Specialty Surgery

Moderator: Alan Meinke, MD, FACS, Nuvance Health Norwalk

Judge: Royd Fukumoto, MD, FACS, Nuvance Health Danbury

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Can Left Colectomy Become a One Day Procedure? Retrospective Outcomes of Sigmoidectomy and Left Hemicolectomy with Colo-rectal Anastomosis - with and without NICE Approach (Preliminary Data)

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Introduction: In the years since Semm and Mouret performed the first laparoscopic surgeries, advancement in minimally invasive surgery has evolved rapidly. What was once novel in laparoscopic surgery is now recommended as the standard approach by surgical societies such as ASCRS to treat diseases such as colorectal malignancy, diverticular disease and rectal prolapse among others, and for good reason. Robotic and laparoscopic colectomy has shown clear benefits in post-operative pain and hospital length of stay, among other outcomes, when compared with open colectomy. At the same time, ERAS protocols have shown great efficacy in GI surgery when it comes to pain, early return of bowel function and other quality measures. However, even as minimally invasive surgery and perioperative care advances rapidly, colectomy as a one day surgery (ODS) or even same day discharge (SDD) is a novel concept with little literature exploring the subject. We hypothesized that well-selected patients successfully undergoing minimally invasive left sided colectomy, specifically left hemicolectomy or sigmoidectomy with colorectal anastomosis with or without rectopexy, can safely be discharged within 24 hours and even, in select cases, on the same day as surgery.

Method(s): retrospective single institution cohort study evaluating 108 patients who underwent minimally invasive left sided colectomy with anastomosis from January 2021 – April 2024. The primary outcome was time to discharge. Secondary outcomes included, but were not limited to, patient characteristics (Sex, age, ASA score, BMI, comorbidities, surgical indication), characteristics of operation (type of surgery, procedure length, drain placement, blood loss, ureteral stent placement, procedure length sub stratified by indication and post-operative outcomes (pain scores at 6, 12, and 24 hrs, toradol use, bowel function, morphine equivalents, length of stay, readmission rate, and complications). All the above were also analyzed when comparing a ‘traditional approach’ (utilizing an extraction incision for specimen removal along with stapled end-to-end anastomosis) and a ‘NICE’ (natural orifice intracoporeal anastomosis with trans-rectal extraction) technique.

Results: 102 patients were included, 6 patients were excluded for either non elective surgery or conversion to an open approach. No differences were present between patient characteristics between the traditional or NICE approach groups. No differences in pain control between the 2 groups were observed. Toradol use was not associated with an increase in complications in either group. The most common complication was urinary retention and ileus. The NICE approach was associated with a decreased length of stay. When adjusting for confounders such as time to void after urinary catheter removal (A variable that was adjusted as a protocol was adjusted during the study), many patients were discharged within 24 hrs and without bowel function. There was less bowel function before discharge in the NICE group. The traditional approach was associated with increased incisional hernia rates, although follow up for the NICE group was shorter.

Conclusion(s): We continue to evaluate protocols to facilitate safe early discharge for patients undergoing uncomplicated minimally invasive left sided colectomy. Early data is reassuring and suggests that properly selected patients may be able to be safely discharged within 24 hrs of admission.

Impact of the COVID-19 Pandemic on Diagnosis, Management, and Outcomes of Thoracic Outlet Syndrome

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Introduction: Thoracic Outlet Syndrome (TOS) patients often experience a delay in referral to Vascular Surgery and to intervention. Healthcare system changes during the COVID-19 pandemic, including virtual appointments and postponement of elective cases, saw a decrease in referrals to Vascular Surgery, but it is unclear how these changes affected patients with TOS. We assessed the impact of the pandemic on time to consult, time to intervention, and outcomes in patients with TOS.

Method(s): We performed a retrospective review of patients ≥ 18 years old who underwent scalenectomy or first or cervical rib resection for TOS from August 2013 to October 2023. Data were extracted from the electronic medical record. Type of TOS, referral source, and outcomes measures including operations performed, post-operative symptoms, and need for long-term physical therapy were collected. Institutional postponement of elective surgery began March 17, 2020. Analysis was performed using SPSS v29. Significance was set at $p < 0.05$.

