

AGENDA

The Annual Meetings of

CONNECTICUT CHAPTER
of the American College of Surgeons
Professional Association, Inc.



October 8, 2021
Trumbull Marriott

CONTINUING MEDICAL EDUCATION CREDIT INFORMATION

Accreditation

The American College of Surgeons is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

AMA PRA Category 1 Credits™

The American College of Surgeons designates this live activity for a maximum of **9.5 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.



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Highest Standards, Better Outcomes



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Learning Objectives:

1. The learner should be aware of surgical research taking place in Connecticut.
2. The learner will be able to discuss the new surgical knowledge generated by residents, fellows and medical students in Connecticut.
3. The learner will have a basis from which they can further examine new surgical techniques
4. The learner will be able to explain the frameworks of and challenges presented by issues of diversity and inclusion in the surgical environment
5. The learner will recognize the role third party payers play in current healthcare environment.

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Table of Contents

Conflict of Interest Disclosure.....	2
Agenda	4
Map of the Trumbull Marriott.....	7
Supporters and Exhibitors.....	8
James Foster, MD, FACS Memorial Lecture.....	9
Surgical Quality Lecture	9
Special Guest Lecture	9
Resident & Medical Student Lecture	10
Women in Surgery Committee Lecture.....	10
Distinguished Service Award	13
Legislative Update.....	13
Business Meeting.....	13
2020 Annual Meeting Minutes	14
2021 Committee Reports	15
New Fellows.....	16
New Chapter Members	16
Medical Student Scholarships	17
The CTACSPA Distinguished Service Award	18
The Michael M Deren, MD, FACS Legislator of the Year Award	19
Officers and Council	20
Past Presidents.....	21
Abstracts	22
Order of Presentation	23

Conflict of Interest Disclosure



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DISCLOSURE INFORMATION

CONNECTICUT CHAPTER OF THE AMERICAN COLLEGE OF SURGEONS PROFESSIONAL ASSOCIATION, INC. ANNUAL AND SCIENTIFIC MEETING
OCTOBER 8, 2021
TRUMBULL, CT

In accordance with the ACCME Accreditation Criteria, the American College of Surgeons must ensure that anyone in a position to control the content of the educational activity (planners and speakers/authors/discussants/moderators) has disclosed all financial relationships with any commercial interest (termed by the ACCME as an "ineligible company", defined below) held in the last 24 months (see below for definitions). Please note that first authors were required to collect and submit disclosure information on behalf all other authors/contributors, if applicable.

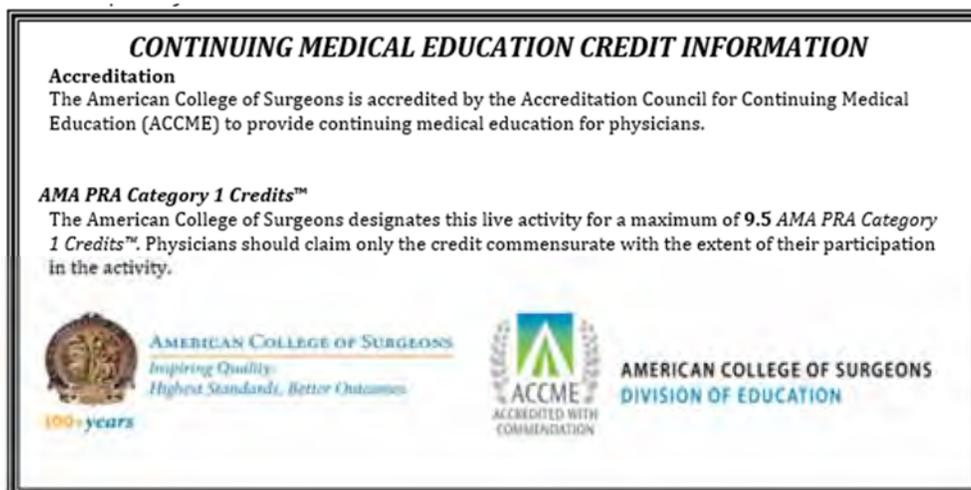
Ineligible company: Any entity producing, marketing, re-selling, or distributing health care goods or services used on or consumed by patients. Providers of clinical services directly to patients are NOT included in this definition.
Financial Relationships: Relationships in which the individual benefits by receiving a salary, royalty, intellectual property rights, consulting fee, honoraria, ownership interest (e.g., stocks, stock options or other ownership interest, excluding diversified mutual funds), or other financial benefit. Financial benefits are usually associated with roles such as employment, management position, independent contractor (including contracted research), consulting, speaking and teaching, membership on advisory committees or review panels, board membership, and other activities from which remuneration is received, or expected. ACCME considers relationships of the person involved in the CME activity to include financial relationships of a spouse or partner.
Conflict of interest: Circumstances create a conflict of interest when an individual has an opportunity to affect CME content about products or services of a commercial interest with which he/she has a financial relationship.

The ACCME also requires that ACS manage any reported conflict and eliminate the potential for bias during the educational activity. Any conflicts noted below have been managed to our satisfaction. The disclosure information is intended to identify any commercial relationships and allow learners to form their own judgments. However, if you perceive a bias during the educational activity, please report it on the evaluation.

SPEAKERS / MODERATORS / DISCUSSANTS/AUTHORS	NOTHING TO DISCLOSE	DISCLOSURE		
		COMPANY	ROLE	RECEIVED
Leah Aakjar, MD	X			
Blake Acquarulo, MPH	X			
Shayan Ahmed, MD	X			
Austin Alecxih, BS	X			
Krist Aploks, MD, MBA	X			
Katarina Bade, BS	X			
Meaghan Broderick, MD	X			
Jeanne Capasse, MD, FACS	X			
Joseph Carbonaro, BS	X			
Phillip Corvo, MD, MA, FACS	X			
Roselle Crombie, MD, FACS	X			
Brittany Davis, MD	X			
Nicholas Druar, MD	X			
Olohirere Ezomo, MPH	X			
Christine Finck, MD, FACS	X			
Royd Fukumoto, MD, FACS	X			
Kristen Glasgow, MD, FACS	X			
Tyler Glaspy, MD	X			
Charles Herrick, MD	X			

Christopher Johnson,	X			
Shash Kala, BA	X			
Daniel Kerekes, MD	X			
Minha Kim, MD	X			
Scott Kurtzman, MD, FACS	X			
Sue Ting Lim, MD	X			
Felix Lui, MD, FACS	X			
Richard Maduka, MD	X			
Samuel Miller, MD	X			
Nupur Nagarkatti, MD	X			
Lisa Newman, MD, MPH, FACS	X			
Tian Sheng Ng, MD	X			
Kathleen O'Neill, MD, PhD	X			
Alexander Ostapenko, MD	X			
Suraj Panjwani, MD	X			
Deb Pappas,	X			
Chelsea Paterson, MD	X			
LJ Punch, MD, FACS	X			
Sean Ramras, MD	X			
Brienne Ryan, MD	X			
Pharis Sasa, BS	X			
Kevin Schuster, MD, FACS	X			
Andrew Seto, MD	X			
David Shapiro, MD, MHCM, FACS	X			
Scott Shikora, MD, FACS		Medtronic	Consultant	Honorarium
Tiahna Spencer, MD	X			
Santosh Swaminathan, MD	X			
Grant Thomas, MD, FACS, MSc	X			
Darren Tishler, MD, FASMBS		Medtronic	Consultant/FDA Trial	Honorarium
Thomas Tritt, MD	X			
Ian Whittall, BA	X			
PLANNING COMMITTEE		COMPANY	ROLE	RECEIVED
Roselle Crombie, MD, FACS	X			
Felix Lui, MD, FACS	X			
Daniel Ricaurte, MD	X			
David Shapiro, MD, MHCM, FACS	X			
Christopher Tasik	X			
Richard Weiss, MD, FACS	X			

Agenda



Connecticut Chapter of the American College of Surgeons Professional Association Meeting

7:30AM Meeting Registration, Continental Breakfast and Exhibits Open – *Grand Ballroom and Foyer*

8:00AM Committee Meetings

Committee on Trauma – [Augusta](#) Commission on Cancer – [Montpelier](#)

8:45AM Opening Remarks – [Grand Ballroom](#)

Felix Lui, MD, FACS, Chapter President, Roselle Crombie, MD, FACS, Program Chair

9:00AM Resident Paper Competitions

Learning Objectives:

- 1) Expand learner's knowledge of novel approaches and emerging trends in surgery
- 2) Acquire skills that can be implemented in learner's own surgical practice

Bariatric and Metabolic Surgery – [Providence Room](#)

Moderator: Darren Tishler, MD, FACS, FASMBS, Chief, Bariatrics, Hartford Hospital, President, Connecticut Chapter of the American Society of Bariatric and Metabolic Surgery

Judge: Connecticut Chapter of the American Society of Bariatric and Metabolic Surgery

Clinical Oncology – [Augusta Room](#)

Moderator: Jeanne Capasse, MD, FACS, Nuvance Health – Norwalk Chair, CT Commission on Cancer

Judge: Scott H. Kurtzman, MD, FACS, Chairman, Waterbury Hospital Department of Surgery; Director, Waterbury Hospital General Surgery Residency Program; Professor of Surgery, University of Connecticut Health Center; Past President and Past Governor-at-Large, Connecticut Chapter of the American College of Surgeons Professional Association, Inc.

John MacArthur, MD, FACS Trauma Competition & Sultan Ahamed, MD, MBA, FACS General Surgery

Trauma – [Montpelier Room](#)

Moderator: Kevin Schuster, MD, MPH, FACS, FCCM, Associate Professor of Surgery (Trauma), Yale School of Medicine, Chair, CT Committee on Trauma, President, CT Surgical Quality Collaborative

Judge: CT Committee on Trauma

General – Montpelier Room

Moderator: Kristen Glasgow, MD, Yale New Haven Health – Bridgeport Hospital

Judge: Alan Meinke, MD, FACS, Private Practice, Surgeons of Westport, Westport, CT, Vice Chairman, Department of Surgery and Director of Surgical Quality, NuVance Health, Norwalk Hospital, Past President, CT Surgical Quality Collaborative & CTACSPA

Plastic Surgery & Medical Student Research - Hartford Room

Moderator: Melissa Mastroianni, MD, Department of Surgery, Plastic and Reconstructive Surgery; Yale School of Medicine

Judge: Shawna Kettyle, MD, FACS, Hartford Healthcare Medical Group

Surgical Quality, NSQIP and ERAS - Boston Room

Moderator: David S. Shapiro, MD, MHCM, FACS, FCCM, Vice Chair of Surgery, Chief of Critical Care and Chief Quality Officer, Saint Francis Hospital & Medical Center, Associate Professor of Surgery University of Connecticut School of Medicine & Frank L. Netter Schools of Medicine

Judge: Shea Gregg, MD, FACS, YaleNewHavenHealth – Bridgeport Campus

Surgical Subspecialties – Concord Room

Moderator: Roselle Crombie, MD, FACS, Yale New Haven Health – Bridgeport Hospital

Judge: Christine Rader, MD, FACS, Director, Extracorporeal Membrane Oxygenation Program, Connecticut Children's

10:30AM Break with Exhibitors – Grand Ballroom

11:00AM Distinguished Guest Lecture: *Addressing Disparities in Bariatric Care*

Scott Shikora, MD, FACS, Director of the Center for Metabolic and Bariatric Surgery, Brigham and Women's Hospital, and Professor of Surgery, Harvard Medical School

Moderated by: : Roselle Crombie, MD, FACS, Yale New Haven Health – Bridgeport Hospital

Learning Objectives:

- 1) Learn how to identify the factors that may cause disparities in bariatric care
- 2) Describe strategies to combat identified disparities and biases

11:45AM Presidential Address, Business Meeting, Distinguished Service Award, Legislative Update – Merritt Ballroom

Distinguished Service Award: Presented to all Connecticut Fellows who Have Served in the US Armed Forces - Scott Kurtzman, Chair, CTACSPA Awards Committee

Presidential Address and Business Meeting - Felix Lui, MD, FACS, President, CTACSPA

Legislative Update - Christopher Johnson, Manager of State Affairs, ACS

12:30PM Fellowship Luncheon in the Exhibit Hall – Grand Ballroom

1:30PM James Foster Memorial Lecture - *Access Denied: Addressing Structural Barriers to Care and Recovery After Bullet Related Injury Update* – Merritt Ballroom

LJ Punch, MD, FACS, Trauma Surgeon, Founder, The T STL, St. Louis MO

Moderator: David S. Shapiro, MD, MHCM, FACS, FCCM, Vice Chair of Surgery, Chief of Critical Care and Chief Quality Officer, Saint Francis Hospital & Medical Center, Associate Professor of Surgery University of Connecticut School of Medicine & Frank L. Netter Schools of Medicine

Learning Objectives:

- 1) Describe the presentation and natural history of Bullet Related Injury
- 2) Describe the structural and historical components of trauma care that have created obstacles to healing after injury
- 3) Explore possibilities to address structural racism within trauma care and delivery

2:30PM Surgical Quality Lecture - Ethnicity-related Variation in Breast Cancer Risk and Outcome
– **Merritt Ballroom**

Lisa Newman, MD, MPH, FACS, Chief of the Section of Breast Surgery, New York-Presbyterian/Weill Cornell Medical Center, and Second Vice-President, American College of Surgeons

Moderated by: Scott Kurtzman, MD, FACS, Program Director, General Surgery Residency Program / Chairman, Department of Surgery

Learning Objectives:

- 1) Describe the social, economic, and political factors that impact the delivery of breast cancer treatment to patients in underserved populations in the United States
- 2) Learn how these issues lead to ethnicity-related variation in the delivery of patient care
- 3) Develop skills to help assist in eliminating breast cancer disparities related to racial/ethnic identity

3:15PM Concurrent Lectures

Women in Surgery Lecture: Building Your Personal Brand– Montpelier & Providence

Deb Pappas, Vice President, Chief Marketing & Communications Officer, Connecticut Children's Hospital

Learning Objectives:

- 1) Define personal branding.
- 2) Identify ways or opportunities to build their personal brand.
- 3) Describe thought leadership.
- 4) Pinpoint areas of expertise and interest to package into a thought leadership platform.
- 5) Write and refine their own narrative.

Resident & Medical Student Lecture

Effectively Engaging in State Advocacy – Merritt Ballroom

Christopher Johnson, Manager of State Affairs, American College of Surgeons

Learning Objectives:

- 1) Gain an understanding of the socioeconomic and political issues that impact delivery of surgical care
- 2) Develop skills to help learners to become political advocates for their patients

Cultural Competence, Morality, and the Concept of Stigma

Chuck Herrick, MD, Nuvance Health, Danbury

Learning Objectives:

- 1) Define Cultural Competence and Stigma and how they relate to morality
- 2) Understand the social intuitionist model of moral reasoning
- 3) Identify Haidt's 6 moral foundations and their impact on various moral attitudes
- 4) Distinguish between group and individual identity in the way these foundations bind and blind us to others

4:15PM 13th Annual Surgical Skills Competition – Grand Ballroom

Hosted by David Shapiro, MD, FACS (Chair) and Shawna Kettyle, MD FACS

Participants will improve their surgical skills by participating and observing hand-on exercises designed to test skills learned in training.

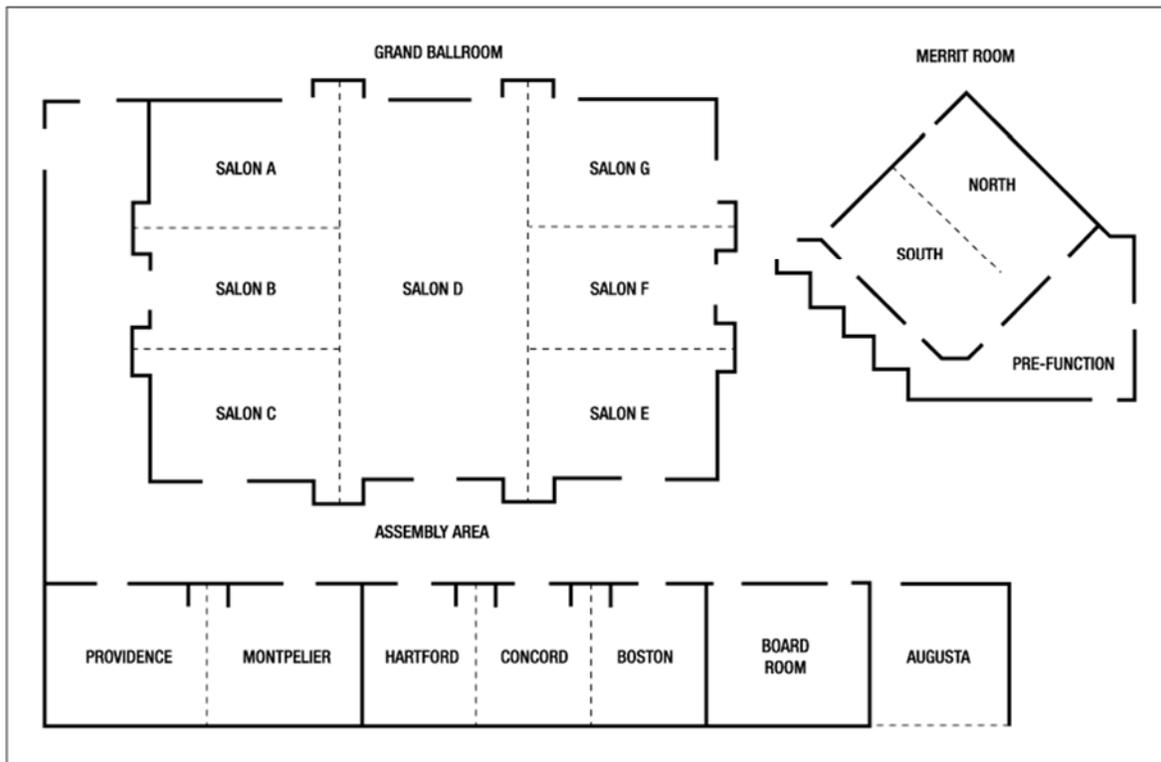
6:45PM Resident Awards & Meeting Wrap

Presentation of the awards for best research papers and the 2021 Skills Competition Championship!

2020 Program Committee: Roselle Crombie, MD, FACS (Chair), Felix Lui, MD, FACS, Daniel Ricaurte, MD, David Shapiro, MD, MHCM, FACS, Christopher Tasik, Richard Weiss, MD, FACS

See you on October 28, 2022, at the Trumbull Marriott

Map of the Trumbull Marriott



Bariatric & Metabolic: Providence
 Clinical Oncology Papers: Augusta
 Trauma & General Surgery: Montpelier

Plastics & Medical Students: Hartford
 Quality, NSQIP & ERAS: Boston
 Specialty Surgery: Concord

Continental Breakfast, the mid-morning break and lunch will be served in the Grand Ballroom

Lectures will be in the Merritt Ballroom

Women in Surgery meeting will be in the Augusta & Montpelier rooms

Resident and Medical Student lecture will be in the Merritt Ballroom

Supporters and Exhibitors

The Connecticut Chapter of the American College of Surgeons recognizes and thank the following for their commercial promotion towards this educational activity

Sultan Ahamed, MD, FACS
General Surgery Competition Sponsor
Integris Group

Scientific Exhibitors

Abbott Nutrition	Medtronic Gastrointestinal & Hepatology
Baxter International	Orascope
CSL Behring	Pacira BioSciences
Heron Therapeutics	Palliare
Integra LifeSciences	Takeda Pharmaceutical
Irrimax - Irrisept	TelaBio
Medtronic Advanced	US Air National Guard
Surgical Technology	US Army Recruiting

Surgical Skills Competition Exhibitors

3M + KCI
Applied Medical
BK Medical
Boston Scientific
Edwards Lifesciences
Ethicon
Intuitive Surgical
Olympus
SimuLab
Strategic Operations
Stryker
W. L. Gore & Assoc.

The Connecticut Chapter of the American College of Surgeons recognizes and thanks Olympus for their in-kind commercial support:

Keynote Lectures

James Foster, MD, FACS Memorial Lecture



Access Denied: Addressing Structural Barriers to Care and Recovery After Bullet Related Injury

LJ Punch, MD, FACS

Trauma Surgeon, Founder, The T STL, St. Louis MO

Moderated by: Felix Lui, MD, FACS



Surgical Quality Lecture



Ethnicity-related Variation in Breast Cancer Risk and Outcome

Lisa Newman, MD, MPH, FACS

Chief of the Section of Breast Surgery, NewYork-Presbyterian/Weill Cornell Medical Center, and Second Vice-President, American College of Surgeons

Moderated by: Scott Kurtzman, MD, FACS



Special Guest Lecture



Addressing Disparities in Bariatric Care

Scott Shikora, MD, FACS

Director of the Center for Metabolic and Bariatric Surgery, Brigham and Women's Hospital, and Professor of Surgery, Harvard Medical School

Moderated by: Felix Lui, MD, FACS

Resident & Medical Student Lecture



Effectively Engaging in State Advocacy

Christopher Johnson

Manager of State Affairs, American College of Surgeons

Moderated by: Shawn Leichty, MD



Cultural Competence, Morality, and the Concept of Stigma

Chuck Herrick, MD

Nuvance Health

Moderated by: Shawn Leichty, MD



Women in Surgery Committee Lecture

Building Your Personal Brand

Deb Pappas

Vice President, Chief Marketing & Communications Officer, Connecticut Children's

Moderated by: Christine Finck, MD, FACS

James H. Foster, M.D.
(1930-2003)



On June 17, 2003, Dr. James H. Foster, Professor of Surgery Emeritus at the University of Connecticut School of Medicine died at his home in Avon, Connecticut after a one-year struggle with pancreatic cancer.

Jim Foster was born in Hamden, CT on June 24, 1930. His father was Lewis C. Foster, M.D., a respected surgeon in New Haven and Clinical Professor on the Yale Faculty, his mother, Alice, a former operating room nurse. As a youth Jim attended Hopkins Grammar School and was a ranked junior tennis player in the state. He continued his love for tennis throughout his life and was a fierce competitor still at the game in the year before his death. He graduated from Haverford College in 1950 and from Columbia University College of Physicians and Surgeons in 1954. He served a surgical internship at Barnes Hospital in St. Louis followed by two years in the U.S. Air Force. Jim received his surgical training at the University of Oregon School of Medicine under the tutelage, and the admiring eye, of the revered surgeon and medical humanist, J. Englebert Dunphy. After completing his residency he remained on the faculty in Portland for five years chiefly at the Veterans Administration Hospital.

In 1966, Hartford Hospital recruited Dr. Foster to be its first full-time Chief of Surgery. Prior to that the department of surgery had been conducting a well-regarded residency for twenty years under the leadership of voluntary practitioner chiefs. John Reed, the first graduate of the program in 1950, would be the fourth Hartford Hospital surgeon to be President of the New England Surgical Society in 1980. As with many high-volume community hospital programs of the time, the emphasis was on clinical care, surgical judgment and guidance based more on anecdotal evidence and experience than on science. Jim soon changed that emphasis by inserting a quest for

evidence-based decision making while respecting and relying upon the skills, knowledge and mentoring gifts of the surgeons to teach his residents.

Within a few weeks of his arrival he started a weekly Morbidity and Mortality Conference, replacing a desultory complications conference. It continues to this day essentially unchanged after nearly forty years. As his first chief resident, I can attest that this was a fearsome undertaking: presenting each case, accounting for wound infections, IV site phlebitis, urinary retentions, anastomotic failures, and, of course, every death on all services. Jim sat at the front of the room presiding, but never allowing an adversarial environment to be created. Insertions of comment were welcomed from all participants. His favorite line at the conclusion of each presentation was, "How could we have done this differently?" And when the discussion became mired in anecdotal commentary, Jim would always ask, "Does anyone have any FACTS on this subject?"

Every resident knew he had a chief who was on educational and oversight mode 24 hours a day. Every attending surgeon knew he had a chief to whom he would be accountable for his patient care and for his role in education. Medicare was just a year old. The elderly poor who had constituted much of the patient population on the resident teaching service were now in the care of private surgeons. Jim Foster would not have his residents' training dependent upon a thinned out "ward" service. Every patient would be a teaching patient and the surgeons who adapted to this philosophy became the vital core of his teaching program, and would bring credit to him, to themselves, and to the institution throughout his twelve-year tenure as chief.

With the advent of organ transplantation, Jim encouraged one of his graduating residents, Robert Schweizer, to go and train with Dr. Belzer and return to establish the transplantation program at Hartford Hospital in 1972. With burgeoning possibilities in cardiac surgery, he supported and encouraged Henry Low and Thomas Donovan to develop that

program. A semi-dormant research laboratory was expanded. Residents became engaged in basic and clinical research, presentations at regional and national meetings became commonplace, and publications appeared more frequently in the literature.

Then in 1974 Dr. Foster set for himself the task of enhancing the knowledge about solid liver tumors with the goals of guiding better surgical treatment and improving patient care. Since the numbers of patients with these lesions in any one institution were small, he decided to gather material from the support of his hospital and the cooperation of his many friends throughout the country, Jim personally visited 98 hospitals in 48 cities in 28 states collecting 650 abstracts of liver tumor patients. Pathological material on each case was reviewed by his pathologist-collaborator at Hartford Hospital, Dr. Martin Berman. The product of this tour de force was monograph #22 in the W.B Saunders series Major Problems in Clinical Surgery entitled Solid Liver Tumors by Foster and Berman published in 1977. Jim's half of the dedication was to Dr. Dunphy. Even after 25 years, the monograph continues to be referenced in papers and discussions on the subject. Jim Foster became an international authority on the management of liver tumors, lending his expertise to the care of patients in Connecticut, and appearing on panels and in the literature until his retirement from surgery in 1993.

As Chief of Surgery during the seventies, Dr. Foster was a strong proponent of close ties between Hartford Hospital and the fledgling University of Connecticut School of Medicine in nearby Farmington. To encourage the process, Jim decided to relinquish his position at Hartford Hospital in 1978 to become Professor and Chairman of Surgery at the medical school. He brought strength, integrity and energy to the surgical program and to the institution. At the state level he was a leader of the Connecticut Society of American Board Surgeons. At its yearly joint meetings with the Connecticut Chapter of the American College of Surgeons, the highlight of the proceedings was the panel

moderated by Jim Foster. Ever-vigilant in recognizing pseudo-science and self-serving hyperbole, and with his typical command of the English language (and his audience), he led discussions of peptic ulcer surgery, pancreatitis, pancreatic cancer, breast cancer and other surgical subjects with memorable skill and common sense.

