

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 IV Radiation-Induced Osseous Metaplasia of the Breast: A Rare Anomaly Following
 Indoor Versus Outdoor Occupational Exposure and Cutaneous Melanoma Risk: A
 Does pancreatitis on imaging matter? The Risk of Adenocarcinoma in Situ in Pati
 Sex-based Differences in Age at Diagnosis of Melanoma Among Patients in the V
 Small bowel obstruction from Urothelial carcinoma metastasis: A rare presentati

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 Commu
 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: Retr
 : Impact of the Affordable Care Act on Management of Ankle Fractures - A Nati
 Global Deletion of Pellino-1 Triggers Cardiac Dysfunction, Cell Death and Increas

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 Ileoanal J-p
 Outcomes of Robotic-Assisted versus Laparoscopic Cholecystectomy – Experienc
 Effects of COVID-19 Pandemic on Cholecystectomies Performed in a Community

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-Patell
 Reduction Mammoplasty Performed to Treat Chronic Headaches in a Patient wit

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
 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 Par

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 Cardiomy
 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 Anticc
 Incidence and Short-Term Outcomes of General Surgeons Performing Elective M
 Incidence of patients on psychiatric medications and their outcomes following el

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

Alexander Ostapenko Dr	Danbury Hospital
Josh Sznol 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 ri
 Adverse Impact of Ascites on Outcomes of Open Inguinal Hernia Repair in the Ur
 Is Patient Sex Associated with Surrogate Consent for Surgical Intervention?
 Assessing the Accuracy of the American College of Surgeons' Surgical Risk Calcul
 A Descriptive Analysis of Older Adult Patients who Underwent Surgery Based on
 Effects of Physician Education on the Identification of Moderate and Severe Mal
 Bearing of BMI on Surgical Outcomes After Ostomy Reversal-NSQIP Analysis
 Role of Ablation Therapy in Conjunction with Surgical Resection for Neuroendoc

Concord - Surgical Subspecialties- Hosted by the CTACSPA

Austin Alecxi 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 NORMAI
 Esophageal Stenosis Secondary to Cavitory Lesions: A Unique Presentation of Dy
 Neoadjuvant radiation therapy prior to a pancreaticoduodenectomy for adenoc
 Pancreatic Paraganglioma and Hyperparathyroidism in a Patient with RET Gene \
 Patent Urachus in Neonate Requiring Surgical Repair
 Prolyl-4-Hydroxylase 2 (PHD-2) Inhibition Promotes Pro-angiogenic and Anti-apo
 The Association between Quadriceps Weakness and Persistent Knee Pain after T

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

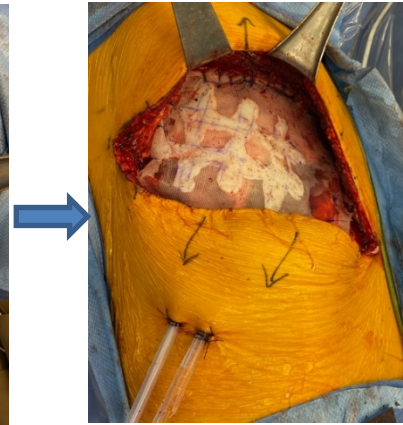
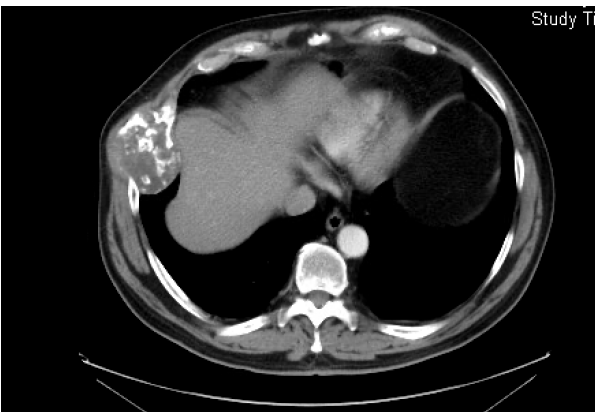
1. Dept of Surgery, Thoracic Service, Memorial Sloan Kettering Cancer Center, New York, NY
2. Stanley J. Dudrick Department of Surgery, Saint Mary's Hospital, Waterbury, CT