Results: Ninety-nine patients met inclusion criteria. Pre-pandemic median time from referral to consult was 6.5 days (IQR 4.0 - 33.0) vs 20.5 days post-pandemic (6.0 - 47.0, $p = 0.054$). The pre-pandemic time from consult to intervention was 30.0 days (6.3 - 85.5) vs. 58.0 days post-pandemic (15.8 - 164.0, $p = 0.065$). There was no significant change in the level of post-op function ($p = 0.099$), return-to-work time ($p = 0.714$), or need for long-term physical therapy ($p = 0.133$). However, post-pandemic patients reported a lower 30-day QuickDASH score (37.6 vs 40.9, $p < 0.001$). Neurogenic TOS patients had a lower risk of post-operative complications than Venous patients (OR 0.0; 95%CI: 0.0-0.7, $p = 0.030$). A higher proportion of referrals were generated by Primary Care Providers since the pandemic (27.7% vs 9.6%, $p = 0.028$).

Conclusion(s): Patients with TOS trended towards longer time to consultation and time to decompressive surgery after COVID-19, although these differences were not significant. Surgical outcomes were similar pre- versus post-pandemic. Increased referrals from primary care may reflect an increase in outpatient care and community TOS awareness. Improvement in QuickDASH Score demonstrates effective care of patients with TOS including virtual access to resources like specialized Physical Therapy.

Outcome	**Pre-pandemic**	**Post-pandemic**	**Significance**
Time to consult	6.5 days	20.5 days	0.054
Time to intervention	30.0 days	58.0 days	0.065
Post-op function			0.508
Tasks without pain	19 (39.6%)	13 (29.5%)	
Tasks with pain	24 (52.1%)	25 (56.8%)	
Unable to complete tasks	4 (8.3%)	6 (13.6%)	
Return-to-work	84.0 days	90.0 days	0.714
30-day QuickDASH	40.9	37.6	< 0.001

Appraisal of the Impact of the Race-Neutral Estimated Glomerular Filtration Rate Waiting Time Modifications on Transplant Wait Time and Outcomes for Black Kidney Candidates: Importance of Transplant Readiness on the Waitlist