On the national scene, Dr. Foster was a member of the American Surgical Association. During his tenure on the American Board of Surgery a number of his Connecticut surgical colleagues were given the honor of serving as guest examiners of candidates for the certifying exam.

Jim Foster's talents, wisdom and work ethic were recognized at the regional level where he served on the executive council of the New England Surgical Society for over fifteen years, first as the Connecticut representative, then five years as recorder, four as secretary, president elect, and president in 1989.

During those years Jim and his wife "Sally" set aside time for travel. One of his favorites was trekking in Nepal in the "foothills" of the Himalayas. It was there that he became somewhat taken by the Eastern philosophies and simpler way of life. It was counterpoint to what he observed as a data-driven, computer-oriented emphasis on technology and materialism in western thought and in western medicine. He felt that in the rush to embrace technology the human element of medicine was being pushed aside. He campaigned in his public pronouncements to encourage a correction in the course medicine was taking, advocating meaningful time spent with the patient and a return to a thorough history and physical examination before the fancy tests. As a man well-grounded in poetry and literature, Jim later became a medical parodist rewording some classic poems to express his concerns. An example was his parody of The Shooting of Dan McGrew by Robert W. Service refashioned to depict a man presenting with a simple sebaceous cyst in which the following revised stanza appeared:

After multiple tests there followed the stress of the long wait for news to return.

A whole week went by before the doctor replied with a voice now full of concern:

"Your potassium's low, which means we must know if your adrenal has a tumor inside. A scan known as CAT will help tell us that and will let us your future decide."

The most vivid profile of the multitalented James Foster was portrayed in his presidential address to the New England Surgical Society at Bretton Woods, New Hampshire, September 23, 1989. Entitled, *Some Eastern Thoughts for Northeastern Surgeons*, it expounded further on Jim's concern with scientific materialism and some lessons taught in the Far East. It is an appropriate primer for those embarking upon a surgical career, but must reading for those in the middle-at the peak of such a career. Pithy ideas are found there, such as:

"We must not let the amorality of the marketplace be an excuse for dispensing with the selfless ethic that Medicine has followed for millennia. It is that ethic rather than our science and technology that commands the respect of our patients and the public. That ethic and those values have no measurable price and never will."

"The fundamental difference between East and West that I would like to stress is that the Easterner believes that values and attitudes are more important than measurements and prices. Quality is more important than quantity, and principles are more important than facts and data."

"Eastern culture is also noted for its reverence-reverence for all forms of life, for quiet, for nature, for the mountains, for old age, even for death. You may not have noticed, but reverence is gone from our contemporary American culture."

A few years later, in 1993, Jim Foster retired to Emeritus Professor status but remained involved in medical student education, curriculum development and in a senior advisory role helping the New England Surgical Society adapt its annual meetings to the 21st century. An accomplished artist himself, he encouraged Sally in their travels to take

up watercolors and capture the landscapes at home and away. She became so skilled in her own right that one-person shows of her work were held with Jim as proud behind the scenes supporter, framer, transporter and friendly official greeter. Not surprisingly, for those who know Sally, proceeds from the sale of her work went to a Save the Children Fund in Afghanistan.

Never idle in retirement, Jim Foster nurtured his innate humanism by reading the works of Shakespeare, seeking out medical references in the plays and sonnets. From this pursuit came a book, *A Doctor's Shakespeare*, fully illustrated with drawings by the author with quotes pertaining to physicians, health, and medicine from Elizabethan times. In the final section we find again Jim the poet/parodist rewording Shakespeare to deliver his message of never forgetting the basics in the care of patients under the pen name Rattlesword. Dedicated to "those several hundreds of patients who taught me something of the human side of medicine", it was published in 2001, a year before he learned of the dread malignancy that would take his life.

Viewing his life in its entirety one sees an individual whose multi-talents were extraordinary in variety and depth: an accomplished athlete, surgeon, physician, editor, writer, poet, artist, traveler, philosopher, leader, friend and sponsor of the efforts of so many others, yet habitually embarrassed when any accolades came his way. He made an indelible mark on family, friends and colleagues and he will be missed. The sincere condolences of this society are warmly extended to Sally, his three children, and five stepsons. I think he would approve of a conclusion to this memorial statement drawn from the final lines of his presidential address. He said, *"When you walk in the quiet of the Himalayas, each person you pass on the trail nods his head, clasps his hands, and says, Namaste. The word is both a hello and goodbye, have a nice day and God be with you."*

Namaste, Jim, and thanks for the honor.

—H. David Crombie



Distinguished Service Award

Presented in honor of all Chapter members who are or have served in the US Armed Forces. We thank our Surgeon Soldiers and have made a donation to the Gary Sinise Foundation on their behalf.

Presented by: *Scott Kurtzman, MD, FACS, Chair, Awards Committee*

Legislative Update

Christopher Johnson, Manager of State Affairs, ACS presents an update on the College's legislative activities and the state of the states.

Business Meeting

Call to Order, Welcoming Remarks, Recognition of New Fellows & New Chapter Members, In Memoria, President's Remarks – *Felix Lui, MD, FACS, President*

Governor-at-Large Report— *Philip Corvo, MD, MA, FACS and Kathleen LaVorgna, MD, FACS*

Secretary's Report – *Royd Fukumoto, MD, FACS*

Approval of Minutes of 2020 Annual Meeting (see page 7)

Election of Officers and Councilors

Membership Report: *Felix Lui, MD, FACS*

Financial Report – *David Shapiro, MD, MHCM, FACS*

Service Recognition - *Alan Meinke, MD, FACS, Immediate Past President*

Exhibitor and Sponsor Recognition, Meeting Updates, Adjournment – *Roselle Crombie, MD, FACS*

Committee Reports – please refer to page 12

2020 Annual Meeting Minutes

Virtual - 30 October 2020 – 11:15 a.m.

The Connecticut Chapter of the American College of Surgeons Professional Association, Inc.

At 11:15 a.m., the 2020 Annual Meeting of the Connecticut Chapter of the American College of Surgeons Professional Association, Inc. was convened by Alan Meinke, MD, FACS.

Dr. Meinke presented opening remarks and acknowledged our Council members for their hard work during the year. New Chapter members and new Fellows were also acknowledged, welcomed, and congratulated. Dr. Meinke reflected on his term as President and offered his support and congratulations to the incoming administration.

Drs. Corvo and LaVorgna, ACS Governor(s)-at-Large gave brief remarks on behalf of the ACS Board of Governors.

A motion was made from the floor to approve the minutes of the 2019 Annual Meeting. The motion was carried with a unanimous vote.

Dr. Lui presented the slate of officers for a one-year term (2020 – 2021) as follows:

President: Felix Lui, MD, FACS, President-elect: David Shapiro, MD, MHCM, FACS, Secretary: Royd Fukumoto, MD, FACS, and Treasurer: Christine Van Cott, MD, FACS.

The following were nominated to serve as Council members for 2-year terms expiring at the Annual Meeting in 2022: Lindsay Bliss, MD, FACS, Adrian Maung, MD, FACS, Manuel Moutinho, MD, FACS, Richard Weiss, MD, FACS, and Brian Shames, MD, FACS.

After hearing no nominations from the floor, a vote was held, and all were approved by unanimous consent.

Dr. Shapiro reported that the Chapter had \$46,630 combined in checking, savings, and accounts receivable versus \$98,310 in the prior year. It was duly noted that the majority of the expenses from the Annual Meeting were not included in this figure and revenues have been significantly impacted by the COVID-19 pandemic.

Dr. Van Cott reported that membership was down by 12% over the prior year (188 vs. 213) attributable largely to the effects of the COVID-19 pandemic on dues collection.

Dr. Lui recognized Dr. Meinke for his dedicated service as President over the past two years and thanks Dr. Shapiro for his service as Treasurer over the past 4 years.

Members were directed to the meeting proceedings book to read Committee reports.

Drs. Meinke acknowledged the meeting supporters and virtual exhibitors, and the College. Several other meeting housekeeping matters were addressed.

At 11:30 a.m. the annual meeting of the Connecticut Chapter of the American College of Surgeons Professional Association, Inc. was adjourned.

2021 Committee Reports

Legislative: Kathy LaVorgna, MD, FACS: The Connecticut State Medical Society (CSMS) tracked a limited amount of health care legislation this past year due to the early termination of the legislative session, on behalf of patients and physicians in the state. The CTACSPA, working with CSMS, reviewed, and signed on to testimony for some of those bills. We also worked in partnership with the Connecticut Chapter of the American Society of Bariatric and Metabolic Surgery on its access bill.

Program Committee: Roselle Crombie, MD, FACS (Chair), Felix Lui, MD, FACS, Daniel Ricaurte, MD, David Shapiro, MD, MHCM, FACS, Christopher Tasik, Richard Weiss, MD, FACS: The Program Committee pivoted back to a live meeting after running 2020 virtually. The Chapter enjoyed another very successful year with over 45 abstracts submitted. The Committee again worked with the ACS to provide our CME credits for the Annual Meeting. On the vendor support side, we are pleased to have meaningful support from our industry partners for both the exhibits and our Surgical Skills Competition. The Committee welcomes your active participation and looks forward to your feedback on the Annual Meeting Survey.

Committee on Young Surgeons: Kristen Glasgow, MD: The Committee is preparing to launch its first webinar in partnership with the Women in Surgery Committee this Fall and then survey young surgeons to determine what they would benefit most from the Committee engaging in for 2022.

Resident Committee: Shawn Leichty, MD: The Residents Committee had a very successful year which kicked off at the annual meeting with strong attendance at their sessions. The Committee pivoted to a virtual ABSITE prep course that saw attendance top 400! They are actively making plans for the 2022 ABSITE course which will also run virtually.

Medical Students Committee: James Danahey and Abby Scurfield (QU) and Kevin Jon (STB liaison [QU]): The Committee generated several presentations for the annual Medical Student Research Paper Competition and continued its support of Stop the Bleed trainings despite the limitations of the pandemic.

Patient Safety and Quality Committee: Alan Meinke, MD, FACS—The CtSQC is in the process of trying to re-organize due to the effects of the pandemic on the SCRs, many of whom have been transitioned to other roles or had their roles outsourced. CtSQC member hospitals are entitled to a discount on the annual ACS NSQIP fees.

Diversity and Inclusion Committee: David Shapiro, MD, FACS – This Committee was formed earlier this year and is starting to shape its mission and vision.

Women in Surgery Committee: Christine Finck, MD, FACS – The WIS Committee was reinvigorated this year by a team of surgeons under the leadership of Dr. Finck. They have established a mission and vision, elected officers and established a junior leadership council, and are developing a survey to send to women surgeons in CT. They are also working on a series of panel discussions, the first of which, *Building Your Brand*, is being held during the Annual Meeting.

New Fellows

Congratulations!

John Kunstman, MD

Raul Guzman, MD

Melanie Sion, MD

Raina Sinha, MD

Daniel Mullins, MD

Sunny Mitchell, MD

Jai Prasad, MBBS

Edward Gifford, MD

Daniel Lavy, MD

Whitney Young, MD

Jesse Eisler, MD

Olutayo Sogunro, DO

Manuel Moutinho, MD

Haddon Pantel, MD

Grigoriy Klimovich, MD

Carissa Webster-Lake, MD

Andreas Lamelas, MD

New Chapter Members

Welcome!

Jeanne Capasse, MD FACS

Christina Stevenson, MD FACS

Jennifer Knod, MD

Maija Cheung, MD

Medical Student Scholarships

Annually, the Connecticut Chapter of The American College of Surgeons Professional Association sponsors an award for excellence in the Surgical Sciences to a graduating senior medical student at the Frank H. Netter, MD School of Medicine at Quinnipiac University, the University of Connecticut School of Medicine, and the Yale School of Medicine.

This award is presented to stimulate student interest in the surgical disciplines and to recognize outstanding achievements in these areas. The award is not restricted to excellence in general surgery or a specific surgical subspecialty, but is presented to the student showing the best overall performance in any of the surgical disciplines.

Congratulations to the 2021 recipients!



JEREMY FRIDLING, M.D.

Frank H. Netter, MD School of Medicine at Quinnipiac University



JOSHUA KNOPF, M.D.

University of Connecticut School of Medicine



STEFANIE ROHDE, M.D.

Yale School of Medicine

The CTACSPA Distinguished Service Award

In 2006, the Chapter formed an Awards Committee which was charged with the task of selecting a candidate for the newly conceived Distinguished Service Award.

This award was created to honor an individual who has made an outstanding contribution to surgical patient care and the art and science of medicine in Connecticut.

We proudly list those upon whom the Connecticut Chapter of the American College of Surgeons Professional Association's Distinguished Service Award has been bestowed:

Award Recipients

2021: The Surgeon Soldiers of the CTACSPA

2018, 2019, 2020: Not Awarded

2017: Scheuster E. Christie, MD, FACS

2016: Scott Ellner, DO, FACS

2015: Kathleen LaVorgna, MD, FACS

2014: David Knight, MD, FACS

2013: H. David Crombie, MD, FACS

2012: Lenworth Jacobs, MD, FACS

2011: Michael Deren, MD, FACS

2010: Joseph Civetta, MD, FACS

2009: Anthony Morgan, MD, FACS

2008: Stanley J. Dudrick, MD, FACS

2007: Frank J. Scarpa, MD, FACS

2006: John D. MacArthur, MD, FACS

The Michael M Deren, MD, FACS Legislator of the Year Award



In September 2019, Council dedicated this award in memory of our colleague and friend, Michael Deren, MD, FACS, who succumbed to a rare illness on July 28, 2019. We will miss his keen insight, his encyclopedic knowledge of medical and world history, his passion for service to his patients and his fellow physicians, his kindness and generosity, his love for his wife, Anne Marie, for whom he often took home a dessert from Council meetings, and his dedication to our Chapter for over 25 years.

Dr. Deren was born in New Haven, CT, attended Seymour schools, obtained his Bachelor of Arts in English at Georgetown University, and his M.D. at Georgetown Medical School. He performed his general surgical residency at Hartford Hospital and then served as a surgical captain in the U.S. Marine Corps in Okinawa. He pursued a cardiothoracic fellowship at Yale University and later returned for a certificate in Physician Leadership from the Yale School of Management. He was in private practice for over 30 years and served as the chief of surgery at Lawrence + Memorial Hospital for 23 years.

To say he was dedicated to organized medicine is an understatement. Dr. Deren was truly an advocate for his colleagues and patients in and out of the operating room. He served the Connecticut Chapter in various capacities including Secretary and President. Dr. Deren served in numerous roles at the American Medical Association, including Chair of the Council on Constitution and Bylaws and the Chair of the Surgical Caucus, as President and later Chairman of the Council of the Connecticut State Medical Society, and in many other professional and civic organizations in Connecticut and across the country. After he left the operating room, he continued to practice at the Backus Hospital Wound Care Clinic and served as Editor of *Connecticut Medicine* or as he affectionately called it "*The Other New England Journal*".

Outside of medicine he was an accomplished chess player who contemplated pursuing the path to Grand Master, fortunately for his patients and colleagues, he chose surgery. Dr. Deren loved playing his Steinway piano and would spend hours working pieces to perfection. He volunteered as a tutor for immigrant students in the Norwich area and was honored as a Knight in the Order of Malta. He also enjoyed cars and driving – it was not uncommon for him to drive from his home in New London to a meeting in New Haven back to Lawrence + Memorial then back home multiple times each week.

In "*the land of steady habits*" there was perhaps one no steadier than Dr. Deren. We thank him for his leadership, and his service and mentorship to our Chapter, our patients, and our profession.

The Michael M Deren, MD, FACS Legislator of the Year Award has been awarded to:

- 2019 – The Honorable James Himes, United States House of Representatives
- 2016 – The Honorable Nancy Wyman, Lt. Governor, State of Connecticut
- 2015 – The Honorable Rosa DeLauro, United States House of Representatives
- 2014 – The Honorable Joseph Courtney, United States House of Representatives
- 2013 – The Honorable Prasad Srinivasan, MD, Representative, State of Connecticut
- 2012 – The Honorable Richard Blumenthal, United States Senate
- 2011 – The Honorable Christopher Murphy, United States House of Representatives
- 2010 – The Honorable Christopher Donovan, Speaker of the House, State of Connecticut
- 2009 – The Honorable James Shapiro, Representative, State of Connecticut

Officers and Council

2020-2021

President

Felxi Lui, M.D., F.A.C.S.*, ***

Secretary

Royd Fukumoto, M.D., F.A.C.S.*

Treasurer

David S. Shapiro, M.D., M.H.C.M., F.A.C.S. *, ***

Immediate Past President

Alan K. Meinke, M.D., F.A.C.S.*

Governors-at-Large

Philip Corvo, M.D., M.A., F.A.C.S.**

Kathleen LaVorgna, M.D., F.A.C.S.**

VP, Annual Meeting Program Cmte.

Roselle Crombie, M.D., F.A.C.S. ***

VP, Membership

Lindsay Bliss, MD *

VP, Legislative Committee

Brendan Campbell, M.D., F.A.C.S.*

Kathleen LaVorgna, M.D., F.A.C.S.**

Chair, Awards Committee

Scott H. Kurtzman, M.D., F.A.C.S.*

Chair, Diversity and Inclusion Committee

David S. Shapiro, M.D., M.H.C.M., F.A.C.S. ***

Chair, Residents Committee

Shawn Leichty, M.D. **

Chair, Medical Students Committee

James Danahey and Abby Scurfield (QU) and Kevin Jon (STB liaison [QU])

Chair, Women in Surgery Committee

Christine Finck, M.D., F.A.C.S.*

Chair, Young Surgeons Committee

Kristen Glasgow, M.D.*

Council Members

Kevin Dwyer, M.D., F.A.C.S.

Shea Gregg, M.D., F.A.C.S.

Adrian Maung, M.D., F.A.C.S.

J. Alexander Palesty, M.D., F.A.C.S.

Brian Shames, M.D., F.A.C.S.

Rekha Singh, M.D., F.A.C.S.

Richard Weiss, M.D., F.A.C.S.***

Ex-officio Members

Chair, CT Committee on Trauma

Kevin Schuster, M.D., F.A.C.S.*

Chair, CT Commission on Cancer

Jeanne Capasse, MD, FACS *

Chair, CT State Trauma Committee

Shea Gregg, M.D., F.A.C.A.

CTASMBS Liaison

Darren Tishler, M.D., F.A.C.S., F.A.S.M.B.S.

* Council Member

**Ex-officio Council Member

***Program Committee Member

Executive Director: Christopher M. Tasik***
65 High Ridge Road, PMB 275, Stamford 06905
T: 203-674-0747 F: 203-621-3023 info@ctacs.org

Past Presidents

Alan Meinke, MD, FACS	2018-2020
Kimberly A. David, MD, MBA, FACS	2016-2018
Michael M. Deren, MD, FACS	2014-2016
Kathleen LaVorgna, MD, FACS	2012-2014
Juan Sanchez, MD, MPA, FACS	2011-2012
Orlando Kirton, MD, FACS	2009-2011
Philip Corvo, MD, MA, FACS	2007-2009
Scott H. Kurtzman, MD, FACS	2005-2007
Gary Bloomgarden, MD, FACS	2004-2005
Kristen Zarfes, M.D., F.A.C.S.	2002-2004
Lenworth Jacobs, MD, MPH, FACS	2000-2002
Charles E. Littlejohn, MD, FACS	1999-2000
Frank J. Scarpa, MD, FACS	1997-1998
John M. MacArthur, MD, FACS	1995 -1996
Sherman M. Bull, MD, FACS	1993 -1994
Robert D. Cottle, MD, FACS	1991 -1992
Robert Boltax, MD, FACS	1989 - 1990
Joseph A. Bardenheier, III, MD, FACS	1987 -1988
Brendan M. Fox, MD, FACS	1985 -1986
Gerard Chapnick, MD, FACS	1983 -1984
Gerald O. Strauch, MD, FACS	1981 -1982
William F. Quigley, MD, FACS	1979 - 1980
Everitt Dolan, MD, FACS	1978
Douglas A. Farmer, MD, FACS	1976-1977
Andrew J. Panettieri, MD, FACS	1974 -1975
John Standard, MD, FACS	1972 -1973
Francis M. Hall, MD, FACS	1970 -1971
John C. Nolan, MD, FACS	1969
Albert C. Herrmann, MD, FACS	1966 – 1968

CONNECTICUT CHAPTER
of the American College of Surgeons
Professional Association, Inc.



ABSTRACTS

Resident Paper Competition October 8, 2021 - Trumbull Marriott

Prizes awarded in the following categories:

	First Place	Second Place	Third Place
Bariatric & Metabolic	X	X	
Clinical Oncology	X	X	X
Sultan Ahamed, MD, MBA, FACS General Surgery	X		
Medical Students	X	X	
Plastics	Hon Mention		
Quality, NSQIP & ERAS	X	X	X
Specialty Surgery	X	X	X
John MacArthur, MD, FACS Trauma	X	X	

Order of Presentation

Providence - Metabolic & Bariatric Surgery - Hosted by CT Chapter ASMBS

Sue Ting Lim MD	Saint Mary's Hospital
Joseph Carbonaro BS	Frank H. Netter MD School of Medicine at QU
Katarina Bade BS	Trinity College
Santosh Swaminathan MD	Saint Mary's Hospital
Santosh Swaminathan MD	Saint Mary's Hospital
Chelsea Paterson MD	Saint Mary's Hospital

Thioredoxin-1 Overexpression Ameliorates the Progression of Diabetic Cardiomyopathy
 Long-Term Outcomes of Revisional Bariatric Surgery
 Effect of COVID-19 Lockdown on Weight Change in Post-Surgical Patients
 Assessment of Blood Transfusion Requirement in Patients on Therapeutic Anticoagulation
 Incidence and Short-Term Outcomes of General Surgeons Performing Elective Laparoscopic Cholecystectomy
 Incidence of patients on psychiatric medications and their outcomes following bariatric surgery

Augusta - Clinical Oncology - Hosted by the CT Commission on Cancer

Santosh Swaminathan MD	Saint Mary's Hospital
Santosh Swaminathan MD	Saint Mary's Hospital
Sue Ting Lim MD	Saint Mary's Hospital
Alexander Frey MD	Yale School of Medicine
Andrew Seto MD	Stamford Hospital
Richard Maduka MD	Yale School of Medicine
Tomasz Kasprzycki MD	Frank H Netter Quinnipiac School of Medicine - WH
Richard Maduka MD	Yale School of Medicine
Sean Ramras MD	Frank H Netter Quinnipiac School of Medicine - WH

Impact of Clinical Vs Laboratory Markers of Malnutrition on Outcomes Following Rigid Prosthesis Reconstruction following Resection of Chest Wall Chondrosarcoma
 Defining the Utility of Combined Positron Emission Tomography – Computed Tomography
 The Incorporation of Palliative Care into a Multidisciplinary Approach to Stage I Lung Cancer
 Radiation-Induced Osseous Metaplasia of the Breast: A Rare Anomaly Following Breast Cancer
 Indoor Versus Outdoor Occupational Exposure and Cutaneous Melanoma Risk: Does pan-creatitis on imaging matter? The Risk of Adenocarcinoma in Situ in Pancreas
 Sex-based Differences in Age at Diagnosis of Melanoma Among Patients in the United States
 Small bowel obstruction from Urothelial carcinoma metastasis: A rare presentation

Montpelier

John MacArthur Trauma/Critical Care - Hosted by the CT Committee on Trauma

Kathleen O'Neill MD, PhD	Yale New Haven Hospital
Sean Ramras MD	Frank H Netter Quinnipiac School of Medicine - WH
Leah Aakjar MD	University of Connecticut
Nicholas Druar MD, MPH	Saint Mary's Hospital
Suraj Panjwani MD	St. Mary's Hospital
Santosh Swaminathan MD	Saint Mary's Hospital

The Effect of the COVID-19 Pandemic on Community Violence: Minority Communities
 A dangerous meal: an acute perforation after foreign body ingestion
 Does Statin Therapy Reduce the Risk of Stroke in Blunt Cerebrovascular Injury?
 Investigation of Shock Index as an Indicator for Level of Trauma Activation: Retrospective Cohort Study
 : Impact of the Affordable Care Act on Management of Ankle Fractures - A National Study
 Global Deletion of Pellino-1 Triggers Cardiac Dysfunction, Cell Death and Inflammation

Sultan Ahamed, MD, FACS General Surgery - Hosted by the CTACSPA

Santosh Swaminathan MD	Saint Mary's Hospital
Shayan Ahmed MD	Saint Mary's Hospital
Tian Sheng Ng MD	Saint Mary's Hospital

Implications of Obesity in Patients with Ulcerative Colitis undergoing Ileocolic Resection
 Outcomes of Robotic-Assisted versus Laparoscopic Cholecystectomy – Experience from a Single Center
 Effects of COVID-19 Pandemic on Cholecystectomies Performed in a Community Hospital

Hartford

Plastic & Reconstructive Surgery - Hosted by the CTACSPA

Brittany Davis MD	Stamford Hospital
Tiahna Spencer MD	UConn Health

A Case Series of Reverse-Flow Anterolateral Thigh Perforator Flap for Peri-Patellar Hernia
 Reduction Mammoplasty Performed to Treat Chronic Headaches in a Patient with Ehlers-Danlos Syndrome

Medical Student Research- Hosted by the CTACSPA

Olohirere Ezomo MPH	Frank H. Netter MD School of Medicine at QU
Blake Acquarulo MPH	Frank H. Netter MD School of Medicine at QU
Olohirere Ezomo MPH	Frank H. Netter MD School of Medicine at QU
Ian Whittall BA	University of Connecticut School of Medicine
Shashwat Kala BA	Yale School of Medicine

Global Research Trends on the impact of the COVID-19 pandemic on Orthopedic Surgery
 Racial Disparities in Outpatient Versus Inpatient Total Hip Arthroplasty
 Ischemia of the thumb, a rare case of emboli to the princeps pollicis artery
 The BITE Score: a Novel Scoring System to Improve Dog Bite Care in Children
 Ethnoracial Disparities in Surgical Pediatric Cancer Care During the COVID-19 Pandemic

Boston - Surgical Quality, NSQIP and ERAS - Hosted by the CtSQC

Alexander Ostapenko Dr	Danbury Hospital
Josh Sznoel MD	Yale School of Medicine
Nupur Nagarkatti MD	Yale School of Medicine
Pharis Sasa BS	Spine Institute of CT
Samuel M. Miller MD	Yale School of Medicine
Thomas Tritt MD	Stamford Hospital
Suraj Panjwani MD	St. Mary's Hospital
Tyler Glaspy MD	Danbury Hospital

Synchronous major hepatic resection with primary colorectal cancer increases mortality
 Adverse Impact of Ascites on Outcomes of Open Inguinal Hernia Repair in the United States
 Is Patient Sex Associated with Surrogate Consent for Surgical Intervention?
 Assessing the Accuracy of the American College of Surgeons' Surgical Risk Calculator
 A Descriptive Analysis of Older Adult Patients who Underwent Surgery Based on Age
 Effects of Physician Education on the Identification of Moderate and Severe Malnutrition
 Bearing of BMI on Surgical Outcomes After Ostomy Reversal-NSQIP Analysis
 Role of Ablation Therapy in Conjunction with Surgical Resection for Neuroendocrine Tumors

Concord - Surgical Subspecialties- Hosted by the CTACSPA

Austin Alecxih BS	Frank H. Netter MD School of Medicine at QU
Brienne Ryan, MD	Connecticut Children's Medical Center
Krist Aploks MD, MBA	Danbury Hospital
Minha Kim MD	Danbury Hospital
Nicolle Burgwardt MD	Stamford Hospital
Sue Ting Lim MD	Saint Mary's Hospital
Olohirere Ezomo MPH	Frank H. Netter MD School of Medicine at QU

BIOMECHANICS OF THE PROXIMAL TIBIOFIBULAR JOINT: QUANTIFYING NORMAL AND ABNORMAL LOADS
 Esophageal Stenosis Secondary to Cavitary Lesions: A Unique Presentation of Diffuse Esophageal Sphincter Dysfunction
 Neoadjuvant radiation therapy prior to a pancreaticoduodenectomy for adenocarcinoma of the pancreas
 Pancreatic Paraganglioma and Hyperparathyroidism in a Patient with RET Gene Mutation
 Patent Urachus in Neonate Requiring Surgical Repair
 Prolyl-4-Hydroxylase 2 (PHD-2) Inhibition Promotes Pro-angiogenic and Anti-apoptotic Signaling
 The Association between Quadriceps Weakness and Persistent Knee Pain after Total Knee Arthroplasty

Metabolic and Bariatric Surgery

Hosted by the CT Chapter of the American Society of Metabolic and Bariatric Surgery

Thioredoxin-1 Overexpression Ameliorates the Progression of Diabetic Cardiomyopathy in Aged Transgenic Mice

^{1,2}Sue Ting Lim, MD., ¹Seetur R. Pradeep, Ph.D., ¹Mahesh Thirunavukkarasu, Ph.D., ^{1,2}Santosh Swaminathan, MD., ^{1,2}Diego Accorsi, MD., ²J. Alexander Palesty, MD, FACS, ¹Nilanjana Maulik Ph.D., FAHA

¹Molecular Cardiology and Angiogenesis Laboratory, Department of Surgery, University of Connecticut School of Medicine

²Stanley J. Dudrick, Department of Surgery, Saint Mary's Hospital

Introduction: Increased production of reactive oxygen species contributes to the etiology of diabetic complications. It acts as an intracellular antioxidant by scavenging reactive oxygen species (ROS) and protect the cells against oxidative stress and cell death. Our study aims to determine the long-term effect of streptozotocin (STZ) induced type-1 diabetes on aging Trx-1 transgenic mice related to their survivability, heart function, fibrosis, and apoptosis up to 180 days (d) compared to its corresponding wild-type (WT C57BL/6J).