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

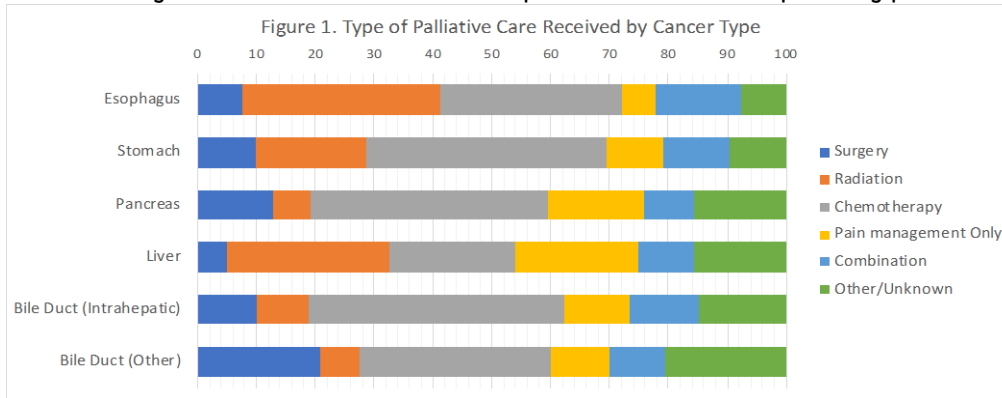
Daniel Kerekes MD*, Alexander Frey MD*, Danielle Heller MD, Vadim Kurbatov MD, Robert D. Becher MD MS, Sajid A. Khan MD FACS Yale School of Medicine. *These authors contributed equally to this work.

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.

References

1. Byard, R.W. and Thomas, M.J. (1988). Osseous Metaplasia with Tumors: A Review of 11 Cases. *Annales de Pathologie*, 8, 64-66.
2. Patil, S., Narchal, S., Paricharak, D., & More, S. (2013). Endometrial osseous metaplasia: case report with literature review. *Annals of medical and health sciences research*, 3(Suppl 1), S10-S12.
3. Gonzalez-Licea A., Yardley J.H., Hartman W.H. (1967). Malignant tumor of the breast with bone formation. *Cancer*, 20, 1234-1247.
4. Smith B.H., Taylor H.B. (1969) The occurrence of bone and cartilage in mammary tumors. *Am. J. Clin. Pathol*, 51, 610-618.
5. Jernstrom P., Lindberg A.L., Meland O.N. (1963). Osteogenic sarcoma of the mammary gland. *Am. J. Clin. Pathol*, 40, 521-526.
6. France C.J., O'Connell J.P. (1970). Osseous metaplasia in the human mammary gland. *Arch. Surg*, 100:238-239.
7. Spagnolo, D. V., & Shilkin, K. B. (1983). Breast neoplasms containing bone and cartilage. *Virchows Archiv. A, Pathological anatomy and histopathology*, 400(3), 287-295. <https://doi.org/10.1007/BF00612190>
8. Christensen, L. G., Di Caterino, T., & Talman, M. L. (2019). Phyllodes tumor with a benign heterologous osseous component: a diagnostic challenge. *APMIS : acta pathologica, microbiologica, et immunologica Scandinavica*, 127(6), 484-488.
9. Pierce LJ, Lippman M, Ben-Baruch N, Swain S, O'Shaughnessy J, Bader JL, Danforth D, Venzon D, Cowan KH. The effect of systemic therapy on local-regional control in locally advanced breast cancer. *Int J Radiat Oncol Biol Phys*. 1992;23(5):949-60. doi: 10.1016/0360-3016(92)90899-s. PMID: 1639655.
10. Sheldon, T.; Hayes, D. F.; Cady, B.; Parker, L.; Osteen, R.; Silver, B.; Recht, A.; Come, S., Henderson, C.; Harris, J. Primary radiation therapy for locally advanced breast cancer. *Cancer* 60:1219-1225;1987.
11. Spanos, W. J., Jr, Montague, E. D., & Fletcher, G. H. (1980). Late complications of radiation only for advanced breast cancer. *International journal of radiation oncology, biology, physics*, 8(11), 1473-1476. [https://doi.org/10.1016/0360-3016\(80\)90002-4](https://doi.org/10.1016/0360-3016(80)90002-4)
12. Virchow R. 1st ed. Hirschwald; Berlin: 1863. Die Krankhaften Geschwulste.
13. Baskar, R., Dai, J., Wenlong, N., Yeo, R., & Yeoh, K. W. (2014). Biological response of cancer cells to radiation treatment. *Frontiers in molecular biosciences*, 1, 24. <https://doi.org/10.3389/fmolb.2014.00024>

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.