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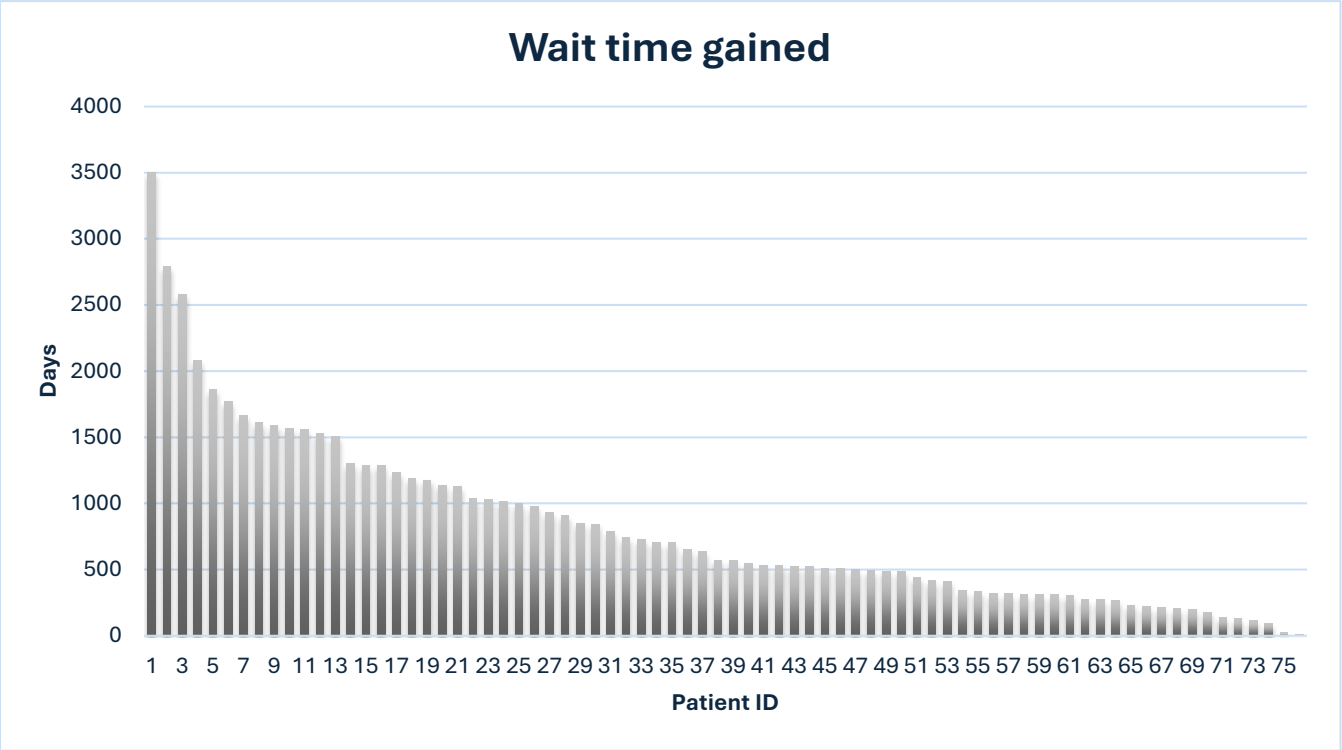
Introduction: In July 2022, the Organ Procurement Transplant Network (OPTN) mandated race-neutral eGFR calculations, replacing historic race-based estimates. Subsequently, this change required transplant programs to identify kidney transplant (KT) candidates who could have benefitted from an earlier waitlist qualification date using race-neutral calculations.

Method(s): This retrospective study analyzed Black patients listed for KT between 2000 and 2023, recalculating their eGFR using race-neutral formulas. KT recipients with modified waiting times (N=26) were compared to two control groups: Black patients without modifications (N=21) and non-Black patients (N=89). Postoperative outcomes, including complications and readmission rates, were analyzed across groups.

Results: Of 126 Black patients evaluated, 60.3% qualified for waiting time modifications, with a median gain of 570 days (12 to 3,500 days) totaling 62,057 days. Within six months, 26 patients (34%) received a KT, mostly from deceased donors (92%) with a median KDPI of 66. Black patients with modifications had significantly higher BMI, diabetes, and peripheral vascular disease compared to controls. Readmission rates were higher among Black patients with modifications, though no significant differences in graft loss or mortality were observed.

Conclusion(s): Race-neutral eGFR recalculations substantially improved waiting time for Black KT candidates, addressing historical disparities. However, higher comorbidities and readmissions among these patients suggest the need for thorough readiness evaluations for waitlist activation.



TransCarotid Artery Revascularization: The Role of Intravascular Ultrasound

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Introduction: Intravascular Ultrasound (IVUS) has been utilized as an imaging modality to enhance procedural precision and outcomes in various endovascular procedures. In standard TransCarotid Artery Revascularization (TCAR), fluoroscopy has been utilized to visualize carotid lesions and guide stent placement. Introducing IVUS in TCAR provides real-time, high-resolution cross-sectional images, allowing for accurate assessment of plaque morphology, luminal dimensions, and vessel architecture. The aim of this study was to analyze the outcomes of TCAR utilizing IVUS and to assess the benefits of this imaging modality.

Methods: We report a cohort of 42 patients who underwent TCAR from February, 2022 to May, 2024. We routinely use IVUS during TCAR. Post stent angioplasty, amount of contrast use, fluoroscopy time, flow reversal time, TCAR procedure time, along with postoperative ipsilateral stroke and myocardial infarction were studied.