Method: WT and Trx-1 overexpressed mice (Trx-1Tg/+) (8-12 weeks old) were injected with STZ (i.p. 50mg/kg-male; 75mg/kg-female for five consecutive days) for induction of diabetes (Dia). Fasting blood sugar level (FBS) was measured 30d after the final injection, and FBS >220mg/dL is used as the cut-off for diabetes. Echocardiography, Survival, FBS measurements were performed on 30, 60, 90, 120, 150, and 180d. Immunohistochemistry was performed on heart tissues (30, 90, and 180d).

Results: Dia-Trx-1Tg/+ mice have preserved EF at 60d (61.14±2.3%), 120d (56.1±1.94%) and 180d (60.8±4.3%), when compared to 30d (64.4±1.94%) representing preserved cardiac functions. On the other hand, Dia-WT mice show significant progressive depression of EF at 60d (53.8±1.9%), 120d (48.8±2.1%), and 180d (48.9±1.5%), ($p < 0.05$) when compared to 30d (68.4±6.1%) Dia-WT. Moreover, Dia-Trx-1Tg/+ mice show significantly higher EF than their corresponding Dia-WT counterparts at each time point measured after diabetic induction ($n=8-12$, $p < 0.05$). Dia-Trx-1Tg/+ mice ($n=71$) also exhibited a survival advantage over Dia-WT ($n=47$) counterparts with a median survival of 150 days compared to 60 days (Log Rank test: $p=0.004$). Dia-Trx-1Tg/+ mice also showed a significant reduction in cardiac fibrosis (4.18±1.08% vs. 17.5±5.1%; $p=0.03$, $n=4$) and TUNEL positive cells (3.81±1.49 vs. 7.66±1.46; $p=0.03$, $n=4$) when compared to their counterpart (Dia-WT) after 180d of diabetes.

Conclusion: These results show that Trx-1Tg/+ mice preserved their cardiac functions, increased survival, along with decreased apoptosis and fibrosis up to 180d under diabetic conditions, and hence suggesting Trx-1 based treatment strategy could prevent heart failure in aging.

Long-Term Outcomes of Revisional Bariatric Surgery

Joseph Carbonaro BS, Ilene Staff PhD, Richard L. Seip PhD, Tara McLaughlin PhD, Connie Santana BS, Darren Tishler MD, Pavlos Pappasavas MD

Introduction: Revisional bariatric surgery may be indicated for patients with insufficient weight loss after the index procedure and/or persistence of comorbidities. This exploratory study compared weight loss and comorbidity resolution 5 years following revisions that were: adjustable gastric band to laparoscopic sleeve gastrectomy (AGB to LSG) and adjustable gastric band to Roux-en-Y gastric bypass (AGB to RYGB). In patients with BMI>35 at pre-revision, we hypothesized the AGB to RYGB group would yield superior outcomes.

Methods: A retrospective chart review identified all patients who underwent revisional bariatric surgery at two medical centers in a healthcare system from 1/2012 to 11/2015. Pre-operative and 5-year post-revisional procedure weights, presence/absence of comorbidities (diabetes, sleep apnea, GERD, hypertension and hyperlipidemia), and hypertension medications were recorded. Outcomes were compared for AGB to LSG and AGB to RYGB groups. Categorical data were analyzed using the Fisher's Exact or Chi-Square test as appropriate, and continuous data using the Mann-Whitney U test.

Results: Of 142 revisional cases, 104 (72%) had 5Y follow-up data. Of these, n13 patients were excluded (n11, for other revision types; n2, for multiple revisions), leaving n51 AGB-LSG and n40 AGB-RYGB revisions. Of these, 73 had baseline BMI \geq 35. Pre-operatively, we noted higher pre-op weight and BMI in RYGB compared to LSG with no other differences. At 5 years post revision, the RYGB group had a significantly greater %TWL, %EWL, and decrease in BMI compared to the AGB to LSG group (*Table 1*). There were no significant differences in individual comorbidity resolution or number of anti-hypertension medications at 5 years between the two groups. However, revision AGB to RYGB decreased the overall number of comorbidities vs. AGB to LSG ($p=0.008$).

Conclusion: The AGB to RYGB revision induced greater long term weight loss compared to the AGB to LSG revision. Our findings suggest that revisional surgery that includes a malabsorptive component (i.e, RYGB) may induce further weight loss after initial gastric banding. The findings may aid clinicians recommending revisional surgery...

Table 1. Summary of weight loss 5 years following revisional surgery in the subset of patients (n=73; n37 SG, n36 RYGB) whose pre-revisional BMI was 35 or higher.

Cohort	Variable	Group	Mean \pm sd	p value
Subset: Pre-Operative BMI \geq 35 (n=73)	%TWL	LSG (n37)	5.64 \pm 10.85	<0.001
		RYGB (n36)	20.11 \pm 10.53	
	% EWL	LSG	14.03 \pm 28.35	<0.001
		RYGB	47.74 \pm 25.46	
	Decrease in BMI	LSG	2.33 \pm 4.45	<0.001
		RYGB	9.21 \pm 5.61	
Change in number of comorbidities	LSG	-0.30 \pm 1.05	0.008	
	RYGB	0.39 \pm 1.10		

Effect of COVID 19 Lockdown on Weight Change in Post-Surgical Bariatric Patients

Bade, K; Seip, RL; Staff, I; McLaughlin, TL; Tishler, DS; Papasavas, PK
Hartford Hospital Metabolic and Bariatric Surgery Center

Introduction: Safe and effective weight loss in the year following bariatric surgery occurs in concert with both social support and a series of clinical visits to manage patient weight loss. Interruption of such support may threaten weight loss. In Connecticut, the COVID pandemic of 2020 led to a “lockdown”, during which in-person services were suspended and social support interrupted. This study investigated the effect of exposure to 63 days of COVID lockdown within 12 months following index bariatric surgery on weight loss in patients who underwent sleeve gastrectomy (SG) or Roux-en-Y gastric bypass (RYGB) surgery.

Method: This single center, retrospective chart review identified 1057 patients with 1 year follow-up data who underwent SG or RYGB from 1/9/2016 to 12/30/20. Controls (Group C) (SG n750, RYGB n130) completed surgery and follow up *before* the COVID lockdown (1/9/2016 to 3/15/20). Experimental patients (Group E) (SG n159, RYGB n18) completed surgery before COVID lockdown and follow up *after* the mandatory lockdown (5/20/20 to 12/31/2020).

Results: Within surgery type, there were a few modest differences in baseline characteristics between E and C (*table 1*). At 1 Y follow-up, absolute and relative weight changes did not differ between E and C and days to follow up were not different. Within group E, 21% of SG patients and 22% of RYGB patients experienced virtual (telemedicine) visits with bariatric clinicians during follow up, compared to none in group C.

Conclusion: We detected no effect of 63 days of COVID lockdown on %TWL at 1 year post SG or RYGB surgery. The institution of telemedicine services may have facilitated beneficial care. The findings may be useful to maintain/improve clinical management of surgical weight loss, in preparation for future pandemics and the suspension of health services.

Table 1. Baseline characteristics of patients undergoing SG or RYGB surgery and weight loss data at 1 year post-surgery, in the control (C) and experimental (E) groups. For continuous variables, data are medians and interquartile range (IQR; 25th pctl, 75th pctl). Percentages represent the proportion of the group.

Variable or Factor	Sleeve Gastrectomy			Roux en Y Gastric Bypass		
	C n750	E n159	p value	C n130	E n18	p value
Women (%, N/total)	81.1% (608/750)	84.9% (135/159)	0.255	87.7% (114/130)	66.7% (12/18)	0.019*
Age (years)	44.6 (32.1-57.1)	42.4 (31.3-53.5)	0.070	43.8 (32.6-55.0)	46.1 (38-54.2)	0.382
Hispanic Ethnicity (%) Yes, No, Not Reported	25.3, 71.6, 3.1	32.1, 67.9, 0	0.025*	26.2, 68.5, 5.4	22.2, 77.8, 0	0.532
Race (%) White, Black Other, Not Reported	57.5, 16.5, 0.5, 25.5	52.2, 15.7, 0.6, 30.8	0.169	61.5, 11.6, 0, 26.9	61.1, 16.7, 0, 22.2	0.789
BMI, pre	44.1 (37-51.2)	43.6 (37.3-49.9)	0.615	46.5 (38.3-54.8)	43.8 (36.4-51.2)	0.280
% TWL, 1 Y	19.2 (10.2-28.2)	20.3 (11.2-29.5)	0.870	30.1 (20.3-39.9)	30.4 (19.9-40.9)	0.794
% EWL, 1 Y	34.0 (16.4-51.6)	35.3 (19-51.6)	0.343	56.6 (33.8-79.4)	54.8 (30.0-79.6)	0.657
Days, Surg to 1Y FU	383 (324-442)	388 (325-451)	0.126	398 (336-461)	380 (324-437)	0.560
BMI, 1 Y	35.6(28.8-42.4)	34.8 (28.1-41.5)	0.331	32.5 (25.7-39.3)	30.1 (25.3-34.9)	0.158
TMVisits, Surg to 1Y	0% (0/750)	20.8% (33/159)	0.001	0% (0/130)	22% (4/18)	0.001

Assessment of Blood Transfusion Requirement in Patients on Therapeutic Anticoagulation and Vena Caval Filters following Elective Minimally Invasive Bariatric Surgery: A MBSAQIP analysis

Santosh Swaminathan MD, Shohan Shetty MD, FACS
Saint Mary's Hospital, Waterbury CT

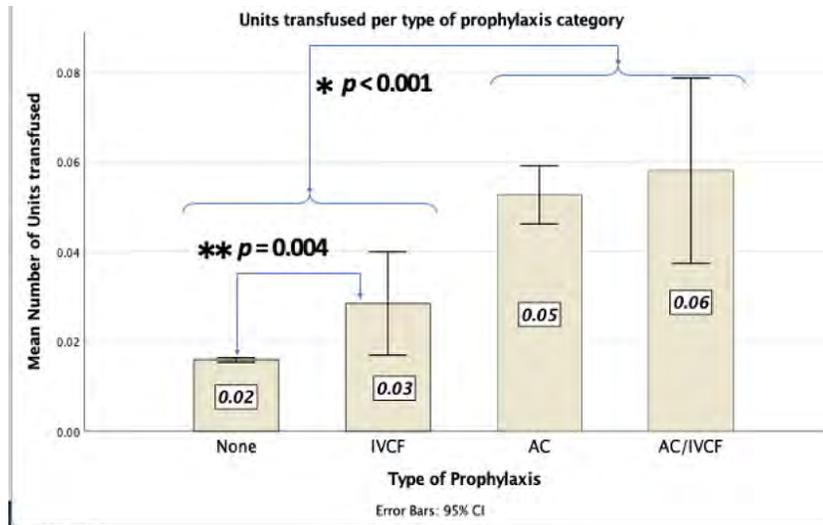
Introduction: Bleeding is one of the most common complications in bariatric surgery and has a risk of being catastrophic. As surgeons are encountering more patients on therapeutic anticoagulation and/or vena caval filters preoperatively, it may become an important consideration to identify the risk of blood transfusions postoperatively in patients undergoing elective bariatric surgery.

Methods: Patients who underwent elective minimally invasive sleeve gastrectomy and gastric bypass from 2015-2019 were identified using the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) database. Patients were classified based on their preoperative state of anticoagulation and postoperative need for transfusion and number of units transfused within 72 hours were analyzed.

Results: Overall, 599,776 patients were identified from the database and categorized into four categories viz. no anticoagulation (96.8%), therapeutic anticoagulation (AC, 2.6%) only, inferior vena caval filter only (IVCF, 0.4%) and patients on both therapeutic anticoagulation and IVC filter (AC/IVCF, 0.2%). After adjusting for significant comorbidities, the risk of need for postoperative blood transfusion on logistic regression analysis expressed as odds ratio (95% CI) are as follows: AC/IVCF group: 3.45 (2.40-4.96), AC: 2.11(1.86-2.40) and IVCF: 1.51 (1.01-2.27). The number of units transfused are indicated in figure 1.

Conclusion: The estimated risk of immediate postoperative need for transfusion is the highest when patients are on therapeutic anticoagulation and have an IVC filter in place and almost two-fold with AC alone. A high index of suspicion for bleeding in the postoperative period in these cohorts of patients is required.

Figure 1. showing the mean number of units of blood transfused within 72 hours postoperatively among the four study categories



Incidence and Short-Term Outcomes of General Surgeons Performing Elective Minimally Invasive Bariatric Surgery: A 5-year Review of MBSAQIP

Santosh Swaminathan MD, Suraj Panjwani MD, Alexander Palesty MD FACS, Shohan Shetty MD FACS
Saint Mary's Hospital, Waterbury CT

Introduction: Surgical weight loss procedures have become pivotal in the management of major comorbidities in patients with obesity. The number of such cases performed across the entire United States is on the rise. These surgeries are mostly being performed by Metabolic and Bariatric Specialty trained surgeons (MBS) however few are still being done by General Surgeons (GS) and thus we would like to study their incidence and the 30-day postoperative outcomes.

Methods: Patients undergoing elective minimally invasive sleeve gastrectomy and gastric bypass from the years 2015 to 2019 were identified using the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) database. Patients were classified based on the specialty of the physician performing the operative procedure and their outcomes analyzed (MBS vs GS).

Results: Of the 632,890 cases identified over the 5 years from the database, 2.5% were performed by GS. Patients in the GS group were white, higher ASA 4 category, lower incidence of preoperative factors such as smoking, hypertension, on dialysis, limited ambulation, cardiac and respiratory comorbidities, and being on therapeutic anticoagulation. Multivariate analysis of post-operative outcomes controlling for significant preoperative factors revealed a 15% increased risk of readmission (95% CI 1.05-1.27) with no significant difference in overall mortality or morbidity.

Conclusion: Approximately 2.5% of all minimally invasive elective bariatric procedures performed across the United States are by general surgeons. In the select patient population being operated by them, their overall outcomes are similar to those of specialty trained Metabolic and Bariatric surgeons.

Incidence of Patients on Psychiatric Medications and Their Outcomes Following Elective Minimally Invasive Sleeve Gastrectomy: Retrospective Review of an Institutional Bariatric Database

Chelsea Paterson MD, Santosh Swaminathan MD, Priscilla Lam MD, Nick, Druar MD, Natalie Pozzi MD, Soroush Shakiba, Kanika Agarrwal, J. Alexander Palesty MD FACS, Shohan Shetty MD, FACS
Saint Mary's Hospital

Introduction: With the adoption of enhanced post-surgery recovery protocols, there is an increasing incentive to identify preoperative factors leading to difference in postoperative outcomes and barriers to timely discharge. Consequently, the overall incidence of patients on psychiatric medications as well as their outcomes following elective minimally invasive sleeve gastrectomy was examined.

Method(s): Patients who underwent elective minimally invasive sleeve gastrectomy at a high-volume bariatric program in a community hospital from 2018-2020 were retrospectively entered into an Institutional Bariatric Database. Patients were classified based on their preoperative use of psychiatric medications and their postoperative outcomes were analyzed.

Results: Four hundred and fifty-two patients were analyzed, of which 25% of patients had a preoperative history of taking psychiatric medications. Patients with a history of using psychiatric medications did have a higher, however not a significantly increased, risk of postoperative nausea (66% vs 59%, $p=0.22$), early performed leak test (endoscopic or radiologic), similar incidence of postoperative emesis (17%), length of stay (37 hrs vs 40 hrs) and postoperative complication rate (6% each). In addition, although not statistically significant, there was a higher incidence of non-English speaking patients with psychiatric disorders compared to English speaking population. Lastly, a 30-day readmission rate was noted to be 4%, however not statistically significant from the 2% in the rest of the patients.

Conclusion(s): One-fourth of the patients undergoing elective minimally invasive sleeve gastrectomy have a history of use of psychiatric medications. This cohort of patients are not associated with significant differences in outcomes from the rest of the study population.

Clinical Oncology – Hosted by the CT Commission on Cancer

Impact of Clinical Vs Laboratory Markers of Malnutrition on Outcomes Following Gastrectomy for Cancer: A 10-year NSQIP Review

Santosh Swaminathan MD¹, Suraj Panjwani MD¹, Jahnavi Kakuturu MD², Dorothy Wakefield MS Pstat³, Alexander J. Palesty MD FACS¹, Shohan Shetty MD, FACS¹

1. Stanley J. Dudrick Department of Surgery, Saint Mary's Hospital, Waterbury, CT

2. Department of Cardiovascular and Thoracic Surgery, West Virginia University, Morgantown, WV

3. Saint Francis Hospital, Hartford, CT

Introduction: Gastric cancer is commonly associated with pain, malabsorption, chronic blood loss anemia leading to malnutrition. Our aim was to evaluate the impact of recent weight loss (WL, clinical marker) and hypoalbuminemia (HA, laboratory marker) on postoperative outcomes following gastrectomy for malignancy.

Methods: Patients undergoing gastrectomy for malignancy from 2009 to 2019 were identified using the American College of Surgeons National Surgical Quality Improvement Program database (ACS-NSQIP). Thirty-day postoperative outcomes were assessed for patients with recent WL, HA (albumin < 3.5 g/dL), or a combination of both (HA+WL).

Results: The study population was categorized into groups viz., HA, WL, HA+WL and none (Reference group). Among the 12796 patients, 980 (8%) had both HA+WL. Pre-operative parameters such as age, gender, race, transfer (origin) status, diabetes, disseminated cancer, history of smoking, COPD, functional status, CHF, bleeding disorder, history of transfusion, ASA status and preoperative sepsis were significantly different among the four study groups and were added to the multivariate logistic regression analysis. Multivariate analysis revealed postoperative complications such as pneumonia, perioperative transfusion and incidence of septic shock were significantly higher in all three groups of malnutrition (Table 1). Patients with HA and HA + WL had a 94% and 82% higher risk of any postoperative complication respectively.

Conclusion: In patients with gastric cancer undergoing gastrectomy, hypoalbuminemia remains a relevant indicator of poor postoperative outcomes with or without recent weight loss. Measures towards correction of this preoperatively could potentially decrease postoperative morbidity.

Table 1. Multivariate analysis (controlling for significant preoperative variables), expressed as odds ratio (95% CI)

Variable	HA	WL	HA+WL
Pneumonia	1.34(1.13-1.59) *	1.52(1.22-1.89) *	1.76(1.40-2.23) *
Unplanned intubation	1.23 (1.001-1.51) *	1.45 (1.11-1.88)	1.74 (1.33-2.26) *
Pulmonary embolism	1.22 (0.82-1.83)	0.89(0.49-1.64)	1.75(1.04-2.92) *
Prolonged ventilator requirement	1.35(1.1-1.66) *	1.24(0.9-1.6)	1.56 (1.19-2.1) *
Transfusion	2.48(2.19-2.81) *	1.4(1.16-1.69) *	1.95(1.62-2.34) *
Sepsis	1.28(1.06-1.55) *	1.09(0.83-1.44)	1.58 (1.22-2.05) *
Septic shock	1.87(1.48-2.35) *	1.62(1.17-2.24) *	2.24(1.64-3.05) *
Any complication	1.94 (1.75-2.15) *	1.47 (1.28-1.69) *	1.82 (1.57-2.11) *

* *indicates statistically significant variables (p<0.05)

Rigid Prosthesis Reconstruction following Resection of Chest Wall Chondrosarcoma

Santosh Swaminathan MD², Benjamin Medina MD¹, Valerie Rusch MD FACS¹

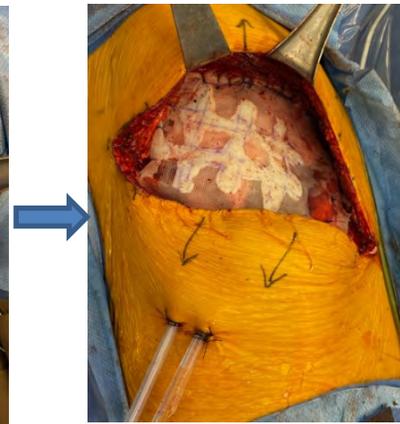
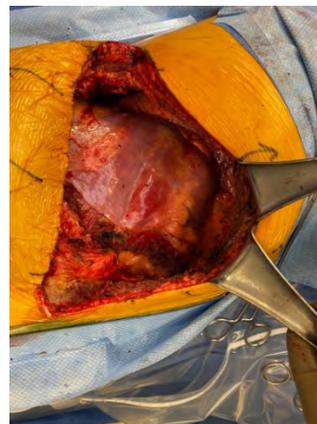
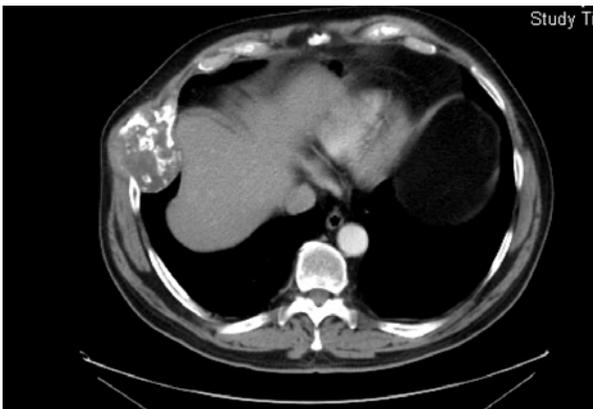
1. Dept of Surgery, Thoracic Service, Memorial Sloan Kettering Cancer Center, New York, NY
2. Stanley J. Dudrick Department of Surgery, Saint Mary's Hospital, Waterbury, CT

Introduction: Management of chest wall tumors involve resection and skeletal reconstruction of the defect. Reconstruction of the defect with rigid prosthesis can prevent a flail chest and provide sufficient chest wall stability to avoid post-operative respiratory failure. Here we describe a case of large chest wall tumor resection and its subsequent reconstruction.

Methods: Seventy-five-year-old male who presented with a complaint of a palpable right lower anterolateral chest wall mass for 1.5 months.

Results: Evaluation with physical examination and imaging revealed a 6 cm x 6.1 cm x 5.4 cm expansile mass of the right 7th anterolateral rib with smaller mass in the right lateral 9th rib measuring 2.2 cm x 2.4 cm x 2 cm. Core needle biopsy of the lesion revealed low grade chondrosarcoma. He underwent operative resection with a right thoracotomy with resection of a 10cm right anterolateral chest wall mass originating from the costochondral junction of the 7th and 8th ribs and a separate 4cm mass involving the 9th rib which had the appearance of a poorly healed chronic rib fracture. Ribs 6-9 were resected. Due to the size of the defect, the reconstruction of the chest wall defect was performed with a rigid prosthesis created with a double layer of polypropylene mesh into which strips of methyl methacrylate (MMA) were infiltrated and contoured to mimic native chest wall. These were secured to the costal margin anteriorly, transected rib heads posteriorly and around the ribs superiorly and inferiorly. The diaphragm had to be reimplemented inferiorly and was incorporated with the mesh. Final pathology confirmed the low-grade chondrosarcoma and the patient was discharged with adequate pain control and removal of chest tubs on day 6.

Discussion: In the present case report we describe a technique of successful chest wall reconstruction with rigid prosthesis following a large chest wall resection using polypropylene mesh with a scaffold of MMA which was developed by this institution thus preventing postoperative flail chest and respiratory failure.