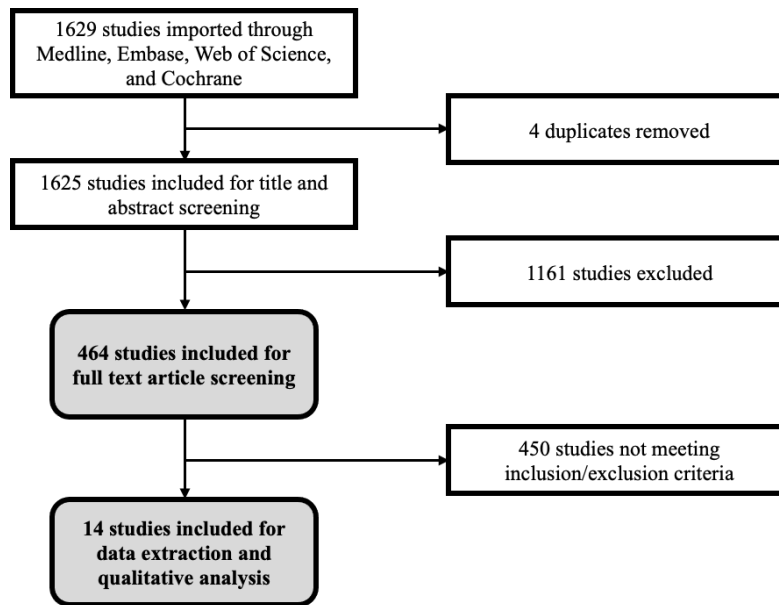
1. Department of Surgery, Yale School of Medicine, New Haven, Connecticut
2. Yale University, New Haven, Connecticut

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.

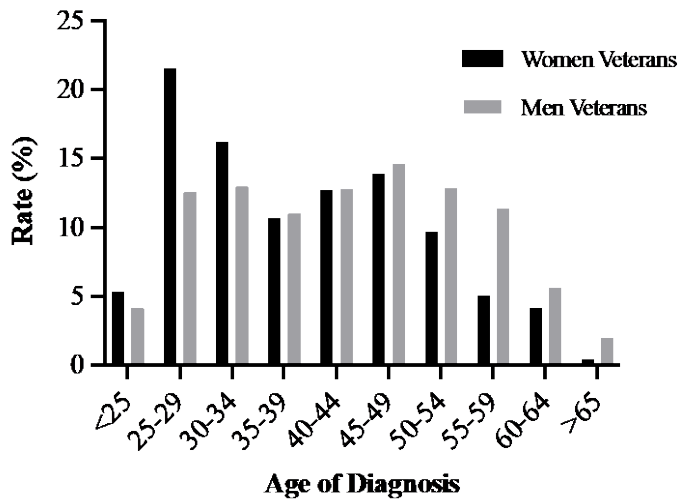
METHODS: We identified all patients treated at VA facilities whose medical records included any diagnosis code for melanoma from 2002 – 2017, using the Women Veterans Cohort Study (WVCS). This VA database identifies those who served during the Iraq and Afghanistan conflicts (OIF/OEF/OND). The principle 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

References

- Blasberg JD, Schwartz G, Mull JA, Moore E. Isolated bladder metastasis causing large bowel obstruction: a case report of an atypical presentation of intussusception. *Cases J*. 2009;2:7124. Published 2009 Jun 11. doi:10.4076/1757-1626-2-7124
- Hoshi A, Tokunaga M, Usui Y, Yamashita H, Sasaki H, Kobayashi Y, Shima M, Miyakita H, Terachi T. Metastatic small intestinal tumor associated with transitional cell carcinoma: a report of 2 cases and review of cases in Japan. *Hinyokika Kiyo*. 2005 Jan;51(1):41-4. Japanese. PMID: 15732341.
- Ii, Y., Munakata, S., Honjo, K. *et al*. Rectal metastasis from bladder urothelial carcinoma: a case report. *surg case rep* **7**, 100 (2021). <https://doi.org/10.1186/s40792-021-01186-8>
- Makarawo T, Phillips J, Eaton J, Kondratowicz G. Sarcomatoid bladder carcinoma: A rare presentation of small bowel metastatic disease. *Int J Case Rep Images*. 2012;3:16–19.
- Shinagare AB, Ramaiya NH, Jagannathan JP, Fennessy FM, Taplin ME, Van den Abbeele AD. Metastatic pattern of bladder cancer: correlation with the characteristics of the primary tumor. *AJR Am J Roentgenol*. 2011 Jan;196(1):117-22. doi: 10.2214/AJR.10.5036. PMID: 21178055.
- Singh S, Ranjan R, Sharma N. Small bowel intussusception due to metastatic bladder carcinoma. *Indian J Urol*. 2014;30(4):445-447. doi:10.4103/0970-1591.134236