Results: 35.7% of patients (15/42) had symptomatic carotid stenosis. 66.7% of the patients (28/42) underwent post stent angioplasty due to residual stenosis and poor apposition. The average contrast needed for TCAR was 5.5ml (2 – 14ml). The average fluoroscopy time required was 9.66 minutes (3 – 17minutes). Flow reversal time was averaged at 18.29 minutes (10 – 57 minutes). The average TCAR procedure time was 84.67 minutes (56 – 150 minutes) Arterial dissection was detected in 4.8% of the patients (2/42) and was treated by additional stent extension. 2.4% of the patients (1/42) had a non-debilitating ipsilateral stroke within 30 days post TCAR. None of the patients experienced postoperative MI within 30 days.

Conclusion: Routine IVUS during TCAR does not increase periprocedural stroke rate. Detailed visualization aids in the optimal selection and deployment of stents, ensuring proper apposition and reducing the risk of complications. It also minimizes contrast usage and decreases the associated risk of stroke secondary to air embolization. It allows earlier detection of suboptimal stent deployment, residual vessel stenosis and arterial dissection.

Left axillary artery access: a safe approach to peripheral arterial disease interventions in the OBL

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Introduction: Endovascular treatment of peripheral arterial disease (PAD) is commonly performed in the out-patient based lab (OBL). Common femoral artery (CFA) and pedal access are well described. Femoral and pedal access may not be suitable in the OBL due to anatomical factors that increase the risk of limb- or life-threatening complications. The use of left infraclavicular axillary artery (LICA) access is reported for treatment of aortic aneurysms. The advantages of LICA access include its accessibility with ultrasound (US), LICA is often disease-free, and patients can be positioned upright post-operatively for easier monitoring. Access complications have an immediate endovascular treatment option. We present our experience using LICA as alternative access for the treatment of iliac, CFA, and femoral/popliteal PAD.

Methods: Patients underwent US-guided access of the lateral portion of the LICA and heparinization. Diagnostic angiography was performed. The descending thoracic aorta was cannulated and the planned vascular bed was targeted. Treatment was decided by the surgeon. Access sites were closed with either Mynx™ or Kelt™. We analyzed success of target lesion revascularization (TLR), symptomatic relief, procedure time, and recovery time. Reported complications include presentation to the hospital within 30 days, neurological complications, access site bleeding, emergent transfer from OBL to hospital, and left upper extremity ischemia.

Results: There were 17 OBL patients who underwent 18 procedures from October 2022 through April 2024. The mean age was 80.2 years, 64.7% were female; comorbidities were 100% HTN, 100% HLD, 44.4% DM, 83.3% current/former smokers. Target lesions were 27.7% iliac, 5.5% CFA, 11.1%, femoral/popliteal, and 16.6% diagnostic. TLR was successful in 88.8% of cases. Two patients had untreatable iliac occlusions so contralateral iliac was stented for planned femoral-femoral artery bypass. 94.1% of patients experienced symptomatic relief. Of the 18 procedures, 33.3% were stented, 27.7% received atherectomy/stenting, 22.2% received atherectomy/balloon angioplasty, and 16.6% were diagnostic. 82.3% of cases utilized a 6F closure device; 17.6% utilized 5F. Average procedure time was 86.5 minutes; average recovery time was 129.1 minutes. There was one patient who returned to the hospital within 30 days for skin bleeding.

Conclusions:
LICA access is a suitable access site that has a high rate of success and low complication rate in the OBL. However, the lesions are limited to above the knee due to device working length.