Defining the Utility of Combined Positron Emission Tomography – Computed Tomography (PET/CT) in the Detection of Metastatic Pancreatic Ductal Adenocarcinoma (PDAC): A Single Institution Retrospective Review

¹Sue Ting Lim, MD, ²Suzanne Parets, MD, ²Samuel Valle, MD, ³Rawad Elias, MD, ²Michael O Loughlin, MD, ²Thomas Farquhar, MD, ⁴Ilene Staff, PhD, ^{5,6,7}Oscar K. Serrano, MD MBA, FACS

1. The Stanley J Dudrick Department of Surgery, Saint's Mary's Hospital, Waterbury, CT
2. Department of Radiology, Hartford Hospital, Hartford, CT
3. Department of Oncology, Hartford HealthCare Cancer Institute, Hartford CT
4. Research Office, Hartford HealthCare, Hartford, CT
5. Department of Surgery, Hartford HealthCare, Hartford, CT
6. Hepatobiliary Surgery, Hartford HealthCare Cancer Institute
7. University of Connecticut School of Medicine, Department of Surgery, Farmington, CT

Introduction: The utility of PET-CT in the staging of pancreatic ductal adenocarcinoma (PDAC) remains controversial. We evaluated the utility of PET/CT in the detection of metastatic PDAC as an adjunct to thin-slice dynamic contrast-enhanced CT (CT) in PDAC patients.

Methods: Between 2010 and 2019, we evaluated 699 patients with a new diagnosis of PDAC in our multidisciplinary pancreas program; 63(9.0%) patients were referred for PET-CT. Of these, 29 patients had a PET-CT in addition to a standard CT performed within a three-month period. Each study was scored by an experienced blinded radiologist on T-, N-, and M-staging criteria. The scores between PET-CT and CT were compared. Kappa statistics (K) were calculated to estimate inter-study variability.

Results: Twenty-nine patients had both PET-CT and CT within a median time of 25 days. The median age of diagnosis for this cohort was 67 years old; 12 patients (41.4%) had biopsy-proven metastatic disease. Median CA 19-9 level in this population was 615 U/L. Among modalities of treatment, 21 patients (72.4%) had neoadjuvant chemotherapy, 5 patients (17.2%) had surgical resection, 4 patients (13.8%) had radiation, and 4 patients (13.8%) had adjuvant chemotherapy. One-year and five-year survival rate of this cohort is 72.4% and 3.4%, respectively. Inter-study variability demonstrated no agreement for T-staging (K=-0.06, p-value=0.49), minimal agreement for N-staging (K = 0.257; p-value = 0.05) and no agreement for M-staging (K = 0.076, p-value = 0.58) between PET-CT and CT scans. T-staging was the most discordant. PET-CT upstaged 5 patients (17.2%). The sensitivity and specificity for N-staging was 50% and 0%, respectively for PET-CT; 33.3% and 100%, respectively for CT. The sensitivity and specificity for M-staging was 66.7% and 33.3%, respectively for PET-CT; 45.5% and 100%, respectively for CT.

Conclusion: There is a high degree of discordance among PET-CT and CT for staging of PDAC, suggesting complementarity between modalities.

The Incorporation of Palliative Care into a Multidisciplinary Approach to Stage IV Hepatopancreatobiliary and Upper Gastrointestinal Cancers: An Opportunity for Improvement

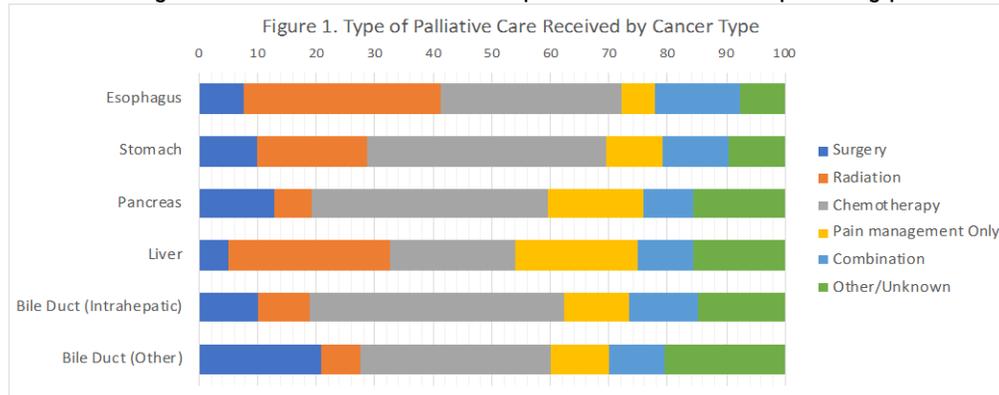
Daniel Kerekes MD*, Alexander Frey MD*, Danielle Heller MD, Vadim Kurbatov MD, Robert D. Becher MD MS, Sajid A. Khan MD FACS Yale School of Medicine. *These authors contributed equally to this work.

Introduction: Palliative care (PC) is recognized by professional societies as a core practice paradigm of multidisciplinary cancer care. Details about PC utilization in current surgical oncology practice in the United States (US) are scarce. This study explored national patterns in PC utilization for advanced hepatopancreatobiliary (HPB) and upper gastrointestinal (GI) cancers.

Methods: The National Cancer Database (NCDB) was queried for patients diagnosed with *de novo* Stage IV cancers of the esophagus, stomach, pancreas, liver and bile duct between 2004 and 2017. The NCDB reports as PC any care provided to a patient with the intent of “controlling symptoms, to alleviate pain, or to make the patient comfortable.” Temporal trends and utilization rates for PC, in addition to specific modalities employed (surgery, radiation, chemotherapy, pain management only, or a combination) were examined across these complex cancers. Multivariable regression identified clinical and demographic factors associated with PC receipt.

Results: 360,521 patients with Stage IV HPB and upper GI cancer were identified. PC utilization increased over time (13.9% in 2004 vs. 22.9% in 2017, p<0.001) across all cancer types. Overall rate of PC utilization was 19.7%, ranging from 16.6% in liver cancer to 25.9% in esophageal cancer. Chemotherapy was the most common PC modality for all cancers except liver, which favored radiation (see Fig. 1). Palliative surgery was most represented in extrahepatic bile duct cancer (20.8% of treatments), whereas pain management was most common in liver (20.8%) and pancreatic (16.3%) cancers. On multivariable logistic regression, location of treatment facility held the strongest association with PC, with highest utilization in the Northeast (Odds Ratio [OR] 1.79; 95% CI 1.74 – 1.85; p<0.001 vs. the West). Higher rates of PC were seen at Integrated Network Cancer Programs (OR 1.26; 1.21 – 1.31; p<0.001 vs. Community Cancer Programs), academic centers (OR 1.20; 1.16 – 1.24; p<0.001), in patients under age 65 (OR 1.16; 1.13 – 1.18; p<0.001), in patients diagnosed after 2011 (OR 1.37; 1.35 – 1.40; p<0.001) and in urban rather than metropolitan areas (OR 1.17; 1.14 – 1.21; p<0.001). PC was less utilized for Hispanic (OR 0.72; 0.70 – 0.75; p<0.001) and Black (OR 0.88; 0.85 – 0.90; p<0.001) patients.

Conclusions: In the US, PC utilization for Stage IV HPB and upper GI cancer is low, and clinically-meaningful disparities in care between regions, hospitals, and patient populations are observed. As PC is known to improve quality of life in advanced cancer, understanding the barriers associated with PC provision is critical to optimizing patient care.



Radiation-Induced Osseous Metaplasia of the Breast: A Rare Anomaly Following Breast Cancer Treatment

Andrew Seto, MD¹; David Ianacone, MD¹; Brittany Davis, MD¹; Victoria Liang, MD¹; Frank Masino, MD²; Leo Otake, MD¹; Helen Pass, MD, FACS¹

¹Stamford Hospital, Department of Surgery, Stamford, CT.

²Stamford Hospital, Department of Radiation Oncology, Stamford, CT.

Introduction: Osseous metaplasia (OM) is a rare pathological entity characterized by the heterotopic formation of bone. The condition occurs in both neoplastic and non-neoplastic conditions and has been reported throughout various organ systems including the lung, thyroid, gastrointestinal tract, pancreas, and endometrium.¹⁻² The majority of reports describing OM of the breast are in malignant conditions such as fibrosarcoma³, malignant mesenchymoma⁴, osteogenic sarcoma⁵, and osteochondrosarcoma⁶. Benign case reports have included fibroadenomas, adenomas, and phyllodes tumors.⁷⁻⁸ Radiation-induced OM of the breast has yet to be described in the literature. In this case report, we present a unique patient who developed osseous metaplasia of her right breast after a partial mastectomy and chemoradiation for breast cancer.

Case: The patient is a 75 year-old female who underwent a right breast wire localized partial mastectomy and axillary lymph node dissection in March 2018 for a pT1cN1M0 biopsy-proven invasive ductal carcinoma with documented metastasis to the axilla. Final pathology revealed a 1.5cm grade 2 ER >95%, ER 60%, HER-2/Neu equivocal on FISH, KI-67 20% invasive ductal carcinoma and 1/18 lymph nodes were positive, with the diseased node measuring 2.2cm with extracapsular extension. She received adjuvant chemotherapy with TCHP (docetaxel, carboplatin, trastuzumab, and pertuzumab). Her radiation consisted of 30 sessions with a total dose of 46 gray to both the right breast and supraclavicular region, followed by a boost to the tumor bed of an additional 14 gray.

Following completion of her therapy, she developed persistent right breast pain thought secondary to radiation-induced fibrosis. On clinical exam, the right breast had become contracted, fibrotic, and conical in shape. The chest wall was hyperpigmented and her skin had chronic hyperpigmentation and telangiectasias. There were no palpable areas of concern, nipple discharge, or adenopathy. CT of the chest showed skin thickening consistent with prior radiation and no suspicious masses or nodules. Diagnostic mammogram showed stable post-surgical changes and no evidence of malignancy.

Conservative management to treat her breast pain had been unsuccessful. Pentoxifylline was trialed, but eventually discontinued due to side effects. Conventional medications for pain and a regimen prescribed by pain specialists were unable to produce adequate relief. Furthermore, workup for an underlying systemic connective tissue disorder was negative. Due to her chronic pain and development of an asymmetrical conical breast, she elected to undergo a completion mastectomy with pedicled transverse rectus abdominus muscle flap reconstruction in August 2021. Final pathology of her breast mastectomy specimen revealed osseous metaplasia, as well as radiation-induced stromal fibrosis and lobular atrophy. There was no evidence of malignancy or radiation associated neoplasia.

Discussion: Radiation has several documented dose-dependent side effects in breast cancer treatment, including fibrosis, retraction, hyperpigmentation, volume loss, and necrosis.⁹⁻¹¹ How radiation effects the development of OM is unclear. This is compounded by the fact that the underlying pathogenesis of OM is not well understood. It is hypothesized that fibroblasts can differentiate into osteoblasts secondary to chronic inflammation, tissue damage, and the release of growth factors such as bone morphogenetic proteins.¹² The biologic effects of radiation such as free radical-mediated DNA damage, cytokine-mediated inflammation, and changes in gene expression¹³ may all play a role in OM. However, given its rarity, there is a paucity of research investigating its underlying mechanism of action. To our knowledge, this is the first case report of radiation-induced osseous metaplasia of the breast in a patient after a partial mastectomy and chemoradiation for breast cancer. Interestingly, our patient showed no signs of ossification, microcalcifications, or distortions on imaging after radiation. However, final pathology was consistent with osseous metaplasia. In a patient with chronic pain and fibrotic breasts after radiation no responsive to standard treatment, osseous metaplasia should be considered.

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Indoor Versus Outdoor Occupational Exposure and Cutaneous Melanoma Risk: A Systematic Review

Richard C. Maduka, MD¹; Karen Tai²; Radha Gonsai²; Nick DeWalt²; Ashwin Chetty²; Alexandria Brackett²; Kelly Olino, MD¹; Eric Schneider, PhD¹; Vanita Ahuja, MD¹.

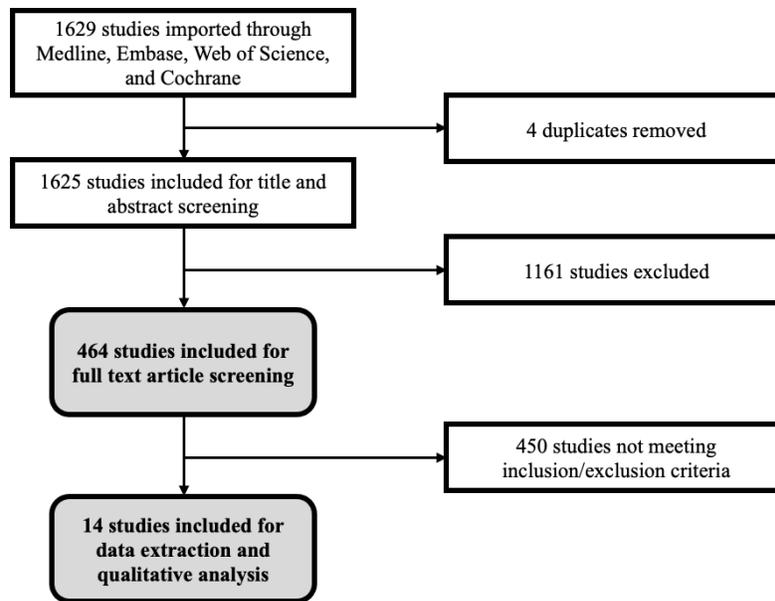
1. Department of Surgery, Yale School of Medicine, New Haven, Connecticut
2. Yale University, New Haven, Connecticut

INTRODUCTION: Melanoma, a malignant neoplasm that develops from melanocytes, is the 5th most common cancer diagnosed in the U.S, representing 5.6% of all new cancer cases. While there are established risk factors to the development of melanoma, (e.g., light-colored eyes, red hair, fair skin), there are conflicting reports on the overall effect of chronic sun exposure has on cutaneous melanoma incidence, either recreationally or at one's occupation. In this systematic review, we outline and critically evaluate the relevant literature related to chronic occupation exposure to sunlight and risk of developing cutaneous melanoma.

METHODS: The study protocol for this systematic review was submitted to the International Prospective Register of Systematic Reviews (PROSPERO) and the PRISMA guidelines were followed to develop this review. An extensive search was performed in several bibliographic databases and articles were included if they met previously established inclusion/exclusion criteria (*figure 1*). For each relevant study included in this review, the following information was extracted: author names, publication year, study name, study design, age, exposure assessment, outcome, comparison, number of cases, case ascertainment, RRs and 95% CIs and adjustment factors.

RESULTS: The initial database search yielded 1,629 articles for review and following full-text screening, a total of 14 articles were included for final analysis. Of the studies included, 11 articles were retrospective case control, 2 were cohort studies, and one study analyzed population-based incidence rates. 3 articles were based in the United States, while most articles examined international populations from Sweden, Belgium, Netherlands, Australia, New Zealand, and Canada. The studies that analyzed an association between workers with potential excessive occupational exposure to sunlight (outdoor) against workers who primarily perform indoor work demonstrated little to no increased risk of the development of cutaneous melanoma

CONCLUSION: Overall, the articles included in this systematic review did not demonstrate an increased risk of developing cutaneous melanoma with outdoor occupations. Further investigation is required to determine if other occupational risk factors exist, to help support the development of screening programs and improve the early detection of melanoma in all populations.



Study Inclusion Criteria:

- Indoor/outdoor occupation related
- Cutaneous melanoma risk / mortality
- Compares two or more groups

Exclusion:

- Full-text not available
- No English version of article
- Inappropriate study design (e.g., meta-analysis, systematic review)
- Only considers chemical / x-ray radiation exposure
- Pediatric population (< 16 years old)
- Does not present a unit of measurement (e.g., RR, HR, OR, SIR, SMR)

Does Pancreatitis on Imaging Matter? The Risk of Adenocarcinoma In Situ in Patients with Resected Intraductal Papillary Mucinous Neoplasms

Tomasz Kasprzycki MD ¹, Sean Ramras MD ¹, Mohammad S. Ali, MD¹, Krishna Patel, MD², Saverio Ligato, MD², Richard Feinn, PhD³, Oscar K. Serrano, MD MBA, FACS^{6,7,8}

¹Department of Surgery, Waterbury Hospital, Waterbury, CT; ²Department of Pathology, Hartford HealthCare, Hartford, CT; ³ Department of Biostatistics, Quinnipiac University School of Medicine, ⁴ Department of Surgery, Hartford Healthcare, Hartford, CT; ⁵ Hepatobiliary Surgery, Hartford HealthCare Cancer Institute; ⁶ University of Connecticut School of Medicine, Department of Surgery, Farmington, CT

Introduction: The significance of an incidental carcinoma *in situ* (CIS) in intraductal papillary mucinous neoplasms (IPMN) remains unknown.

Methods: Using an IRB-approved single institution retrospective IPMN registry, we analyzed 44 patients with IPMN resected from 2010 to 2021. We collected pre-, intra-, and post-operative data including clinical and radiologic findings to determine associations with CIS.

Results: 44 patients had surgery for IPMN; 7 (15.9%) demonstrated CIS. The median age was 66 (43-96) years and median BMI was 28.8 kg/m² (17.5-42.2). There were 9 (20%) patients with diabetes mellitus (DM), 15 (34%) smokers, and 4 (9%) had family history of pancreatic ductal adenocarcinoma (PDAC); 13 (30%) had clinical pancreatitis. Preoperative imaging revealed 11 (25%) main duct IPMN (MD-IPMN), 10 (23%) branch duct IPMN (BD-IPMN), and 23 (52%) mixed type IPMN. A non-enhancing mural nodule was detected in 4 (9%) patients, pancreatitis on imaging in 16 (36%), and average main pancreatic duct size was 6 mm. The average serum CA 19-9 was 27 U/mL; while average cyst CEA level was 732 ng/mL. There was no significant difference in age, BMI, DM, smoking history, family history, serum CA 19-9, or cystic CEA levels. Patients with CIS had a greater incidence of pancreatitis on imaging ($p=0.006$) and a greater pancreatic duct size ($p=0.005$). There was no difference in median survival (CIS patients 4.6 years vs 5.4 years; $p=0.59$).

Conclusion: IPMN patients with radiologic imaging demonstrating pancreatitis and enlarged pancreatic duct size should raise concern for the presence of CIS.

Sponsoring Institution: Hartford Hospital

Sex-based Differences in Age at Diagnosis of Melanoma Among Patients in the Veterans Affairs Health System

Richard C. Maduka¹, Kelly Olino¹, Eric DeRycke³, Joseph L. Goulet³, Cynthia Brandt², James Clune¹, Eric B. Schneider¹, Vanita Ahuja^{1,2}

1. Department of Surgery, Yale School of Medicine, New Haven, Connecticut
2. Department of Surgery, VA Connecticut Healthcare System, West Haven, Connecticut
3. Pain Research, Informatics, Multimorbidities and Education (PRIME), VA Connecticut Healthcare System, West Haven, Connecticut

INTRODUCTION: Melanoma represents 5.6% of all new cancer cases annually in the U.S. and is currently the 5th most common cancer diagnosed in the Veterans Affairs (VA) health system. While lifetime melanoma diagnosis is more common among men, studies have reported that women diagnosed with melanoma receive their initial diagnosis at younger ages. To date, little has been reported regarding sex-based differences in the prevalence of and risk factors for melanoma among military Veterans. We sought to examine sex-based differences by age at the time of diagnosis among U.S. military Veterans receiving care in the VA.

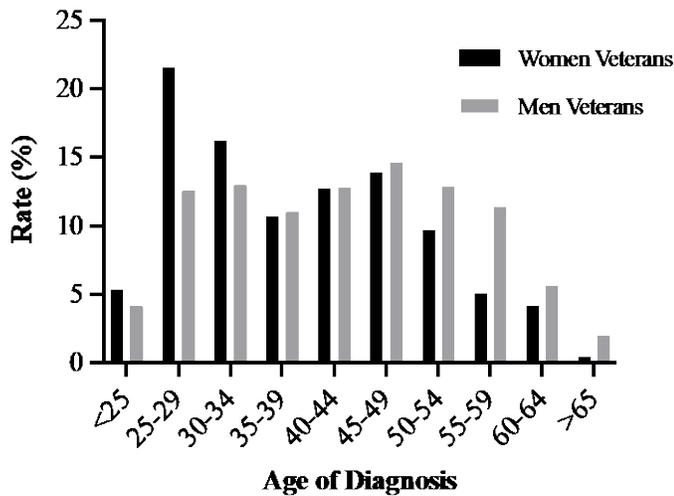
METHODS: We identified all patients treated at VA facilities whose medical records included any diagnosis code for melanoma from 2002 – 2017, using the Women Veterans Cohort Study (WVCS). This VA database identifies those who served during the Iraq and Afghanistan conflicts (OIF/OEF/OND). The principle factor of interest was patient age at the first coded melanoma diagnosis; however, we also examined disease subtype, stage at presentation, treatment modalities, and patient morbidity/mortality. Univariate and bivariate analysis was performed.

RESULTS: There were a total of 2,978 individuals whose VA medical records included a diagnosis of melanoma. Among these, 2,546 (85.5%) were men and 432 (14.5%) were women Veterans. Men were more likely than women to be an officer (18.3% vs. 16.7%, $p = 0.003$), and to have served in the Army/Marines (67.2% vs. 58.3%, $p < .001$), while women were more likely to be non-White (15.0% vs. 10.7%, $p < .001$) and to have served in the Air Force/Navy (41.7% vs 32.8%, $p < .001$). Additionally, men were more likely to be married at the time of diagnosis (61.9% vs. 38.2%, $p < .001$), and be a current or former smoker (57.7% vs 45.6%, $p < .001$). Melanoma lesion location for men was most common on the head and neck (92.6%), while for women Veterans it was the lower limbs and hips (31.2%). On average, women received their melanoma diagnosis nearly four years before their men counterparts. (39.1 versus 42.8, $p < .001$).

CONCLUSION: In this preliminary examination of data from the VA system, we observed that women Veterans who had a recorded diagnosis of melanoma in the VA system were significantly younger than men Veterans. Further analyses of sex-based

relationships for risk factors associated with the development of melanoma would be useful in optimization of melanoma screening protocols among military Veterans of both sexes. Developing evidence to support the optimization of melanoma screening protocols for men and women Veterans may be especially relevant for the cohort who served in theater during Operation Iraqi Freedom and/or Operation Enduring Freedom in Afghanistan.

Figure: Age at initial diagnosis of melanoma in the VA Health System



Small Bowel Obstruction from Urothelial Carcinoma Metastasis: a Rare Presentation

Sean Ramras MD¹, Mohammad S. Ali MD¹, Peter Zdankiewicz MD FACS¹

¹Frank H. Netter Quinipiac School of Medicine - Waterbury Hospital

Introduction: Urothelial cell carcinoma rarely metastasizes to the gastrointestinal tract, and do not typically cause small bowel obstruction.¹ Frequently urothelial carcinoma metastasizes through the lymphatic system to the liver, lungs, bone, and peritoneum.^{4,2} Typically tumors with more advanced T invasion and atypical features metastasize earlier.³ However, there are few cases regarding metastasis to the small bowel. In this case report, we present a unique patient with urothelial carcinoma who presented for a small bowel obstruction secondary to metastatic lesion.

Case Presentation: A 70-year-old female active cigarette smoker with past medical history of recurrent treated urinary tract infections and scoliosis and no significant past surgical history presented to the emergency department with approximately 3-day history of worsening abdominal pain around known umbilical hernia, nausea, diarrhea, and multiple self-reported episodes of bilious emesis. She endorsed anorexia over the past week but denied any fevers, sweats, chills, or unexplained weight loss. Denied any hematuria, exposure to occupational toxins, history of cystoscopy or urethral trauma. Patient was vitally within normal limits, and physical examination findings only significant for non-reducible umbilical hernia with ecchymosis noted and tender to palpation. CT abdomen/pelvis with IV contrast demonstrated small bowel obstruction with transition in right lower quadrant, 2.9x4.5x3.9cm fat and fluid-filled umbilical hernia, and a 3.7x4.8x3cm mass that arose from the dome of the bladder. Patient was admitted to surgical service with placement on nasogastric tube in right nostril. The following morning patient underwent exploratory laparotomy, primary umbilical hernia repair and small bowel resection of 20cm of ileum with side-to-side anastomosis. Upon examination intra-operatively, 3 lesions were identified in the distal jejunum and ileum, with the most distal lesion in the terminal ileum causing obstruction and one more medially at the mesenteric border. As well, mass was noted in the pelvis originating from the bladder vs uterus with adhesions to small bowel and omentum. Pathology report of resection demonstrated high-grade urothelial carcinoma, squamous differentiation, and transmural involvement of small bowel with foci of lymphovascular invasion. Post operatively patient’s diet was advanced after a return of bowel function and was discharged.

Discussion: Urothelial carcinoma is rare cause of associated small bowel obstruction, with only a few mentioned cases regarding such findings.¹ Small bowel obstruction is a rare presentation of metastatic disease, with evidence pointing towards

intussusception with the mass as a lead point.⁴ Rarity of condition leads to low level of suspicion, however, patient did have a strong cigarette smoking history. There are suggestions that surgical deposition of cancer cells can lead to bowel obstruction; however, our patient denied any previous history of surgical intervention of any kind.⁵ Malignant bowel obstruction occurs primarily in the small bowel, and the aim of surgery is for return to digestive permeability.⁶

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John MacArthur Trauma/Critical Care - Hosted by the CT Committee on Trauma

The Effect of the COVID-19 Pandemic on Community Violence: Minority Communities Are Hit the Hardest

Kathleen M O'Neill

Yale School of Medicine

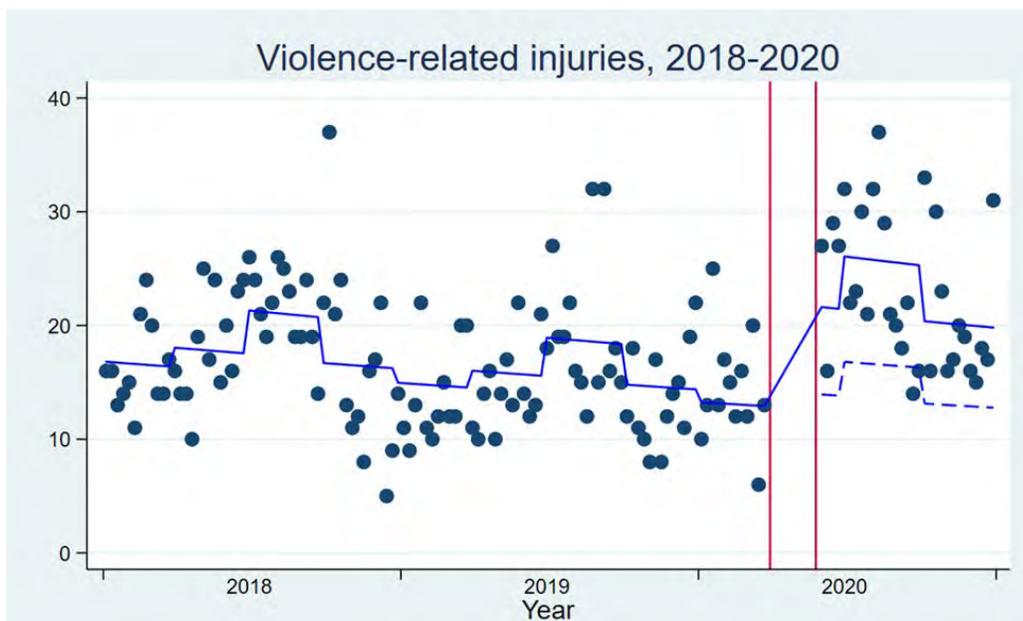
Introduction: Research on natural disasters suggest that these events may lead to increases in community violence. The COVID-19 pandemic is a unique historical event with similar traits to a natural disaster including broad social disruption, job loss, and large-scale morbidity and mortality. The effect of the COVID-19 pandemic on community violence and whether this disproportionately affected racial and ethnic minority communities is unknown.

Methods: We collected trauma registry data on all violence-related (defined as gunshot wound, stabbing, or assault) patient presentations to major trauma centers in Connecticut from January 1st, 2018 to December 31st, 2020. We compared the pattern of violence-related trauma from pre- and post-COVID-19 pandemic using an interrupted time series linear regression model, adjusted for seasonality and then stratified by race/ethnicity.

Results: We identified 2,563 violence-related trauma presentations from 2018-2020. There was a 55% increase in violence-related trauma in the post-COVID period compared with the pre-COVID period (IRR: 1.55; 95%CI: 1.34-1.80; p-value<.001); this increase was driven largely by more penetrating stab and gunshot injuries post-COVID. There was no significant difference in rate of admission, need for intensive care, or injury severity score. When stratified by race/ethnicity, there was a 61% increase in violence-related trauma presentation among Black/Latino patients (IRR: 1.61; 95%CI: 1.36-1.90; p-value<.001) that was not seen in the white population (IRR: 0.91; 95%CI: 0.61-1.36; p-value=.659).

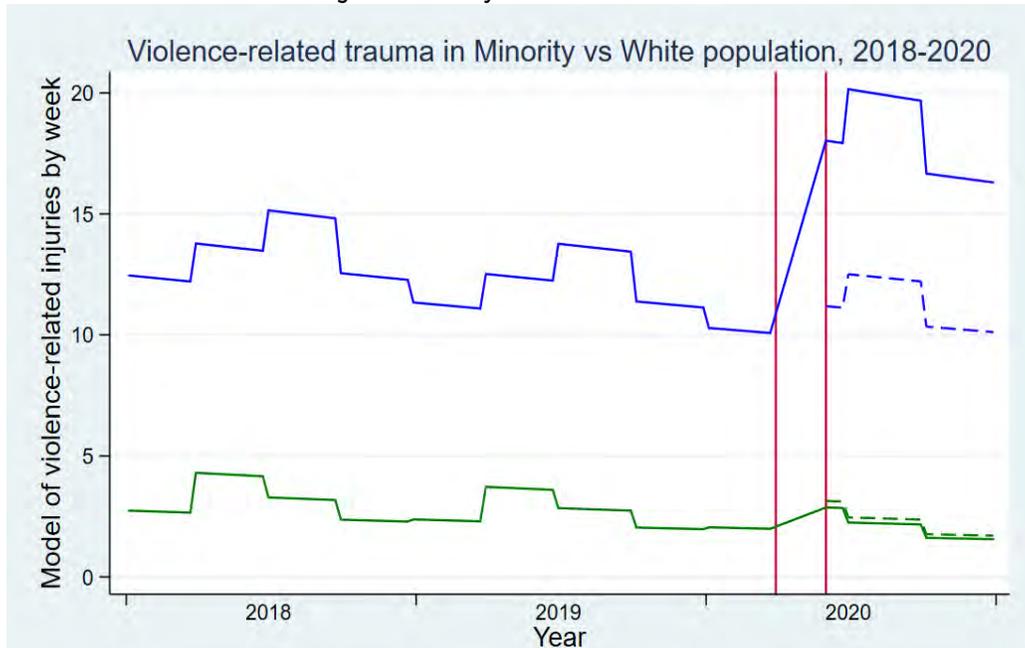
Conclusion: Violence-related trauma significantly increased during the COVID-19 public health crisis in the state of Connecticut. Black/Latino populations were disproportionately impacted, with higher increases in community violence as compared to the white population. Increased community violence is yet another negative health and social consequence of the COVID-19 pandemic, and one that excessively burdens racial and ethnic minority communities already at increased risk from systemic health and social inequities.

Time series linear regression analysis for all violence-related injuries



Interrupted time series regression analysis for all violence-related injuries in combined dataset, adjusted for seasonality. Data points are weekly violence-related trauma presentations. Blue line = predicted mean violence by the model; Dashed blue line = predicted mean violence with removal of effect of COVID-19 pandemic; Red lines = lockdown period (March 23 – May 21, 2020).

Stratified time series linear regression analyses



Interrupted time series regression analysis for all violence-related injuries in racial and ethnic minorities (defined as either Black or Latino) as compared with the white population plotted on the same graph from combined dataset, adjusted for seasonality. Data points (y-axis) are weekly violence-related trauma presentations. Blue line= predicted mean violence for racial/ethnic minorities. Dashed blue line= predicted mean violence for racial/ethnic minorities with removal of effect of COVID-19 pandemic; Green line= predicted mean violence for non-minority population. Dashed green line= predicted mean violence for non-minority population with removal of effect of COVID-19 pandemic; Red line = lockdown period (March 23 – May 21, 2020).

A Dangerous Meal: An Acute Perforation After Foreign Body Ingestion

Sean Ramras MD, George Weck MD, Georgios Mihalopoulos MD, Jayakara Shetty MD
Frank H Netter Quinnipiac School of Medicine

Introduction: Foreign body ingestion occurs frequently, with a majority proceeding along the gastrointestinal tract without any obstruction, stricture or perforation noted.⁵ Specifically in the adult population, many are ingested accidentally but may be intentional or in a state of altered mental status.² Erosion of foreign body material through the bowel wall leads to perforation.³ The typical onset of perforation occurs 10.4 days after foreign body ingestion, but with sharp objects symptoms are acutely evident.^{5,1} To follow is a case report of patient who presented with a small bowel perforation within 24 hours after accidental foreign body ingestion.

Case Presentation: 40-year-old female who presented to ED for a one-day history of burning, diffuse abdominal pain that began after consuming dinner at a family barbeque. She possessed normal bowel function, with consistent flatus and non-bloody bowel movements, and was without any nausea, vomiting or fevers. Her surgical history included a gastric bypass, exploratory laparotomy for internal hernia, laparoscopic cholecystectomy, and laparoscopic bilateral tubal ligation. CT imaging was obtained and was remarkable for a small linear foreign body-like density penetrating through a loop of small bowel with adjacent mesenteric edema noted. Her physical exam demonstrated severe tenderness in her right lower quadrant and supra-pubic region. Her vitals and initial lab work were within normal limits. The patient was taken to the operating room for a diagnostic laparoscopy with conversion to an exploratory laparotomy after discovery of a loop of small bowel with a thin, metallic object perforating

through the bowel wall, surrounded by an area of inflammation. A foreign body removal and small bowel resection with side-to-side anastomosis was conducted. Pathology later demonstrated a small bowel segment with focal microperforation, fibrinopurulent serositis and edema. The metallic object was identified as a wire bristle from a barbecue grill brush. The patient's post-operative course uneventful, and she was discharged in a timely fashion.

Discussion: Although the incidence for intestinal perforation from foreign body ingestion is low, sharp-pointed objects carry up to a 35% risk of complications with the majority necessitating urgent surgical intervention due to a high risk of perforation.⁴ A thorough physical examinations should be conducted to evaluate for signs of perforation, including but not limited to peritonitis. CT imaging is the superior modality for the detection of ingested foreign body.¹ Endoscopic and laparoscopic techniques may be utilized as initial less invasive interventions but are often unsuccessful in providing adequate exposure of bowel.⁴ As in this patient, conversion to a laparotomy is often required.

Foreign body ingestion is a relatively uncommon occurrence, but once confirmed with physical exam and imaging, must be intervened with prompt surgical intervention due to high risk for bowel perforation.

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Does Statin Therapy Reduce the Risk of Stroke in Blunt Cerebrovascular Injury?

Leah Aakjar MD, Jane Keating MD, Matthew Jaffa DO, Peter Brown, Jonathan Gates MD, Ilene Staff PhD, Daniel Ricourte MD
University of Connecticut

Introduction: Statin therapy is known to prevent stroke in patients with atherosclerotic disease but has not been studied in trauma. We compared ischemic stroke rates among patients with blunt cerebral vascular injury (BCVI) depending on pre-admission statin use.

Methods: This is a retrospective cohort study of trauma patients admitted to a level I trauma center between 2016 and 2021. We included patients ≥ 18 years of age that suffered a BCVI following blunt trauma. We compared the risks of ischemic stroke between patients on statin therapy prior to admission (BCVI-S) vs. those who were not on a statin (BCVI-NS). We also compared patient demographics, mechanism of injury, comorbidities and injury severity score (ISS) between the two groups.

Results: From August 2016 to March 2021, 101 patients were admitted to our institution with the diagnosis of BCVI, with 86 patients meeting inclusion criteria. 19 carotid and 80 vertebral injuries were identified. Twenty-two patients were on statin therapy prior to injury, while 64 were not. Patients on statin therapy were overall significantly older with a higher rate of all comorbidities (p -values < 0.05) (Table 1). Importantly, despite increased comorbidities among this group, BCVI-S patients trended towards a decreased stroke rate when compared to BCVI-NS patients. (13.6% vs 23.4%, p -value= 0.544) (Table 2).

Conclusion: Although limited by sample size, the clinical significance in stroke reduction in patients with BCVI on statins should not be overlooked. Following a larger multi-center retrospective study, a future prospective trial will be helpful to study the stroke risk in patients initiated on statins at the time of BCVI diagnosis.

Variables	BCVI-S	BCVI-NS	p
Age, mean ± SD	76.45 ± 14.196	49.97 ± 18.853	<0.001
Male, n (%)	9 (40.9)	36 (56.3)	0.229
Mechanism of Injury, n			
Motor Vehicle Crash	3	26	---
Motorcycle Crash	1	9	---
Fall	18	20	---
Pedestrian Struck by Vehicle	0	2	---
Diving	0	3	---
Other	0	4	---
Comorbidities, n (%)			
Hypertension	19 (86.4)	11 (17.2)	<0.001
Hyperlipidemia	17 (77.3)	6 (9.4)	<0.001
Coronary Artery Disease	9 (40.9)	8 (12.5)	0.010
Diabetes Mellitus	9 (40.9)	7 (10.9)	0.004
Peripheral Vascular Disease	3 (14.3)	0 (0.0)	0.013
Atrial Fibrillation	10 (45.5)	5 (7.8)	<0.001
History of Stroke	4 (18.2)	0 (0.0)	0.003
Injury Severity Score, mean	35.73	46.17	0.090

Table 1. Patient demographics in BCVI-S and BCVI-NS groups.

	BCVI-S	BCVI-NS	Total			
Stroke (n)	3	15	18			
No stroke (n)	19	49	68			
Stroke rate (%)	13.6	23.4	20.9			
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	
CAROTID BCVI						
BCVI-S						
No stroke (n)	0	4	1	1	0	
Stroke (n)	0	0	0	0	0	
Stroke rate (%)	N/A	0	0	0	N/A	
BCVI-NS						
No Stroke (n)	2	3	0	0	2	
Stroke (n)	0	3	2	1	2	
Stroke rate (%)	0	50	100	100	50	
Total Carotid BCVI (n)	2	10	3	2	4	
VERTEBRAL BCVI						
BCVI-S						
No Stroke (n)	3	9	1	6	0	
Stroke (n)	0	1	0	2	0	
Stroke rate (%)	0	10	0	25	N/A	
BCVI-NS						
No Stroke (n)	14	11	2	19	1	
Stroke (n)	1	4	0	6	0	
Stroke rate (%)	6.6	26.6	0	24	0	
Total Vertebral BCVI (n)	18	25	3	33	1	

Table 2. Stroke rates in patients with BCVI-S vs BCVI-NS.

Investigation of Shock Index as an Indicator for Level of Trauma Activation: Retrospective Chart Review at a Single Level II Institution

Nicholas Druar, MD, MPH, St. Mary's Hospital

Introduction: Shock index (SI) is defined as the heart rate (HR) divided by systolic blood pressure (SBP). SI >1.0 has been found to predict increased risk of mortality and other markers of morbidity, such as need for massive transfusion protocol activation and admission to intensive care units. Here we attempted to analyze the association of Shock Index at a single Level II institution with trauma activation level.

Method(s): Retrospective review of data was taken from Level II trauma center database kept for trauma certification from 2012-2020. Demographics, initial heart rate, initial GCS, initial systolic blood pressure were recorded. Univariate and multivariate analysis was conducted looking at effect on shock index. Patients were not included if missing data of primary variables was not available.

Results: Four thousand nine hundred and eighty-one patients were included in the study. Overall, mean SI was 0.65 with range from 0 to 4.8. A one-way analysis of variance showed a statistically significant difference between levels of trauma activation with increasing shock index with higher levels of activation. In multivariate analysis, level of activation along with morality and initial GCS were found to be independently associated with a shock index greater than 1. Age was found to be inversely significant on multivariate analysis.

Conclusion(s): In a retrospective review of trauma patients at a single Level 2 institution, shock index was higher with increasing level of activation. Like previous studies SI remains an important clinical indicator for trauma. We propose of the use of shock index in trauma activation guidelines to help triage patients to an appropriate level of care.

Impact of the Affordable Care Act on Management of Ankle Fractures - A National Trauma Data Bank Analysis

Suraj Panjwani MD^{1,2}, Emily Cook DPM MPH³, Jeremy Cook DPM MPH³, J Alexander Palesty MD², Mitchell Cahan MD MBA^{1,3}

- 1- University of Massachusetts Medical School, Worcester, MA
- 2- St. Mary's Hospital, Waterbury, CT
- 3- Mount Auburn Hospital, Cambridge, MA

Introduction The major provisions of Affordable Care Act (ACA) took effect in January 2014. Using the National Trauma Data Bank (NTDB), we asked whether ACA's expanded Medicaid coverage provision had any bearing on insurance coverage and outcomes for patients diagnosed with ankle fractures.

Methods We defined 2012-2013 as pre-ACA and 2015-2016 as post-ACA. We delineated 2014 as a washout year. We identified patients aged 18-64 years with ankle fractures using ICD 9 codes. Exclusion criteria included poly-trauma and patients dead on arrival. We analyzed patient demographics including hospital payment source along with injury and institutional characteristics, length of stay (LOS) and discharge disposition - home vs. home with services or to a facility constituted primary outcomes of interest. We performed univariate followed by multivariate analyses.

Results We identified 26,445 patients with ankle fracture; 13,864 (52%) pre-ACA and 12,581 (48%) post-ACA. For hospital payment source, 11% patients used Medicaid pre-ACA vs. 16% post-ACA, whereas 17% were self-pay pre-ACA vs. 14% post ACA ($p < 0.001$). We found the highest Medicaid expansion in the West region (23% post-ACA vs. 10% pre-ACA, $p < 0.001$), whereas the lowest in the South region (12% post ACA vs. 10% pre ACA, $p < 0.001$). Mean LOS for all patients was 4.3 days and was higher for the post ACA group (5 vs. 3.6 days, $p < 0.001$). Compared to pre-ACA, post-ACA saw more patients being discharged to a facility (8% vs. 17%, $p < 0.001$) or home with services (9% vs. 11%, $p < 0.001$) and thus fewer to home without services (83% vs. 73%, $p < 0.001$). Multivariate analyses reflected increased odds for a longer LOS (≥ 4 days) and discharge to a facility/home with services for post-ACA patients (Table 1, 2).

Conclusion ACA's Medicaid expansion provision positively impacted patients with ankle fractures. Specifically, the ACA improved resource utilization as seen by longer LOS and discharge home with services or to a facility.

See tables on next page...

	Odds Ratio	CI 95%	P-value
Period			
Pre-ACA (2012-2013)	Ref		
Post-ACA (2015-2016)	1.64	1.53-1.75	<0.0001*
Increasing Age	1.05	1.049-1.056	<0.0001*
Increasing ISS	1.14	1.13-1.15	<0.0001*
Sex			
Female	Ref		
Male	0.70	0.65-0.75	<0.0001*
Race			
White	Ref		
Black	1.17	1.05-1.28	0.0082
Ethnicity			
Non-Hispanics	Ref		
Hispanic	0.75	0.63-0.89	0.001*
Region			
South	Ref		
Mid-West	1.17	1.08-1.27	<0.0001*
North-East	2.39	2.18-2.63	<0.0001*
West	0.94	0.84-1.06	0.337
Insurance			
Self-pay	Ref		
Private	1.87	1.64-2.13	<0.0001*
Medicaid	3.12	2.69-3.62	<0.0001*
Fracture			
Closed	Ref		
Open	0.99	0.90-1.10	0.99
Trauma Center level			
Other	Ref		
Level 1	0.88	0.82-0.94	<0.0001*

Table 1 - Multivariate analysis looking at predictors for **discharge** to facility/home with services CI Confidence Interval, ISS - Injury Severity Scale, * p<0.05

	Odds Ratio	CI 95%	P-value
Period			
Pre-ACA (2012-2013)	Ref		
Post-ACA (2015-2016)	1.23	1.16-1.30	<0.0001*
Increasing Age	1.03	1.029-1.034	<0.0001*
Increasing ISS	1.16	1.15-1.17	<0.0001*
Sex			
Female	Ref		
Male	0.85	0.81-0.90	<0.0001*
Race			
White	Ref		
Black	1.39	1.28-1.50	<0.0001*
Ethnicity			
Non-Hispanics	Ref		
Hispanic	1.00	0.89-1.13	0.92
Region			
South	Ref		
Mid-West	0.88	0.82-0.94	<0.0001*
North-East	1.43	1.32-1.55	<0.0001*
West	0.83	0.75-0.91	<0.0001*
Insurance			
Self-pay	Ref		
Private	0.92	0.85-1.00	0.063
Medicaid	1.62	1.46-1.79	<0.0001*
Fracture			
Closed	Ref		
Open	1.19	1.10-1.30	<0.0001*
Trauma Center level			
Other	Ref		
Level 1	1.20	1.13-1.26	<0.0001*

Table 2 - Multivariate analysis looking at predictors for **LOS ≥ 4 days** CI - Confidence Interval, ISS - Injury Severity Scale, * p<0.05

Global Deletion of Pellino-1 Triggers Cardiac Dysfunction, Cell Death and Increased Inflammation in a Murine Severe Sepsis Model

^{1,2}Santosh Swaminathan MD, ¹Pradeep Seetur Radhakrishna PhD, ¹Mahesh Thirunavukkarasu PhD, ¹Ricksha Wilson MD, ¹Jacob Campbell DO, ^{1,2}Ibnalwalid Saad MD, ^{1,2}Diego Accorsi MD, ²J. Alexander Palesty MD FACS, ¹Nilanjana Maulik PhD FAHA

¹Molecular Cardiology and Angiogenesis Laboratory, Department of Surgery, University of Connecticut School of Medicine; ²Stanley J. Dudrick, Department of Surgery, Saint Mary's Hospital

Introduction: Sepsis induced multiorgan dysfunction/failure is a major clinical problem that requires new and effective therapeutics. The prevalence of sepsis-related cardiac dysfunction can be as high as 70%. We have previously reported that global Pellino-1 (Peli1) knockout (KO) mice worsen cardiac function and ischemic limb recovery following myocardial infarction and critical limb ischemia respectively. In the present study, we investigated the effects of global Peli1 inhibition in sepsis induced cardiac dysfunction.

Methods: Wild-type (WT) and Peli1 KO mice were divided into Wild-type sham (WTS), Wild-type Cecal Ligation and Puncture (WTCLP), Peli-1 KO sham (Peli-1KO S), and Peli-1KO CLP. Cardiac function (LVEF, FS) by two-dimensional echocardiography was assessed pre-procedure, at 6, and 24 hours post-surgery. Serum IL-6 and TNF-alpha (ELISA) at 6 hours and apoptosis (TUNEL assay) at 24 hours were measured. Results are expressed as mean \pm SEM.

Results: Cardiac functional parameters such as EF and FS both in the preoperative setting and the sham groups were not significantly different. In the CLP groups, there was no difference in these parameters in the early time point (6 hours), but a significant reduction in EF was observed in the Peli1KO population at 24-hours post-surgery [EF: (Peli1KO-38.48% \pm 1.36, n=11) vs. (WT-54.55 \pm 3.11, n=26), $p < 0.0001$]. This trend was also observed in the reduction of FS at the same time point [FS: (Peli1KO-18.04 \pm 0.77, n=11) vs. (WT-29.17 \pm 2.88, n=26), $p < 0.0001$]. Peli1KOCLP group also showed significant increase in the levels of IL-6 [(Peli1KO-706.8 \pm 43.00) vs (WT-483.2 \pm 24.01, n=6), (pg/ml, $p = 0.001$)] and TNF-alpha [(Peli1KO-260.4 \pm 39.04) vs (WT-161.8 \pm 20.00, n=6), (pg/ml, $p = 0.0012$)]. Increased cardiac dysfunction at 24 hours was further supported by increased apoptosis in the Peli1KOCLP group (70 \pm 2.74; TUNEL+ve) when compared to the WTCLP group (11.67 \pm 2.82), (n=6, $p = 0.028$).

Conclusions: Our study indicate that Peli1 plays important role related to cardiac function, inflammation and apoptosis following severe sepsis in a murine genetic model.

Sultan Ahamed, MD, FACS General Surgery - Hosted by the CTACSPA

Implications of Obesity in Patients with Ulcerative Colitis Undergoing Ileoanal J-pouch anastomosis

Santosh Swaminathan MD^{1,2}, Tomas M Heimann MD FACS²

1. Stanley J. Dudrick Department of Surgery, Saint Mary's Hospital, Waterbury, CT

2. Division of Colorectal Surgery, Department of Surgery, Icahn School of Medicine at Mount Sinai, New York, NY

Introduction: While many patients with Ulcerative Colitis (UC) are underweight, there is a subset with less severe symptoms who are overweight. The significance of the added weight on the outcome of ileoanal J-pouch anastomosis (IPAA) is unclear. Thus, our objective was to study the outcomes of patients with UC who are classified as overweight following ileoanal J-pouch anastomosis

Methods: Three hundred and fifty-four patients who underwent IPAA for UC were studied prospectively. Seventy-five of them were classified as overweight based on being 10% above their ideal body weight (IBW). They were compared to 279 patients with lower IBW

Results: Patients who were overweight were significantly more likely to be female, older at surgery, with longer duration of disease, less likely to have severe proctitis and more likely to have dysplasia as their indication for surgery. They were also more likely to have a stapled IPAA instead of a mucosectomy and hand sewn anastomosis. Subset analysis comparing the patients who underwent stapled IPAA (70 patients) showed significantly higher incidence of partial anastomotic dehiscence (20% vs 0%,

p=0.004) and need for transfusion (60% vs 33%, p=0.04) in overweight patients. In addition, there was a significantly longer length of residual mucosa between the dentate line and the stapled IPAA in overweight patients (2.6 cm vs 2.1 cm, p=0.03).

Conclusions: Stapled IPAA in overweight patients is technically more challenging to perform and review of their outcomes shows significantly increased incidence of partial anastomotic dehiscence and longer residual mucosal remnant in the rectal cuff. The longer residual mucosa may have implications in the long-term follow up of overweight patients and their potential cancer risk.

Outcomes of Robotic-Assisted versus Laparoscopic Cholecystectomy – Experience of a High-Volume Robotic Center

Shayan Ahmed MD, Sue Ting Lim MD, Nicholas Druar MD, Konstantinos Grillas, Vikram Bhatt MD, J Alexander Palesty MD
The Stanley J Dudrick Department of Surgery, Saint Mary’s Hospital

Introduction: The National Inpatient Sample database showed an increase in robotic-assisted (RAS) cholecystectomy from 0.02% in 2008 to 3.2% in 2017. The outcomes of RAS cholecystectomy remained poorly defined. Our study aims to determine the outcomes of RAS versus laparoscopic (lap) cholecystectomies in a high-volume robotic surgical center of excellence.

Method: A retrospective chart review was performed on all patients who underwent cholecystectomies during the calendar year 2020. The primary goal was to interrogate the conversion rate to open surgery, length of stay (LOS), complication, OR time between robotic-assisted (RAS) cholecystectomy and laparoscopic (lap) cholecystectomy.

Results: Our study population includes 294 patients who underwent cholecystectomy in 2020. Among these, 206 (70.0%) were lap cholecystectomy, and 88 (30.0%) were RAS cholecystectomy. In the laparoscopic cohort, 85 were urgent cholecystectomies (41.3%), and 121 were elective (58.7%), whereas, in the robotic group, 31 (35.2%) were urgent cholecystectomies, and 57 (4.85%) were elective. The conversion rate to open cholecystectomy was 2.43% (5/206) in lap cholecystectomy and 1.1% (1/88) in RAS cholecystectomy (p=0.42). The mean LOS is 84.5 hours in lap cholecystectomies (median=31.5) and 29.5 hours (median=8) in RAS cholecystectomies. There is a significantly lower operating time in lap cholecystectomy (mean=48.6 minutes) when compared to RAS cholecystectomy (mean= 70.2minutes). Overall, complication rates were comparable in the laparoscopic and the robot-assisted group (5.80% vs 5.68%). There was one CBD injury in each group, one trocar injury for peritoneal access and three retained CBD stone in the lap group. In the laparoscopic group there were two postoperative bleeds requiring transfusion as compared to one in the RAS group. Readmission rates were lower in the RAS cholecystectomy group (1.14%) compared to the lap cholecystectomy group (2.43%).

Conclusions: Robotic-assisted cholecystectomy has a lower conversion rate than the laparoscopic approach suggesting the robotic approach may benefit a subset of patients in the management of benign gallbladder disease. The lower length of stay and lower readmission rate in RAS cholecystectomies may mitigate the longer operating times in terms of cost, which will need to be further investigated.

Outcomes	Robotic-assisted Cholecystectomy	Laparoscopic Cholecystectomy
Total Cases	88	206
- Urgent	31 (35.2%)	85 (41.3%)
- Elective	57(64.8%)	121(58.7%)
Conversion to open (p=0.42)	1 (1.1%)	5 (2.43%)
Complications	5 (5.68%)	12 (5.80%)
Readmissions	1 (1.14%)	5 (2.43%)
Mean LOS, hours	29.5 (Median: 8)	84.5 (Median: 31.5)
- Urgent	66.2 (Median: 54)	135.3 (Median: 47)
- Elective	9.5 (Median: 7)	12 (Median: 6)
Complication(s) (p=0.55)	5 (5.7%)	11 (5.3%)
OR time, minutes (p<0.001)	70.2	48.6
- Urgent	75	53.8
- Elective	67.6	41.3

Effects of COVID-19 Pandemic on Cholecystectomies Performed in a Community Hospital

Tian Sheng Ng MD, Sue Ting Lim MD, Nicholas Druar MD, Konstantinos Grillas, J Alexander Palesty MD
The Stanley J Dudrick Department of Surgery, Saint Mary's Hospital

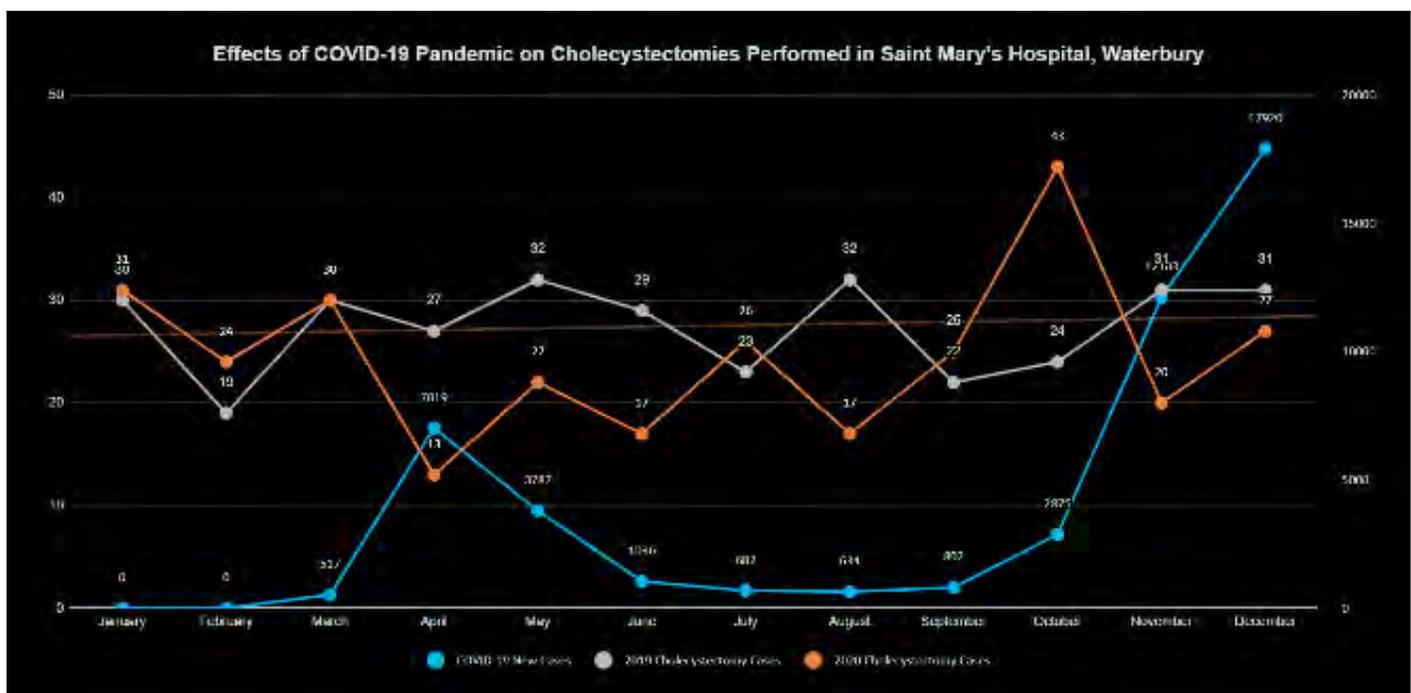
Introduction: The COVID-19 pandemic significantly impacted surgical practice, from procedural prioritization to perioperative practices. This impact included all types of cases including elective and urgent cases. Our study aims to describe this effect in terms of caseload, characteristics and outcomes of cholecystectomies in our institution during the different periods of COVID-19 pandemic.

Methods: This is a retrospective single institution analysis of all cholecystectomies performed during the period from 1 January 2020 to December 31st 2020. The characteristics of cases in 2020 were compared between pre-COVID period (January –March), the height of first COVID surge (April –May), post first COVID surge (June – October) and second COVID surge (November – December). The observed number of cases in each period was also compared to the number of cases in 2019 prior to the impact of COVID-19 to understand baseline caseloads.

Results:

There were 294 cholecystectomies performed in 2020, which is a 10.9% decrease from 330 cholecystectomies in 2019. During the first COVID surge, there was a decrease in number of cases to 2.5 cases per week as compared to 6.3 cases per week in 2019. The lowest number of cholecystectomies were performed in April during the peak of COVID, which is 17 cases from 27 cases in 2019, and the highest number of cholecystectomies were performed in October, just before the second COVID surge. There was a total of six conversion to open cholecystectomies, one in pre-COVID period, two during the COVID surge and three post first COVID surge. Pathology reports revealed necrotizing gallbladders from the 5 patients during the COVID period. The length of stay increased, with a mean of 34.4 hours prior to the surge to a mean of 50.9 hours during the surge and finally a mean of 110.6 hours following the first COVID surge.

Conclusions: We analyzed the impact of COVID-19 on all cholecystectomies at a single community-based institution. There is a decreased in number of cholecystectomies performed during the COVID surge. The number of conversions to open and the length of stay is greatest immediately post-COVID surge suggesting a delayed in presentation during COVID resulted in more complex anatomy of acute cholecystitis.



Plastic & Reconstructive Surgery - Hosted by the CTACSPA

A Case Series of Reverse-Flow Anterolateral Thigh Perforator Flap for Peri-Patellar Wound Coverage

Brittany Davis MD, David Ianacone MD, Ryan Pettit MD, Yuen-Jong Liu MD

Stamford Hospital- Columbia University Vagelos College of Physicians and Surgeons

Introduction: Lower extremity wounds compose a large portion of all acute and chronic wounds and can be treated with a variety of approaches from conservative medical treatment to invasive surgical intervention. Measures involving flap coverage allow for improved perfusion and tissue coverage when compared to more conservative approaches such as chronic antibiotic use or skin grafting. These procedures potentially save the patient from repeated trips to the OR for repeat debridements or painful wound vac changes. Moreover, for wounds around the knee, preserving the mobility of the joint is essential. The reverse-flow anterolateral thigh (ALT) perforator flap is a propeller flap that can cover wounds around the knee without limiting the mobility of the joint. However, this type of flap is rarely used. The aim of our case-series is to demonstrate the utility in this approach to providing a single-step surgery that allows for peri-patellar wound coverage.

Methods: Between October 2020 and January 2021, a case series of 3 patients with wounds in the peri-patellar region underwent fasciocutaneous island propeller perforator flap from the left anterolateral thigh based on the left superolateral genicular artery. All patients underwent doppler evaluation of the lateral thigh of the involved leg and the perforators were identified and marked. The island fasciocutaneous flap was elevated with electrocautery and tenotomy scissors, incorporating a wide cuff of superficial muscle fascia around the perforators to minimize the risk of kinking. The fasciocutaneous island perforator flap based on the superolateral genicular artery was then elevated and rotated in propeller fashion and the distal end of the flap (formerly at the proximal thigh) reached beyond the open wound of the knee. The flap was tailored in size and the remaining skin bridge was excised. The flap was sutured into place and doppler was used to confirm no disruption of flow. The patients were followed for readmission and complications; including hematoma, infection, and flap necrosis.

Results: All 3 patients were male (Ages 38, 51, 83) and had peri-patellar wounds. The 38 and 58 year old males both suffered open fractures of the lower extremity, infection, and wounds over their hardware. The 83 year old male had infected hardware after a total knee replacement that required hardware removal, a medial gastrocnemius muscle flap and split thickness skin graft that unfortunately had necrosed. All 3 underwent the reverse flow ALT flap as detailed above. The 38 year old patient returned to the OR for partial flap necrosis after continued recreational PCP and tobacco use. He underwent revision with debridement of the necrotic area and wound vac placement, with delayed split thickness skin graft. The 51 and 83 year old patients had no complications from their flaps, required no further revisions of the wound area, and did not have any impaired mobility.

Conclusions: In conclusion, the reverse flow ALT flap is an excellent choice for both acute and chronic peri-patellar wound coverage without compromise of joint mobility in a carefully selected patient population without vascular risk factors for flap failure.

Reduction Mammoplasty Performed to Treat Chronic Headaches in a Patient with a Ventriculoperitoneal Shunt

Austin Healy MD, Ian Whittall BA, Julia Perugini, Tiahna Spencer, MD, Alan Babigian MD

Hartford Hospital, Hartford CT and UConn School of Medicine, Farmington CT

Introduction: According to the American Society of Plastic Surgeons, over 107,000 reduction mammoplasty procedures were performed in 2019. These procedures have a variety of clinical indications, ranging from reconstructive to aesthetic. While reduction mammoplasty is most commonly performed for macromastia resulting in chronic pain in the neck and back, there are other benefits to the procedure as well. Studies have also documented improvements in headaches, respiratory status, psychological wellbeing and aesthetics. We present a 29-year-old female with a past medical history of hydrocephalus and Chiari malformation type 1 status post ventriculoperitoneal (VP) shunt placement, and redundant breast tissue that reportedly pulled on her VP shunt which led to chronic headaches.

Method(s): This case study was conducted where the patient's electronic medical records were reviewed retrospectively to monitor the initiation of the symptoms and have been examined post operatively to monitor for the resolution or recurrence of the chronic headache. Consent was obtained for participation in this study.

Results: A bilateral reduction mammoplasty was performed, using an inferiorly based pedicle, with 288g of breast tissue removed from the right breast and 352g removed from the left breast. The patient was seen in the office post-operatively with subjective remission of chronic headaches. Postoperatively, she had visibly less tension on the subcutaneous shunt. To date, there are no further documented visits to her neurosurgeon or to the ED for headaches.

Conclusion(s): Breast reduction mammoplasty may serve as a benefit for patients with a ventriculoperitoneal shunt and chronic headaches.

Medical Student Research- Hosted by the CTACSPA

Global Research Trends on the impact of the COVID 19 pandemic on Orthopedic Surgery: a bibliometric analysis.

Olohirere Ezomo MPH¹, Jillian Giblin BSc¹, Julius Oni FAAOS²

1. Frank H. Netter School of Medicine
2. Johns Hopkins School of Medicine, Department of Orthopedic Surgery.

Introduction: The COVID-19 pandemic affected the world of medicine and orthopedic surgery was not an exception. The pandemic created situations that required surgeons to respond to rapidly evolving guidelines and patient management approaches. Due to the growing interest in the role COVID-19 pandemic continues to play in the field of orthopedic surgery, we identified the most cited publications related to COVID-19 and orthopedic surgery.

Objective: To assess for clinical guidelines, surgeon experiences, innovations, and possible research trends and central themes in orthopedic surgery with respect to COVID 19 pandemic.

Methods: Two databases were searched, PubMed and SCOPUS using keywords - "orthopedic surgery," "orthopedics," "SARS COVID-19", "coronavirus" and "COVID-19". Results were exported the same day to prevent discrepancies with frequent database updates. Our inclusion criteria included articles published after 2020, while our exclusion criteria were articles outside the field of orthopedic surgery or COVID-19, and with less than 25-citations. Titles, abstracts and full texts were screened, and selected articles were used for this analysis.

Result: Of the initial 2048 articles produced from the database search, 68 titles were selected, 23 duplicated were excluded, yielding 45 abstracts for final assessment. After abstract screening, 30 articles were selected for this bibliometric analysis. The mean of the number of citations was 52 with a median of 44. The number of citations of the selected articles range from 34-109 citations each. The top 5 countries where the papers were published were Singapore, China, United States, and Italy. Of the 30 articles, the top five journals that published them were from Journal of Bone Joint Surgery (eight articles), Journal of American Academy of Orthopedic Surgery (3 articles), Journal of Arthroplasty (2 articles), Journal of the American Academy of Orthopedic Surgeons (2 articles) and Knee Surgery and Sports Traumatology and Arthroscopy Journal (2 articles). The top 5 articles with the highest citations had 109, 95, 78, 77 and 76 citations respectively. These articles covered diverse topics such as orthopedic surgeon experiences treating COVID 19 patients in the early wake of the pandemic, infection rates among patients who had fractures and the influence of telemedicine on the practice of Orthopedic Surgery.

Conclusion: Further research into the development of validated, modified examination techniques specifically targeted towards virtual visits is needed. Furthermore, the need for new technology to allow for improved interactive physical examinations is critical as the world of medicine moves towards the era of growing spurt of telemedicine.

Racial Disparities in Outpatient Versus Inpatient Total Hip Arthroplasty

Blake Acquarulo MPH¹, Anya Kamaraju BS¹, Ryan Smith BS¹, Richard Feinn PhD, MS¹, Karen Myrick DNP, FNP-BC, ONP-C, FAAN^{1,2}, Mohamad J Halawi, MD³

1. Frank H Netter MD School of Medicine at Quinnipiac University, Hamden, CT
2. University of Saint Joseph, West Hartford, CT
3. Department of Orthopaedic Surgery, Baylor College of Medicine, Houston, TX

Introduction: By 2026, estimates predict that nearly half of all arthroplasty procedures will be done in the outpatient setting. Racial disparities have previously been described in the utilization and outcomes of total hip arthroplasty (THA), but the potential role of racial disparities in patient selection for inpatient and outpatient THA has not been explored. The objective of this study is to determine if racial disparities exists for patients who underwent inpatient versus outpatient THA. A secondary objective is to identify differences in rates of complications for inpatient versus outpatient THA.

Method(s): A retrospective review of the 2010-2018 American College of Surgeons National Surgical Quality Improvement Program was performed. Asian, Black, Hawaiian/Pacific Islander, Hispanic, Native American/Alaskan, and White patients who underwent THA were compared in terms of outpatient versus inpatient treatment and adverse events.

Results: 182,841 patients were analyzed. After controlling for baseline differences, compared to Whites outpatient THA was higher in Asians (OR=1.64, p<.001), Blacks (OR=1.37, p<.001) and Hispanics (OR=1.62, p<.001). However, complication rates for Blacks (12.4%) and Asians (13.3%) were significantly higher (p<.001) than Whites (10.8%), but Asians had a lower readmission rate (2.3% vs 3.4%). No significant differences in outpatient treatment or complication rate were found between Whites and Native Americans or Hawaiians.

Conclusion: There are racial disparities in outpatient THA treatment that is not explained by patient clinical features. To explain these disparities, more precise patient criteria based on preoperative comorbidities for each procedure need to be established. Identification and mitigation of racial selection bias is an important modifiable risk factor to mitigate disparities in outcomes at the surgeon level.

Ischemia of the Thumb, a Rare Case of Emboli to the Princeps Pollicis Artery Abstract

Olohirere Ezomo MPH¹, Ryan Smith BSc¹, Anya Kamaraju BS¹, Blake Acquarulo BS¹, Scott Myrick², Karen Myrick¹

1. Frank H. Netter School of Medicine
2. Quinnipiac University

Introduction/ Significance: Acute digital ischemia is relatively rare due to collateral blood supply to the hand from ulnar and radial arteries. This case highlights the importance of thorough investigation for systemic causes of distal upper extremity ischemia.

Objective: We present a case of thumb ischemia secondary to embolic occlusion of the princeps pollicis artery, a branch of the radial artery, with concomitant atherosclerotic occlusion of the ipsilateral subclavian artery

Case: Patient is a 61-year-old man with a complaint of recurrent sudden right thumb pain. Previous episode was 2 weeks ago with spontaneous recovery. Pain was sudden in nature, constant, throbbing and associated with a bluish discoloration of the thumb and numbness. No associated swelling noted. Pain does not radiate, is not alleviated by manual pressure and nothing makes it worse. **Physical examination** demonstrated cold right thumb with cyanosis distal to the distal interphalangeal (DIP) joint over volar aspect with diminished sensation. Doppler ultrasound of the right thumb confirmed the presence of a thrombus in the princeps pollicis artery with 80% blockage. Investigation for a potential embolic source using echocardiogram (essentially normal) and CT angiogram identified a plaque with local protrusion (approximately 55%) into the lumen of the right subclavian artery compared with adjacent intima media thickness.

Discussion: Differential diagnosis for digital ischemia include trauma such as an underlying fracture and atraumatic diseases like Raynaud’s disease. Never miss diagnoses such as an atherosclerotic embolus, septic emboli from infectious endocarditis and paradoxical emboli from a deep vein thrombosis through a patent foramen ovale are crucial diagnosis that must be either ruled out or ruled in. Treatment modalities for digital ischemia include medical therapy such as anti-platelet drugs e.g., clopidogrel, aspirin⁶. Unfractionated or low molecular weight heparin therapy endovascular tissue plasminogen activator nitroglycerin patch and iloprost. In severe acute digital ischemia with imminent risk of finger loss, microsurgical dissection of the digital collateral arteries with reconstruction may be needed emergently to restore blood flow to the affected finger^{9,25}

Conclusion: Thumb pain in a patient with high risk for atherosclerosis should raise suspicion for thumb ischemia and such patient will require prompt workup and intervention.

The BITE Score: A Novel Scoring System to Improve Dog Bite Care In Children

Ian Whittall BA¹, Sango Asante MD¹, Maria Slater BA¹, Gazal Gulati BS¹, Ashley Hine BS¹, Michael Brimacombe PhD², Charles Castiglione MD³, Christopher Hughes MD³

¹School of Medicine, University of Connecticut

²Department of Pediatrics, John Dempsey Hospital

³Division of Plastic Surgery, Connecticut Children’s

Introduction: There are 76 million pet dogs in the United States and 4.5 million dog bites are reported every year. Twenty percent of dog bites in pediatric patients require medical management, surgical repair, or both. The spectrum of severity of dog bites makes evaluating treatment options challenging. Despite the frequency of dog bite injuries and the spectrum of recommended treatment, there exists no simple evaluation tool to triage bite severity and guide subsequent operative or non-operative management. We created a novel scoring system for pediatric dog bite injuries in an effort to streamline and standardize decision-making processes.

Methods: We conducted a 10 year, retrospective review of dog bite injuries among pediatric patients from 2009-2019 at a tertiary care children’s hospital. We evaluated patient and injury-related factors that are independently associated with a need for operative intervention of dog bite injuries. Categorical data was analyzed using Pearson’s and likelihood-ratio Chi-squared test to determine associations with operative management. Significant variables were included in a binary logistic regression model to create a predictive model for the likely need for operative management based on these variables in combination.

Results: A total of 698 patients with dog bite injuries were included in the study, with a mean age of 8.1 ±7.1 years old. 54.8% were male, and 53.9% of patient’s families were the dog’s owners. Other variables including dog provocation by the patient prior to the injury, dog size, dog breed, wound size, and wound location were also collected. 51.9% of patients received operative treatment upon presentation to the hospital. Patient age ($p<0.01$), dog ownership ($p<0.01$), dog size ($p=0.01$), and the head as the location of injury ($p<0.01$) were found to have significant associations with operative management.

$$y = -1.674 + x_1 + x_2 + x_3 + x_4$$

x_1	Presence of head lesion	Absence: $x_1=0$ Presence: $x_1=1.658$
x_2	Age	0-3.7 years: $x_2=0$ 3.7-7.7 years: $x_2=0.316$ 7.7-11.8 years: $x_2=0.389$ 11.8 years and older: $x_2=-0.291$
x_3	Dog size	Small: $x_3=0$ Medium: $x_3=0.966$ Large: $x_3=-0.862$
x_4	Dog ownership status	Absence: $x_4=0$ Presence: $x_4=0.230$

This model indicates need for operative management when its output value, y , is greater than 0.5. The model was found to have a sensitivity and specificity of 76.8% and 61.2%, respectively. A receiver-operating characteristic curve for this 280 sample analysis yielded an area of 0.733.

Conclusion: Our novel scoring system indicates that child age, dog ownership status, dog size, and injury location are among the most crucial variables in determining the need for operative management among children with dog bite injuries. Wide adoption of this scoring system may improve the efficiency and quality of care in pediatric dog bites.

Ethnoracial Disparities in Surgical Pediatric Cancer Care During the COVID-19 Pandemic at Yale New Haven Hospital

Shashwat Kala^{1*}, Rachel Levinson^{1*}, Nensi Ruzgar¹, Juan Vasquez², Emily Christison-Lagay³

*Equal authorship

¹Yale University School of Medicine

²Section of Pediatric Hematology/Oncology Department of Pediatrics, Yale University School of Medicine

³Section of Pediatric Surgery, Department of Surgery, Yale University School of Medicine

Introduction: While the COVID-19 pandemic has posed an undeniable risk to the public at large, communities of color have emerged as particularly vulnerable. Cancer patients, especially those requiring surgical management, also represent an at-risk population, given the prolonged disease treatment course and increased risk of immunological complications. This study focuses on the interrelationship between these demographics and assesses the ethnoracial disparities in surgical pediatric cancer care during the first 10 months of the COVID-19 pandemic.

Method(s): A single-institution retrospective chart review identified pediatric cancer surgery patients receiving care at Yale New Haven Hospital's Smilow Cancer Center between 3/12/2019-1/12/2020 (pre-COVID cohort) and 3/12/2020-1/12/21 (COVID cohort). Additional inclusion criteria included 1) cancer diagnoses within the predetermined inclusion periods; 2) <18 years old. Up to 58 variables (demographics, treatments, surgeries, number and length of hospital stays, protocol deviations, etc.) were collected for each patient. Group differences were analyzed using independent-samples t-tests.

Results: N=33 and n=46 patients were included in the pre-COVID and COVID cohorts, respectively. Proportion of racial/ethnic minority patients (39.4% pre-COVID, 37% COVID, $p=0.464$) and specifically of Black/African American patients (12.1% pre-COVID, 19.6% COVID, $p=0.385$) did not significantly differ in the cohorts. Group-level comparisons indicate no differences in variables between non-Hispanic whites and racial/ethnic minorities in either the pre-COVID or COVID cohorts (all $p>0.05$).

However, within-demographic comparisons of variables between the pre-COVID and COVID cohorts reveal significant differences. On average, the racial/ethnic minority COVID cohort spent more in-hospital days at 90 days after diagnosis than their pre-COVID comparison group (8.08+SD days pre-COVID, 20.12+SD days COVID, $p=0.050$). They also experienced an increase in protocol deviations (0.08+SD pre-COVID, 1.18+SD COVID, $p=0.015$). Additionally, patients who identified as a member of a racial/ethnic minority experienced an increased number of hospitalizations 90 days after diagnosis (2.08+SD pre-COVID, 3.76+SD COVID, $p=0.05$). These differences were not experienced by the non-Hispanic white cohort.

Conclusions: Although in a small sample, this study suggests a disproportionate impact of the COVID-19 pandemic on pediatric cancer surgery patients identified as racial/ethnic minorities. Further studies in larger populations of patients are warranted to better understand the potential impact of the pandemic on clinical outcomes including endpoints of recurrence and death and what medical, social/cultural, and/or institutional factors might explain discrepancies within the provision of surgical care.

Surgical Quality, NSQIP and ERAS - Hosted by the CtSQC

Synchronous Major Hepatic Resection with Primary Colorectal Cancer Increases Risk of Organ Space Infections

Alexander Ostapenko MD^{ab}, Stephanie Stroeveer PhD, MPH^c, Minha Kim MD^{ab}, Krist Aploks MD^{ab}, Ramanathan Seshadri MD^{ab}, Xiang Dong MD^{ab}

^aDivision of Surgical Oncology, Department of General Surgery, Danbury Hospital, CT

^bDepartment of Surgery, Larner College of Medicine, University of Vermont. VT

^cDepartment of Research and Innovation, Nuvance Health, CT

Introduction: One quarter of patients with colorectal cancer present with metastases, most commonly to the liver. Traditionally these patients underwent resection of the primary colorectal lesion followed by chemotherapy and hepatic resection. With improvement of outcomes in hepatic surgery, there has been a shift to simultaneous resection of both the primary colorectal cancer and hepatic metastases in a single operation. Several studies from high volume centers have demonstrated similar outcomes between the two approaches. The goal of this study is to determine if synchronous resection increases risk of surgical site infections (SSIs).

Methods: We conducted a cross-sectional retrospective analysis of the targeted hepatectomy NSQIP database from 2014-2019. The primary outcome was surgical site infections stratified into superficial, deep, organ space, and wound dehiscence. We performed univariate logistic regression to determine if there were higher odds of SSIs in patients undergoing hepatic resection concurrently with primary colorectal resection. Subsequently, we performed multivariable logistic regression to assess the effect of synchronous hepatic resection on the outcome while controlling for potential confounders and including relevant covariates. Additionally, we performed stratified analyses by size of hepatic resection (partial, total left, total right, and trisegmentectomy).

Results: Of the 7,445 patients included in the study, 431(5.8%) underwent synchronous resection and 7,014 metachronous resection. On average, synchronous resections prolonged surgery by 62 minutes. There was no difference in superficial and deep SSIs between the groups; however, there was a significant difference in organ space SSIs. Patients undergoing synchronous resection had 1.51 times the odds of developing an organ space SSI (OR=1.51, 95%CI = 1.10, 2.17, p=0.04) compared to patients with metachronous resection on multivariate analysis. Patients undergoing a lobectomy concurrently with a colorectal resection had 2.30 times the odds of developing an organ space SSI (OR=2.30, 95% CI = 1.20,6.86, p=0.010).

Conclusions: Prior studies demonstrated that synchronous resections are safe in properly selected patients with no difference in long-term outcomes. Few studies have explored immediate perioperative outcomes between the two approaches. After controlling for confounders, we demonstrate that synchronous resection with major hepatic surgery increases the risk of organ space SSIs. This study does not distinguish whether the organ space SSI was a result of the colon or liver resection. Future studies should elucidate the precise source of organ space SSIs in order to decrease the risk of this adverse outcome. Nevertheless, surgeons should be aware of this risk and discuss this with patients pre-operatively.

Adverse Impact of Ascites on Outcomes of Open Inguinal Hernia Repair in the United States

Daniel Kerekes MD, Josh Sznol MD, Sajid A. Khan MD FACS, Robert D. Becher MD MS

Yale School of Medicine

Introduction: Inguinal hernias with concomitant ascites pose a clinical dilemma. Clinical studies in this patient population are limited and conflicting. In this study, we examined whether preoperative ascites adversely affects postoperative outcomes in elective and non-elective open inguinal hernia repair.

Methods: The American College of Surgeons National Surgical Quality Improvement Program (NSQIP) is a nationally validated database of patient variables, perioperative metrics, and surgical outcomes recorded prospectively by trained clinical reviewers at participating institutions. NSQIP data were queried for patients who underwent elective or non-elective open inguinal hernia repair as their primary operation from 2005-2019. The inclusion criterion for the study group was the presence of preoperative ascites.

Results: A total of 237,478 open inguinal hernia repair patients were included, 733 with ascites and 236,745 without ascites. Mortality at 30 days for the ascites group was higher than the non-ascites group for both elective (2.5% vs. 0.1%, $p < 0.001$) and non-elective (9.7% vs. 2.1%, $p < 0.001$) cases. Serious complications in the ascites group were also higher than in the non-ascites group for elective cases (9.1% vs. 1.6%, $p < 0.001$) and non-elective cases (41.1% vs. 10.2%, $p < 0.001$). Multivariable regression controlling for sex, age, number of comorbidities, functional status, American Society of Anesthesiologists (ASA) physical status class, and preoperative sepsis demonstrated that patients with ascites undergoing elective inguinal hernia repair had increased risk of mortality (Odds Ratio [OR] 6.4; 95% CI 3.6 – 11.4; $p < 0.001$) over those without ascites; there was no difference between groups in odds of mortality after non-elective cases. Patients with ascites experienced increased risk-adjusted rates of serious complication in both the elective (OR 2.6; 1.9 – 3.6; $p < 0.001$) and non-elective (OR 2.3; 1.5 – 3.4; $p < 0.001$) settings. Ascites was additionally found to be an independent predictor of longer hospital length of stay ($p < 0.001$ for both groups) and increased rate of return to the operating room ($p < 0.001$ for elective; $p = 0.011$ for non-elective), as well as longer elective operative time ($p < 0.001$).

Conclusions: The presence of ascites is strongly linked to serious complications, return to the operating room, and longer length of stay after both elective and non-elective open inguinal hernia repair. Moreover, ascites is associated with higher 30-day mortality after elective cases. This study suggests that open inguinal hernia repair with concomitant ascites can be fraught with complications, and optimization of ascites prior to surgery may be critical to improving clinical outcomes.

Table 3. Ascites Status as a Predictor of Perioperative Course and Surgical Outcomes (Multivariable Regression)

Outcome	EMERGENCY			ELECTIVE		
	B [95% CI]	Odds Ratio [95% CI]	P value	B [95% CI]	Odds Ratio [95% CI]	P value
Operative time, min	7.6 [-0.5 – 15.6]		0.065	15.0 [12.2 – 17.9]		< 0.001
Hospital length of stay, days	4.5 [3.5 – 5.4]		< 0.001	1.8 [1.5 – 2.1]		< 0.001
Superficial SSI		1.6 [0.5 – 5.2]	0.434		2.1 [0.99 – 4.5]	0.052
Deep SSI		*	*		2.6 [0.6 – 10.9]	0.180
Organ Space SSI		3.0 [0.9 – 10.2]	0.081		0.8 [0.1 – 5.9]	0.786
Wound dehiscence		1.6 [0.2 – 12.4]	0.665		3.3 [0.99 – 11.1]	0.053
Return to OR		2.3 [1.2 – 4.2]	0.011		2.9 [1.9 – 4.4]	< 0.001
Sepsis after surgery		1.1 [0.3 – 3.7]	0.861		1.7 [0.7 – 4.5]	0.255
Serious Complication		2.3 [1.5 – 3.4]	< 0.001		2.6 [1.9 – 3.6]	< 0.001
Perioperative Death		1.9 [0.9 – 4.1]	0.078		6.4 [3.6 – 11.4]	< 0.001

*analysis unable to be performed as no deep SSIs occurred in the ascites group who underwent emergent surgery

Is Patient Sex Associated with Surrogate Consent for Surgical Intervention?

Nupur Nagarkatti MD¹, Samuel M Miller MD¹, Eric Schneider PhD¹, Vanita Ahuja MD MPH MBA¹, Sanjay Mohanty MD², Lisa Kodadek MD¹

¹Yale University School of Medicine, Department of Surgery; ²Indiana University School of Medicine, Department of Surgery

Introduction: Differences between female and male patients have been identified in many facets of medicine. We sought to understand whether differences in surrogate consent exist between female and male patients who undergo surgery.

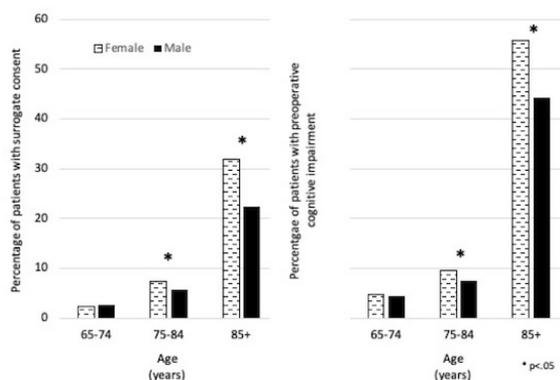
Method(s): A descriptive study was designed using data from the Geriatric Surgery American College of Surgeons NSQIP Collaborative collected from 2014-2018. All patients included were ≥ 65 years old and had surgery. Patients were considered to have had surrogate consent if the signature on the consent form for their index operation was not their own. Chi-square tests were used to identify relationships between surrogate consent and both demographic and baseline characteristics. Patients were classified into distinct age groups for analysis across subgroups. Of note, patients > 89 years old were coded as 90 by NSQIP to avoid identification of individual patients.

Results: Of 51,832 patients identified, 3,416 (6.6%) had surrogate consent. Overall, 7.7% of females had surrogate consent compared to 5.3% of males ($p < 0.001$). Subgroup analysis based on age categories showed: no difference in surrogate consent between female and male patients 65-74 years old (2.3% vs 2.6%, $p = .17$); higher rates of surrogate consent in females than males for patients 75-84 years old (7.3% vs 5.6%, $p < 0.001$) and ≥ 85 years (31.2% vs 22.4%, $p < 0.001$) (Figure). A similar relationship was seen between sex and preoperative cognitive status: no difference in preoperative cognitive impairment in female and male patients 65-74 years old (4.4% vs 4.7%, $p = .34$); higher rates of preoperative cognitive impairment in females than males for those 75-84 (9.5% vs 7.4%, $p < 0.001$) and ≥ 85 (31.2% vs 22.6%, $p < 0.001$) (Figure).

Conclusion(s): Sex-based differences in surrogate consent varied with age. There was no difference in the proportion of female vs. male patients between 65-74 years old who had surrogate consent, but females were more likely than males to have had surrogate consent in both 75-84 and ≥ 85 -year-old age groups. A similar pattern was observed in sex-based differences in preoperative cognitive impairment. Taken together, these findings suggest the possibility of age-related collinearity between sex and surrogate consent as well as sex and preoperative cognitive impairment. Thus, it is possible that female patients were more likely to have surrogate consent than their male counterparts because they were older and more likely to be cognitively impaired. The inability to use a quantified measure of age in patients > 89 years old prevents the quantification and assessment of relationships between age- and sex-related differences in surrogate consent among older patients older than 89 years of age.

Figure: Sex-based differences in surrogate consent and preoperative cognitive impairment by age group

Figure: Sex-based differences in surrogate consent and preoperative cognitive impairment by age group



Assessing the Accuracy of the American College of Surgeons' Surgical Risk Calculator for Lumbar Surgeries

Pharis Sasa, B.S.¹, Dr. Aris Yannopoulos, M.D.², Smitha Vellanky, MSc²

¹Quinnipiac University Frank H. Netter MD School of Medicine, North Haven, CT

²Saint Francis Hospital and Medical Center, Spine Institute of CT, Hartford, CT

Introduction: The American College of Surgeons (ACS) has an online risk calculator that estimates a patient's risk of postsurgical complications based on pre-surgical variables. There are few studies that determine the calculator's efficacy in spine surgeries. It is possible this tool could be used to better express surgical risk to a patient during informed consent. The aim of this study is to determine the ability of the ACS surgical risk calculator to accurately estimate the risk outcomes on average and on an individual basis for patients undergoing lumbar fusions, laminectomies, and discectomies.

Methods: A retrospective chart review was performed of 228 lumbar fusions and 212 lumbar laminectomies and discectomies between January 2018 and December 2018. Preoperative data was entered into the calculator, risk assessments were recorded, and compared to the patient's true outcomes of pneumonia, cardiac complications, surgical site infections, urinary tract infections (UTI), venous thrombosis, renal failure, readmission, return to OR, death, length of stay, and discharge to a rehabilitation facility.

Predicted risk was compared to complication occurrence using two-sample t-test for average rates and receiver-operating characteristic (ROC) for individual cases.

Results: For laminectomy and discectomy patients, the calculator was able to predict the average risk of all postsurgical complications except death and length of stay. The ROC showed the calculator was only able to predict UTIs ($c=.745$, $p=0.04$) and discharge to a rehabilitation facility ($c=.755$, $p=0.01$) at an individual level. For fusion patients, the calculator was able to predict the average risk of all postsurgical complications except death and discharge to a rehabilitation facility. The ROC showed the calculator was only able to predict readmission ($c=.763$, $p<0.05$) and discharge to a rehabilitation facility ($c=.729$, $p<0.05$).

Conclusions: While the risk calculator shows promise with its ability to predict the risk among an average pool of patients undergoing lumbar surgery, it lacks accuracy to be useful to an individual patient for their specific circumstance.

A Descriptive Analysis of Older Adult Patients Who Underwent Surgery Based on Surrogate Consent.

Samuel M. Miller MD¹, Nupur Nagarkatti MD¹, Eric Schneider PhD¹, Vanita Ahuja MD MPH MBA¹, Sanjay Mohanty MD², Lisa Kodadek MD¹

¹Yale University School of Medicine, Department of Surgery; ²Indiana University School of Medicine, Department of Surgery

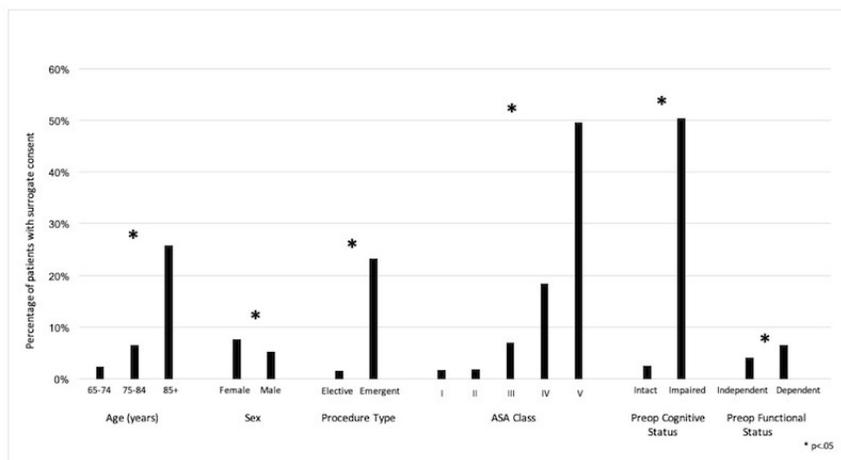
Introduction: Surrogate consent for operation is sought when a patient is considered unable to consent for themselves. Among older adults, inability to consent can result from a chronic disability or from acute pathology. Determining a patient's capacity to consent is required as part of the surgeon's preoperative assessment. However, there is no universal standardized process to ensure consistency in the way that this capacity assessment is performed. The purpose of this study is to describe older adults who underwent surgical intervention with surrogate consent.

Methods: A descriptive analysis was performed using data from the Geriatric Surgery American College of Surgeons NSQIP Collaborative collected from 2014-2018. All patients included were ≥ 65 years old and underwent a surgical procedure. Patients were considered to have had a surrogate decision-maker if the signature on the consent form for their index operation was not their own. Demographic and preoperative health metrics were evaluated to examine differences between those for whom surrogate consent was and was not provided.

Results: 51,832 patients ≥ 65 years old whose consent forms had been analyzed were identified. 3,416 (6.6%) of these patients had a surrogate decision-maker. Surrogate consent was more frequent among older patients, with 2.4% of patients between 65 and 74 having a surrogate increasing to 25.9% for those ≥ 85 . (Figure). Among patients for whom surrogate consent was provided, 43% were over 85 while 21% were 65-74. On average, female patients were more likely than males to have had surrogate consent (7.7% vs 5.3%, $p<.001$), as were patients undergoing emergent vs. elective procedures (23.3% vs. 1.6%, $p<.001$) (Figure). Patients with higher ASA classification, who were cognitively impaired or functionally dependent prior to surgery were also more likely to have had surrogate consent. Of note, 4.5% of people who signed their own consent carried a diagnosis of cognitive impairment at the time they consented to surgery.

Conclusions: Older patients and female patients were more likely to have surrogate consent than their younger and male counterparts. In addition, those with preoperative disability and greater comorbidity burden were proportionally more likely to have had surrogate consent. Importantly, nearly 1 in 20 patients who signed their own consent form carried a diagnosis of cognitive impairment. The variability observed in these initial findings suggests the need for development and standardization of an evidence-based process for the assessment of surgical decision-making capacity in older adults.

Figure: Descriptive statistics of patients with surrogate consent



Effects of Physician Education on the Identification of Moderate and Severe Malnutrition at a Single Center Suburban Community Hospital

Thomas Tritt MD, Samantha Norden MD, Katherine Howard MD
Stamford Health

Introduction: Malnutrition is a major contributor to increased morbidity and mortality, decreased function and quality of life, increased frequency and length of hospital stay. The American Society for Parenteral Nutrition and Dietetics defines severe malnutrition as a patient with two or more of the following six characteristics: insufficient energy intake, unintentional weight loss, loss of muscle mass, loss of subcutaneous fat, localized or generalized fluid accumulation, diminished functional status as measured by hand grip strength. According to data published in 2009, only 3% of patients admitted in an acute care setting in the United States are diagnosed with malnutrition according to ICD-9 coding. This represents a gross underestimation of the 15-60% of patients, in certain populations, that suffer from severe malnutrition. Current practices at Stamford Hospital identify patients at high risk for severe malnutrition through objective measures which allow dietitians to consult on these patients. However, unless severe malnutrition is documented by a physician, it cannot be coded and further acted upon. We posit this results in significantly increased morbidity and mortality, as well as monetary hospital losses.

Method(s): Quality improvement project using Electronic Medical Record (EMR) data. Data will be collected prospectively and retrospectively on patients meeting inclusion criteria. Inclusion criteria: All patients admitted to inpatient or observational setting to the medical and surgical services at Stamford Hospital from January 2021-present who are identified as meeting the American Society for Parenteral and Enteral Nutrition (ASPEN) criteria for moderate or severe malnutrition. Exclusion criteria: Patients admitted to psychiatric inpatient service and same day surgery patients. We will analyze the changes in identification and knowledge on patients presenting with moderate and severe malnutrition according to the ASPEN criteria before and after the implementation of the quality improvement project.

EMR Alerts: A mandatory question will arise on all physician progress notes in Meditech (Stamford EMR) stating “Does the patient meet criteria for moderate or severe malnutrition?”

Physician Education: Presentations will be given to residents, attending physicians, and physician’s assistants during medical and surgical grand rounds, to educate on newly implemented Meditech alerts and where ASPEN criteria can be documented in patients who are at high risk for protein calorie malnutrition. Anonymous pre- and post-presentation surveys will be conducted electronically to verify level of understanding of ASPEN criteria and comfort level of documenting clinically significant malnutrition.

Results: We will analyze physician understanding of ASPEN criteria and ability to document objective metrics according to survey results. Data will be collected from Meditech, the Stamford Hospital EMR, in order to assess the improvement in documentation of clinical malnutrition by healthcare providers. Clinical dietitian records of patients who have been flagged due to meeting ASPEN criteria will be cross-referenced with filed Current Procedural Terminology (CPT) codes for clinical malnutrition, which signifies that the hospital coders billed insurance for the services. This will allow us to evaluate the degree to which our intervention has facilitated the billing process and to quantify its monetary impact.

Conclusion(s): We hope to increase awareness of protein calorie malnutrition among physicians and improve EMR documentation of ASPEN criteria in the EMR at Stamford Hospital.

Bearing of BMI on Surgical Outcomes After Ostomy Reversal-NSQIP Analysis

Suraj Panjwani MD^{1,2}, Amanda Fazzalari MD², J Alexander Palesty MD², Mitchell Cahan MD MBA^{1,3}

1 - Department of Surgery - University of Massachusetts Medical School, Worcester, MA

2 - Department of Surgery - St. Mary's Hospital, Waterbury, CT

3 - Department of Surgery - Mt. Auburn Hospital, Cambridge, MA

Introduction: Ostomy reversal is often considered minor in comparison to its index procedure. However, there still exists a 11-33% post-operative complication rate. We sought to investigate the impact of BMI on surgical outcomes among patients undergoing ostomy reversal.

Method(s): The National Surgical Quality Improvement Program (NSQIP) database was queried between 2009 and 2018 to identify all adult patients that underwent laparoscopic or open small or large bowel ostomy reversal. Patient cohort was divided based on BMI cut off of 35. Preoperative and operative data were compared between the two groups. Postoperative 30 day outcomes such as length of stay (LOS), complications, reoperation, readmission and death were analyzed. Clinically relevant factors identified to be different on univariate analysis were included in multivariable regression analyses.

Result(s): We analyzed 53,104 patients that underwent ostomy reversal. Patients with BMI ≥ 35 comprised 11% of total patients. Table.1 displays the comparison between groups based on BMI. Patients with BMI ≥ 35 had longer operative time (171 vs. 130 mins, $p < 0.0001$) and LOS (6.2 vs. 5.9 days, $p < 0.0001$). Thirty-day mortality, readmission or reoperation rates did not differ based on BMI. Patients with BMI ≥ 35 had a 21% complication rate (vs. 15% BMI ≤ 35 , $p < 0.0001$). BMI ≥ 35 was an independent predictor for prolonged operative time (β -39.4, $p < 0.0001$) and post-operative complications (OR 1.46, $p < 0.0001$)

Conclusion(s): BMI is a crucial factor that may negatively impact surgical outcomes following an ostomy reversal. Potential risks and measures to optimize body weight must be discussed with patient preoperatively.

Table.1 - Patient Characteristics based on BMI

Variable	BMI<35 (89%)	BMI>=35 (11%)	P value * - $p < 0.05$
Age (years) Mean \pm Std. dev	57 \pm 15	54 \pm 13	<0.0001*
Female	46%	56%	<0.0001*
Hispanic	7%	9%	<0.0001*
Nonwhite race	12%	14%	<0.0001*
ASA 3/4	45%	65%	<0.0001*
Smoker	22%	19%	<0.0001*
Chronic Obstructive Pulmonary Disease	4%	5%	0.001*
Congestive Heart failure	0.3%	0.6%	0.004*
Steroids	6%	4%	<0.0001*
Diabetes Mellitus	10%	23%	<0.0001*

Role of Ablation Therapy in Conjunction with Surgical Resection for Neuroendocrine Tumors (NETs): Risks and Benefits of Multimodality Surgical Treatment for NETs Involving the Liver

Tyler Glaspy MD¹, Alexander Ostapenko MD¹, Stephanie Stroeve PhD, MPH², Minha Kim MD¹, Krist Aploks MD¹, Xiang Dong MD¹, Ramanathan Seshadri MD¹

¹Division of Surgical Oncology, Danbury Hospital, CT

²Department of Research and Innovation, Nuvance Health, CT

Introduction: Neuroendocrine tumors (NETs) are epithelial tumors that can arise from most organs. They are indolent, slow growing neoplasms that are frequently discovered at a late stage when they become symptomatic from hormonal excretion by metastasizing to the liver. It is estimated that 80-90% of these tumors are inoperable at the time of presentation. However, several publications demonstrate that resection of hepatic metastases from NETs improves both quality of life and prolongs 5-year survival. Therefore, adjunct modalities such as thermal ablation are frequently utilized in conjunction with resection. Although studies report long-term outcomes for patients undergoing ablation with surgery, no prior studies have explored the effects of ablation on peri-operative outcomes in patients undergoing hepatic resection for NETs. We aim to evaluate whether undergoing ablation in conjunction with hepatic resection for NETs increases the risk for peri-operative complications such as surgical site infections (SSIs), bile leak, and significant bleeding.

Method(s): The NSQIP Procedure Targeted Participant Use Data file for hepatectomy from the years 2015-2019 was utilized. A retrospective cohort analysis was conducted. All patients in the database undergoing hepatic resection for NETs aged 18 years or older were included. Patients older than 90 years at time of surgery, patients with 'unknown' ablation status, and patients with an infection at the time of surgery were excluded from this analysis. Primary outcomes were SSIs, bile leak, and significant bleeding. Univariate logistic regression was utilized to assess whether there were higher odds of SSIs, bile leak or significant bleeding in patients undergoing ablation concurrently with hepatic resection than with resection alone. Multivariable logistic regression was utilized to determine whether the risk of developing our selected outcomes was higher among patients undergoing ablation while controlling for potential confounders. P values <0.05 were considered statistically significant.

Results: A total of 966 patients were identified in the database after utilizing exclusion criteria, with 298 undergoing intra-operative ablation (30.85%) and 668 with no ablation (69.15%). The mean age at time of surgery was 59.7 years. There were 475 males (49.2%) and 491 females (50.8%). A total of 150 patients (15.5%) experienced significant bleeding during their procedure. There was no statistically significant difference in the odds of significant bleeding after controlling for relevant confounders between the two groups (OR 0.66; 95% CI 0.36, 1.05). To better assess this model, a Hosmer-Lemeshow goodness-of-fit test was performed, which showed $\chi^2=820.3$; $P=0.75$; this again shows no significant difference between the two groups. A total of 117 patients (12.1%) experienced a surgical site infection following their procedure. There was no statistically significant difference in the odds of any surgical site infection (OR 0.89; 95% CI 0.54, 1.45) or organ space infection (OR 1.10; 95% CI 0.62, 1.98) between the two groups after controlling for relevant confounders. A total of 55 patients (5.7%) experienced a bile leak. The odds of a bile leak among patients who had concurrent intra-operative ablation was statistically significantly more likely than the odds of developing one without ablation (OR 0.70; 95% CI 0.33, 1.47) after controlling for confounding variables.

Conclusion(s): In prior studies, intraoperative ablation in conjunction with surgery has emerged as a tool to prolong survival and decrease morbidity in patients with neuroendocrine tumors with metastases to the liver. Our study shows that intraoperative ablation in conjunction with surgery does not significantly increase peri-operative adverse outcomes when compared to surgery alone for neuroendocrine tumors with metastases to the liver. Surgeons should be mindful of this tool available to help achieve complete resection of liver metastases when they are not amenable to resection with surgery alone. Surgeons should not be concerned that intraoperative ablation increases perioperative risk when compared to surgery alone.

Surgical Specialties - Hosted by the CTACSPA

Biomechanics of the Proximal Tibiofibular Joint: Quantifying Normal Motion

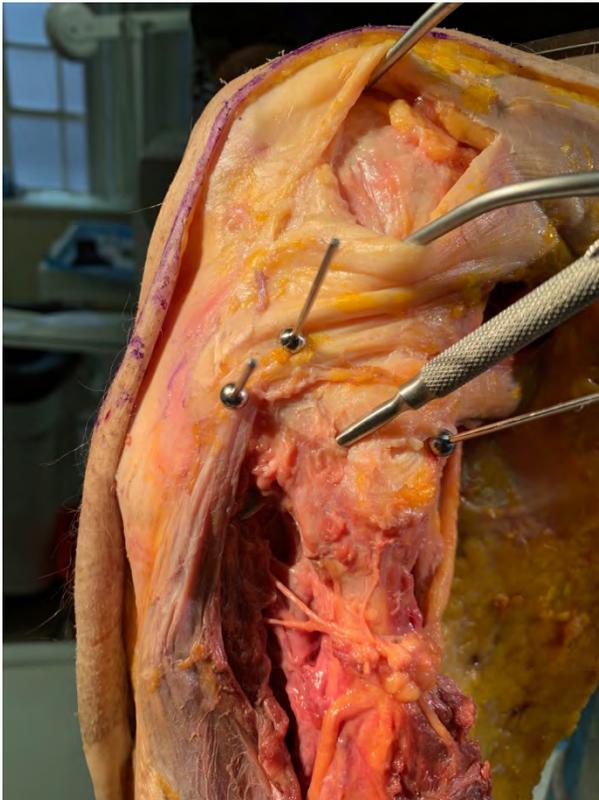
Kristofer Chenard MD (Spine & Orthopedic Center), Austin Alexih MS BS (Frank Netter MD School of Medicine), Matthew Gotlin MD (Lenox Hill Hospital), Benjamin Bedford MD (Specialty Orthopedics/Lenox Hill Hospital), Stephen Nicholas MD (Specialty Orthopedics/Lenox Hill Hospital)

Introduction: The normal range of motion at the proximal tibiofibular joint is unknown. Injuries to the proximal tibiofibular joint (PTFJ) can occur in isolation or combined with other ligamentous injuries of the knee, including injury of the posterolateral corner. Recent studies have demonstrated that anatomic posterolateral corner reconstructions are unable to restore varus and external rotation stability if concomitant disruption of the PTFJ has occurred.¹² Instability of the PTFJ is most notable at 90 degrees of knee flexion, however, normal and pathologic motion have not yet been defined.

Methods: We immobilized 10 human cadaver knees proximally and distally at a flexion angle of 90 degrees. We placed two convergent kirschner wires, one in the proximal fibula, and one in the proximal tibia, to provide reference points for measurement. Anterior, posterior, and lateral translation from the reduced position were measured after the application of a 30N force at the fibular neck.

Results: The mean anterior fibular translation was 2.4 mm (+/-1.0mm), the mean posterior fibular translation was 2.4 mm (+/-1.0 mm) and the mean lateral translation was 2.0 mm (+/-1.2 mm). The mean maximum total translation from anterior to posterior (anterior plus posterior translation) was 4.8 mm (+/-2.0 mm). Nine out of ten specimens had a total anterior to posterior translation less than 6mm; the remaining specimen was noted to be ligamentously lax and had a total range of 10 mm.

Conclusions: Quantification of physiologic motion at the proximal tibiofibular joint provides a basis upon which treating providers can predicate their assessment of joint stability. PTFJ joint motion in excess of physiologic parameters enters into a pathophysiologic range that may need to be addressed clinically to restore knee stability, especially in the context of a concomitant posterolateral corner injury.¹²³



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Esophageal Stenosis Secondary to Cavitory Lesions: A Unique Presentation of Dysphagia

Brienne Ryan, MD; Brandon Madris, MD, Dr. Dukleska, MD

Connecticut Children's Medical Center, Department of Surgery, Hartford, CT

Introduction: Feeding and swallowing disorders can have multiple underlying causes including medical, behavioral, and environmental. The differential can include neuromuscular disorders, infectious, anatomic abnormalities of the aerodigestive tract and genetic abnormalities. It often requires a multidisciplinary team to elucidate the underlying cause. Surgical consultation is necessary for certain anatomic conditions including congenital esophageal stenosis, stricture, esophageal atresia or tracheoesophageal fistulas, all of which may require surgical intervention. These conditions prevent proper swallowing and increase the risk of aspiration, often requiring prompt surgical repair. In this case report, we present a unique patient who developed esophageal stenosis secondary to infectious cavitory lesions.

Case: Patient is a 3 week old infant born at 39.2 weeks gestation with post-natal course complicated by meconium aspiration syndrome, GERD/oropharyngeal dysphagia with aspiration requiring NGT feeds and antibiotics who presented with increased secretions, vomiting and intolerance of feeds. Patient was noted to have frothy, foaming secretion and desaturations during feeding. Infectious work up revealed likely aspiration pneumonia for which IV clindamycin was initiated. Infectious disease, neurology, and ENT were consulted. Patient underwent barium swallow to evaluate esophagus which showed narrowing in esophagus with pouching noted proximal and thin trickle of contrast distally into stomach, however imaging was unable to fully assess caliber of distal esophagus due to upstream narrowing. At this time, surgery was consulted for suspected esophageal stricture versus stenosis. Of note, patient had previously undergone UGI at an OSH after birth which showed slow esophageal passage, but did not show any obstruction. The tentative plan was that once patient recovered from her PNA, she would undergo bronchoscopy and EGD with possible esophageal dilation.

In the interim, A CT scan was obtained which showed multiple pulmonary masses demonstrating various degrees of cavitation, most consistent with septic emboli as well as mass effect upon the distal esophagus which appeared to be secondary to a cavitory lesion of the right lower lobe. In an effort to optimize nutrition and minimize further risk for aspiration, an NGT was placement under fluoroscopy. Pulmonology and hematology was consulted given pulmonary lesions and possibility of oncologic etiology. Echocardiogram was performed which showed no vegetations, and US neck/upper extremities was performed without identified thrombi. Tuberculosis was deemed unlikely given negative TST. Although an intrinsic inflammatory component was not completely ruled out, the decision was made to follow the patient with serial imaging while continuing antibiotics to evaluate whether reduction in the size of the cavitory lesions would lead to improved aspiration symptoms. The patient was continued on Unasyn, an replegle remained in place to assist with secretions and the patient eventually underwent laparoscopic gastrostomy tube placement.

A repeat CT was obtained on hospital day 13 which showed significant interval improvement in the multiple pulmonary cavitory masses, A repeat esophagram on hospital day 20 showed persistent dilatation of the proximal thoracic esophagus with persistent marked narrowing of the mid to distal esophagus over a length of 1.5 cm, however slight improvement in passage of contrast into the stomach.

Discussion: Feeding and swallowing disorders have numerous etiologies. Anatomic abnormalities of the aerodigestive tract including esophageal stenosis, stricture, and esophageal atresia with and without fistulization often require prompt surgical intervention to optimize nutrition and prevent sequelae such as aspiration pneumonia or esophageal perforation. Esophageal strictures can be caused by intrinsic pathologies including trauma such as corrosive esophageal injury, gastroesophageal reflux disease, or esophagitis. We present a case of extrinsic compression of the esophagus secondary to an infectious etiology, requiring numerous interventions including nasogastric tube replacement and laparoscopic gastric tube placement. Despite continued regression of the lesions after antibiotic treatment, the patient continues to have stenosis requiring tube feeds and replegle placement to assist in secretion removal. Further imaging and interventions may be required after resolution of the infectious process, and additional work up into the etiology of the lesions is ongoing.

Neoadjuvant Radiation Therapy Prior to a Pancreaticoduodenectomy for Adenocarcinoma Correlates with Longer Operative Times and Perioperative Blood Loss.

Krist Aploks MD, MBA^{ab}, Stephanie Stroeve PhD, MPH^c, Minha Kim MD^{ab}, Alexander Ostapenko MD^{ab}, Ramanathan Seshadri MD^{ab}, Xiang Dong MD^{ab}

^aDivision of Surgical Oncology, Department of General Surgery, Danbury Hospital, CT

^bDepartment of Surgery, Larner College of Medicine, University of Vermont, VT

^cDepartment of Research and Innovation, Nuvance Health, CT

Introduction: Pancreatic adenocarcinoma today represents the fourth most common cause of cancer-related death in the United States. In patients with “borderline resectable” disease, current NCCN guidelines recommend the use of neoadjuvant chemoradiation prior to a pancreaticoduodenectomy. While neoadjuvant radiotherapy in particular has been shown to incur long term morbidity and mortality benefits, it is theorized that its administration may increase total operative time and case complexity. The purpose of this study is to determine whether there is an association between neoadjuvant radiotherapy, total operative time, and perioperative transfusion requirements among patients receiving a pancreaticoduodenectomy for pancreatic adenocarcinoma.

Methods and procedures: Using the 2015-2019 NSQIP data set, we performed a retrospective analysis on patients receiving a pancreaticoduodenectomy for pancreatic adenocarcinoma. Dividing patients into two groups based off of neoadjuvant radiotherapy status, we used multivariate logistical and negative binomial regression to determine if there is a statistically significant correlation between neoadjuvant radiotherapy and our outcome variables (perioperative blood transfusion and total operative time).

Results: Out of the total 11,458 patients included in the study, 1,470 (12.8%) underwent neoadjuvant radiation. Using multivariate logistical regression to control for confounding factors, patients who received neoadjuvant radiotherapy were significantly more likely to require a perioperative blood transfusion compared to those that did not (aOR = 1.55, 95% CI = 1.34, 1.78, $p < 0.01$). Using multivariate negative binomial regression, we also found that surgeries in patients who received neoadjuvant chemotherapy were (on average) 14 minutes longer than those in patients who received no such therapy (IRR= 1.14, 95% CI = 1.11, 1.16, $p < 0.01$).

Conclusions: The results of our study support the hypothesis that neoadjuvant radiotherapy increases total operative time and perioperative blood transfusions in patients who receive it compared to those that do not. This is likely secondary to radiation’s effect on the pancreas, which has been theorized to change the texture of the pancreas and distort tissue planes. Although longer operative times and a greater likelihood of perioperative blood transfusions do not necessarily correlate with increased surgical complexity, these factors must be kept in mind when operating on previously irradiated patients.

Pancreatic Paraganglioma and Hyperparathyroidism in a Patient with *RET* Gene Variant Mutation

Minha Kim, MD^{ab}, Krist Aploks, MD^{ab}, Susanna Vargas-Pinto, MD^{ab}, Xiang Dong, MD^{ab}

^aDivision of Surgical Oncology, Department of General Surgery, Danbury Hospital, CT

^bDepartment of Surgery, Larner College of Medicine, University of Vermont, VT

Introduction: Paraganglioma (PGL) are rare extra-adrenal neuroendocrine tumors that can form within sympathetic and parasympathetic ganglia throughout the body. Although all PGLs arise from neural crest-derived chromaffin cells, these tumors differ with regards to function (ability to produce and secrete catecholamines), location, and malignant potential. PGLs are associated with germline mutations in a variety of genes, including *RET*. *RET* is proto-oncogene that has been associated with the multiple endocrine neoplasia type 2 (MEN2) syndrome. Individuals with *RET* mutations leading to MEN2 are at risk for developing hyperparathyroidism, medullary thyroid cancer, and pheochromocytomas/paraganglioma. The University of Utah MEN2 and *RET* genetic database has documented approximately 200 different mutations, most of which have not been characterized. Here, we describe a patient with a history of hyperparathyroidism who developed a pancreatic retroperitoneal paraganglioma and was found to have a variant of *RET* mutation with unknown significance, which has not been documented in the University of Utah MEN2 and *RET* genetic database.

Method: Literature review of paragangliomas

Case Presentation: A 64-year-old Caucasian male initially presented to his primary care physician only complaining of gradual right hip pain for more than two months. His medical history was significant for left parathyroidectomy for a parathyroid adenoma and well-controlled hypertension. Family history elicited prostate cancer in the patient's father. Imaging revealed mild degenerative changes in the spine and a 11 cm ovoid, solid, enhancing mass in the right mid-abdominal mesentery. Biopsy of the mass revealed an atypical epithelioid and spindle cell neoplasm. The patient underwent an elective exploratory laparotomy and resection of the retroperitoneal tumor. Patient's histologic evaluation and tumor immunohistochemistry were consistent with metastatic PGL. With the diagnosis of PGL, catecholamine levels were obtained and found to be elevated. He underwent genetic testing, which revealed a variant of the *RET* gene with unknown significance (c.731C->T (p.T244I)). To rule out MEN2 related tumors and metastatic disease, patient had ultrasound of the thyroid and PET dotatate scan, which was negative for any pathology.

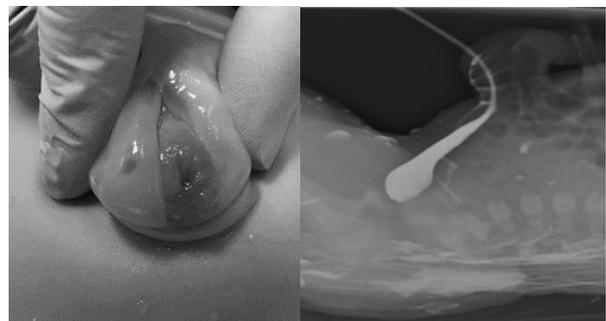
Discussion: Genetic testing is recommended for any patient diagnosed with PGLs, since roughly 40% carry germline mutations. The *RET* proto-oncogene, commonly associated with PGLs, has also been linked to MEN syndromes types 2A, 2B, and familial medullary thyroid carcinoma. Due to the fact that different mutations to the *RET* gene can result in wide range of effects, attempts have recently been made to catalog the phenotype of individual mutations for prognostic purposes. Our patient was found to have a retroperitoneal paraganglioma associated with a *RET*T244I germline mutation. This mutation, as of yet, has not been listed in the University of Utah MEN2 and *RET* genetic database. The variant has been reported once in the ClinVAR database as a variant with unknown significance. Despite his isolated history of parathyroid adenoma and the identified paraganglioma, our patient did not meet criteria for a diagnosis of any established *RET*-associated syndrome. His long-term prognosis remains uncertain so he will require close surveillance to assess for recurrence or metastatic disease.

Patent Urachus in Neonate Requiring Surgical Repair

Nicolle Burgwardt MD, Meaghan Broderick MD, Gerard Weinberg MD, FACS, FAAP
Stamford Hospital

Introduction: Urachal anomalies are uncommon congenital malformations, with patent urachus incidence reported as 1-2 in 100,000 deliveries. Presentation of urachal anomalies can range from abnormal navel appearance, including edematous umbilicus, weeping, and granulomas, to constant drainage of urine. Imaging is required for the definitive diagnosis of a patent urachus. Currently, surgery is the mainstay of treatment for symptomatic urachal anomalies. We present the case of a neonate with a true patent urachus requiring surgical management.

Case Presentation: Our patient was a 0-day-old male born full term from uncomplicated pregnancy, who was found to have an abnormal umbilicus in the delivery room. Prenatal ultrasound had identified an uncomplicated "umbilical cyst." A pediatric surgical consult was called to further evaluate. On abdominal exam, the baby had a 2cm wide mass at the base of the cord, which appeared like a stoma with central lumen, intermittently draining clear fluid. The lumen was cannulated for about 10cm with a feeding tube and additional clear fluid was drained. A bedside contrast study revealed a patent urachus with communication with the bladder dome, and the decision was made to proceed with urachal excision and bladder repair.



Intraoperatively, a 5Fr feeding catheter was used as a urinary catheter, which when placed, protruded from the central lumen observed in the umbilicus. An infraumbilical incision was made and the urachus was dissected free of the abdominal wall and umbilical cord structures, taking care to stay extraperitoneal. The urachal remnant was amputated at the level of the bladder

dome. The bladder dome was repaired in two layers. The umbilical cord was amputated at the level of the abdominal wall, and the defect was circumferentially closed with a purse string suture. Post-operatively, the baby had minimal umbilical drainage. His urinary catheter was removed POD2 and he was discharged home POD3 voiding freely. One month post-operatively, the umbilicus was well healed and VCUg revealed normal appearing bladder with no evidence of persistent urachal defect.

Discussion: The urachus is the embryologic remnant of the cloaca and allantois. The allantois is an extraembryonic diverticulum from the posterior yolk sac and the cloaca is an endoderm-lined structure which divides into the urogenital sinus and rectum. The superior portion of the urogenital sinus develops into the bladder. Its apex forms the bladder dome and is contiguous with the allantois. Both structures involute and elongate into a fibromuscular cord as the bladder descends into the pelvis around the 4th gestational month. This urachal remnant connects the apex of the bladder to the umbilicus, traveling along the extraperitoneal space of Retzius. It contains epithelial, submucosa and muscular layers, is 8-10mm in diameter, and ranges from 3-10cm in length. Urachal remnants are present in almost 100% of neonates and obliterate due to fibrosis, forming the median umbilical ligament. Any degree of obliteration failure may result in a urachal anomaly.

A patent urachus is one of four types of urachal anomalies: urachal fistula (patent urachus), urachal cyst, umbilical urachal sinus, and vesico-urachal diverticulum. There has been an increase in diagnosis of asymptomatic urachal anomalies with the routine use of cross-sectional imaging. Before the increase in incidental diagnoses, approximately 300 symptomatic cases were reported in the literature between 1550-1970. A patent urachus is the most common of the urachal anomalies, accounting for roughly 50%, and its incidence is approximately 1-2 in 100,000 deliveries. A true patent urachus is characterized by free and persistent communication with the bladder leading to urine leakage from the umbilicus. It is rarely asymptomatic. There is a higher prevalence in males, 2:1.

A patent urachus most often presents at birth with urine leakage and associated umbilical abnormalities, including edema, granulomas, and delayed cord stump healing. The differential diagnosis for an umbilical mass in a neonate can range from a pyogenic granuloma to umbilical hernia to urachal anomaly. The presentation of umbilical abnormalities can overlap, making a correct diagnosis crucial for appropriate management. Definitive diagnosis is made with imaging, usually ultrasound or cystography, demonstrating a fistulous connection of the bladder to the umbilicus.

Surgery is the mainstay of treatment for patients with a symptomatic urachal anomaly. There is a small risk of malignant degeneration of the epithelial layer, most often urothelium. The incidence of urachal adenocarcinoma accounts for 0.01% of all cancer in adults. In addition to mitigating this small risk of malignancy, the goal of surgical therapy for a patent urachus is to remove the fistula. This is accomplished by excising the entire urachal remnant, repairing the bladder dome, excising remaining cord structures, and closing of the abdominal wall fascial defect. Our case illustrates that while uncommon, a patent urachus should be considered in a neonate with an umbilical abnormality.

Prolyl-4-Hydroxylase 2 (PHD-2) Inhibition Promotes Pro-angiogenic and Anti-apoptotic Signaling and Preserves Cardiac Function in a Murine Genetic Myocardial Infarction Model

^{1,2}Sue Ting Lim, MD; ¹Pradeep Seetur Radhakrishna, Ph.D.; ¹Mahesh Thirunavukkarasu, Ph.D.; ²J. Alexander Palesty, MD, FACS; ¹Nilanjana Maulik, Ph.D., FAHA

¹Molecular Cardiology and Angiogenesis Laboratory, Department of Surgery, University of Connecticut School of Medicine,

²The Stanley J. Dudrick, Department of Surgery, Saint Mary's Hospital

Introduction: We have previously reported that the stabilization of hypoxic-inducible transcription factor (HIF1- α) by suppressing prolyl-4-hydroxylase enzymes (PHD-1 and PHD-3) results in improved angiogenesis, cardiac function and limb perfusion in murine models. This study explores the inhibitory effects of another prolyl-4-hydroxylase enzyme, PHD-2 in ischemic heart failure. We used mouse cardiac-specific PHD-2 gene knockout model to study its effects on angiogenic factors, cell survivability and cardiac function in myocardial infarction(MI).

Methods: The left anterior descending artery is ligated in 8-12 weeks old wild-type (WTMI) and PHD2^{-/-} mice (PHD2^{-/-}MI) to induce MI. Cardiac function was obtained using echocardiography. Left ventricular tissues were obtained at 4 and 30-days post-MI. Echocardiographic analysis was performed 30-days post-MI followed by immunohistochemistry to determine the extent of fibrosis and vessel growth. Western blot(WB) was performed to determine proangiogenic and anti-apoptotic factors.

Results: Echocardiography at 30-days post-MI shows a greater ejection fraction (52.02±3.2% vs. 27.85±3.12%, p<0.0001) and fractional shortening (26.88 ±1.9% vs. 13.14±1.63%, p<0.0001) in PHD2KO as compared to WT(n=9). WB shows increased HIF-1a (36-fold), VEGF (11-fold), phospho-AKT (4.3-fold), b-Catenin (19-fold) levels along with reduced Bax expression (3.6-fold) and myocardial fibrosis (3.8±1.4% vs. 15.5±5%, p=0.048) in PHD2^{-/-}MI compared to WTMI group(n=6).

Conclusion: Inhibition of PHD2 is cardioprotective as evident by preserved cardiac function, increased expression of angiogenic factors, and reduction of apoptotic markers. Overall, PHD2 gene inhibition is a promising candidate in the management of cardiovascular disease.

The Association between Quadriceps Weakness and Persistent Knee Pain after Total Knee Arthroplasty – A Systematic Review.

Olohirere Ezomo, MPH¹; Kawsu Barry, MD²; Julius Kunte Oni, MD²

1. Frank H. Netter School of Medicine, Quinnipiac University, CT.
2. Johns Hopkins School of Medicine, John Hopkins University, MD.

Importance: Total Knee Arthroplasty (TKA) is one of the most common surgical procedures performed for the definitive treatment of knee osteoarthritis. With more patients undergoing the procedure in recent years, there has been a lot of focus on improving patient outcomes such as postoperative TKA pain and optimizing post-operative functional status. Unfortunately, despite recent technological and surgical technique advances, some patients continue to experience unexplained persistent knee pain after TKA. There are some proposed theories that have sought to explain the association between quadriceps weakness (QW) and persistent knee pain after TKA, with the goal of improving overall patient outcome.

Objective: To examine existing data to 1) present recent knowledge on QW and associated persistent knee pain after TKA and 2) highlight areas for further research.

Methods: We carried out an extensive review of the literature using 3 databases – Google Scholar, PubMed and Scopus from year 2000 – 2020. Inclusion criteria were articles published in peer reviewed journals from 2000-2020 and written in English. Exclusion criteria were book chapters, theses, commentaries, case reports and case series; articles published before year 2000 were also excluded. We compiled and presented data from selected articles to discuss the present state of knowledge with respect to quadriceps weakness and postoperative TKA persistent pain.

Results: Several factors have been discussed in the literature that predict postoperative TKA outcomes, such as preoperative quadriceps weakness and comorbidity status, such as smoking and body mass index (BMI). Reduced muscle activation, usually from pain around the knee joint, has been demonstrated to be central to the mechanism of developing quadriceps weakness both pre-and postoperatively. The reduced muscle activation comes from the acute postoperative knee pain and swelling after TKA. This then leads to quadriceps weakness and if the quadriceps do not gain strength adequately after TKA, could subsequently cause knee instability and persistent knee pain as a long-term sequela. In return, the persistent knee pain can further worsen and lead to chronic quadriceps weakness post TKA. Thus, creating a vicious cycle between quadriceps weakness and persistent knee pain after TKA.

Conclusion: QW is an understudied yet important predictive factor for postoperative TKA pain. Optimization of quadriceps strength could improve persistent knee pain and patient outcomes after TKA

S/N	Study/ Year	Title	Type of study	Result	Conclusion	LOE
1.	Breugem et al/ 2014.	Anterior Knee pain after TKA: What can cause this pain?	Systematic review	Noiceptors around the knee are numerous and activated by abnormal mechanical deformation, soft tissue overloading and stretching.	Further research on the complex interaction of factors causing knee pain after TKA need to be investigated	V
2.	Berth et al/ 2002.	Improvement of voluntary quadriceps muscle activation after TKA	Case control. 50 patients undergoing TKA and 23 healthy controls.	Voluntary quadriceps muscle activation and maximal contraction increased after TKA but remained lower to non-operated side and controls.	Voluntary activation deficits persist 3 years after TKA	IV
3.	Rice et al/ 2010	Quadriceps arthrogenic muscle inhibition: Neural mechanism and treatment perspectives	Systematic review	Arthrogenic muscle inhibition can delay or prevent quadriceps muscle strength recovery for months after TKA. Even though, arthrogenic muscle inhibition reduces over time, quadriceps inhibition often persists for years after TKA	Arthrogenic muscle inhibition's neural mechanism needs to be better understood to help rehabilitation efforts after TKA	V
4.	Kim et al/ 2019	Central sensitization is a risk factor for persistent postoperative pain and dissatisfaction in patients undergoing revision TKA	Case control study	Persistent knee pain post-TKA led to poor patient satisfaction rates. Central sensitization changes the way the central nervous system works, with patients becoming more sensitive to pain. It also predicted pre- and post-TKA persistent knee pain	Central sensitization is a risk factor for persistent knee pain post revision TKA	IV
5.	Gungor et al/ 2019	Incidence and risk factors for development of persistent postsurgical pain following TKA	Cross-sectional/ Observational	Risk of developing persistent postsurgical pain after TKA was 31.3%. African Americans had a higher risk compared to Whites. Higher pre-operative pain scores predict the risk of developing persistent postsurgical pain after TKA	Racial differences and type of peripheral nerve block may play a role in the development of persistent postsurgical knee pain after TKA	VI
6.	Mizner et al/ 2005	Early quadriceps strength loss after TKA: the contributions of muscle atrophy and failure of voluntary muscle activation	Cross-sectional/ Observational	After TKA, quadriceps strength and voluntary activation reduces by 62% and 17% respectively, with reduced voluntary activation and atrophy predicting 85% loss of quadriceps strength one month after TKA. Improved knee pain after TKA did not improve voluntary muscle activation	Pain control alone may not be sufficient to increase muscle strength after TKA	VI
7.	Loyd et al/ 2019	Peripheral nociception is associated with voluntary activation deficits and quadriceps weakness following TKA	Cross-sectional/ Observational	Postoperative quadriceps weakness is significantly explained by deficits in voluntary activation. Knee pressure-pain threshold change was also significantly associated with the change in quadriceps strength and activation	Study lends evidence to a causal pathway between increased knee nociceptor firing and reduced quadriceps activation and strength after TKA	VI
8.	Kim et al/ 2018	The effects of pain on quadriceps strength, joint proprioception and dynamic balance among women aged 65 to 75 years with knee osteoarthritis	Cross-sectional / Observational	Knee extensor muscle strength was lower in osteoarthritic knee compared to the non-osteoarthritic knee at angular velocities of 60 and 180 degrees - 55 vs 63 Nm and 38 vs 45 Nm respectively.	Patients with knee osteoarthritis had weaker quadriceps strength in the painful knee.	VI
9.	Christensen et al/ 2018	Quadriceps weakness preferentially predicts detrimental gait compensations among common impairments after TKA	Cross-sectional/ Observational	Persistent quadriceps weakness after TKA predicts physical performance and knee loading at least 6 months after surgery	Quadriceps femoris strength asymmetry improved over time while residual knee pain and extensor power remained the same	VI
10.	Marmon et al/ 2014	Activation deficits do not limit quadriceps strength training gains in patients after TKA	Randomized Controlled Trial	Pain post TKA contributes to muscle activation deficits but is not a predictive factor for muscle strength gain after TKA	Quadriceps muscle activation does not predict muscle strength 3 months after TKA	III
11.	Paravlic et al/ 2018	Neurostructurel correlate of strength decrease following TKA: A systematic review of the literature with meta-analysis.	Meta-analysis	Change in voluntary muscle activation accounted for 39% of change in quadriceps strength of the operated leg after TKA. Maximal voluntary contraction strength of the quadriceps starts to recover after 1.5 months post TKA and returned to pre-operative values about 33 months post TKA	Other neurological mechanisms such as antagonistic hamstring activation may be contributory to quadriceps weakness after TKA	I
12.	Breugem et al/ 2014	No difference in anterior knee pain between a fixed and a mobile posterior stabilized TKA after 7.9 years	Randomized Controlled Trial	13% of posterior stabilized fixed patients experienced persistent anterior knee pain compared to 17% for the posterior stabilized mobile cohort after 6-10 years of follow up. However, the difference was not significant. Persistent anterior knee pain after TKA significantly affects the daily activities that patients can perform after TKA	Fixed or mobile implants had no predictive value on the incidence of persistent knee pain post TKA on the long term	III
13.	Breugem et al/ 2008	Less anterior knee pain with a mobile bearing prosthesis compared with a fixed bearing prosthesis	Randomized Controlled Trial	18.9% of posterior stabilized fixed patients experienced persistent anterior knee pain compared to 4.3% for the posterior stabilized mobile cohort after 1 year of follow up. Both cohorts had similar postoperative improvement in functionality and range of motion of the patients	Posterior stabilized mobile bearing was associated with lower incidence of anterior knee pain 1-year post TKA	III