Patient Demographics	
Total Patients = 17	
6 M (35.2%)	
11 F (64.7%)	
Mean age 80.2	
Medical History	
ESRD	1 of 18 (5.5%)
HTN	18 of 18 (100%)
DM	8 of 18 (44.4%)
CAD	3 of 18 (16.6%)
Smoking	15 of 18(83.3%)
AC?	18 of 18 (100%)
HLD	15 of 18 (83.3%)
COPD	3 of 18 (16.6%)

Table 1. Patient demographics undergoing PAD treatment via LICA access

Procedure Parameters	
Intervention Type	
Diagnostic	3 of 18 (16.6%)
Stenting	6 of 18 (33.3%)
Atherectomy/stent	5 of 18 (27.7%)
Atherectomy/angioplasty	4 of 18 (22.2%)
Treatment Beds	
Iliac	5 of 18 (27.7%)
CFA	1 of 18 (5.5%)
Femoral/popliteal	2 of 18 (11.1%)
Multiple vessel beds	7 of 18 (38.8%)
Other (diagnostic)	3 of 18 (16.6%)
Average Procedure time	86.5 mins
Average Recovery time	129.1 mins

Table 2. Intervention types and treatment beds via LICA access

Outcomes	
Symptomatic relief	16/17
Complications	
Neurological Complications	0/17
Presentation to Hospital in 30 days	1/17
Access site bleeding	0/17
Emergent transfer to hospital	0/17
LUE ischemia	0/17

Table 3. Procedure outcomes and complications following LICA

Uncovering Disparities and Trends in Lung Cancer Screening Based on Patient Race and Insurance Status

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Introduction: Recognizing disparities in lung cancer screening by patient race and insurance status is crucial for advancing public health equity. This enables targeted interventions, addressing disproportionate risks and access barriers faced by certain demographic groups. Understanding differences in access facilitates tailored lung cancer screening programs, optimizing resource allocation and outcomes. Identifying patterns in screening across different racial and insurance groups helps providers implement strategies to ensure equitable access to detection and treatment.

Methods: A prospectively collected and maintained Lung Cancer Screening Dashboard from a large Northeast hospital system electronic-medical record database retrospective review was performed. Patient insurance status (Medicare, Private Insurance, Medicaid, self-pay or worker's compensation, Other) and race (White, Black/African American, Asian, Other, None of the Above) for all adult screening chest computed tomography (CT) scans ordered between Jan 1st, 2018 to March 9th, 2024 were collected and evaluated for growth trends. Predictive measures were used to estimate projections for the remainder of 2024, whereas growth calculations used 2023 data as that was the most recent full calendar year.

Results: Overall growth and increased lung cancer screening adoption was seen over the study period with a total of 1,317 scans in 2018 verses 5,014 scans in 2023. Most screening CT scans are performed through Medicare (57.3% in 2023), followed by Private Insurance (21.38%) and Medicaid (19.6%). In the study period, White patients with Medicare were more likely to be screened for lung cancer than other ethnicities (77.5% Medicare in 2023). Interestingly, Black Medicare patients experienced the greatest increase in screening scans with a 4.5-fold increase between 2018 and 2023 vs 3.5-fold increase among White Medicare patients. Increases in screening were similar among Medicaid patients, White (3.9-fold increase) and Black (3.8-fold increase), whereas Black Private Insurance patients saw a notable increase in screening scans (6.7-fold increase) vs White (3.3-fold increase). Since 2020, an increasing number of African Americans have received lung CT screenings.

Conclusion: Increased lung cancer screening among White patients accounts for a disproportionate share of the increases in lung cancer screening. Screening outreach efforts should focus on Black and other patient populations for more equitable use of this important health service. Recognizing trends in lung cancer screening informs policymaking, driving initiatives to address systemic inequities in healthcare delivery. Acknowledging and addressing disparities in lung cancer screening empowers healthcare systems to deliver more equitable and effective care, reducing the burden of disease on vulnerable populations.

Revascularization of Superior Mesenteric Artery with Flow Reversal in Replaced Common Hepatic Artery in Chronic Mesenteric Ischemia

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Introduction: This is a unique case and angiographic finding in which superior mesenteric artery (SMA) with a replaced common hepatic artery (RCHA) was revascularized for treatment of chronic mesenteric ischemia (CMI), resulting in resolution of flow reversal within RCHA.

Case Description: A 66 year old man with recurrent post-prandial pain and developmental delay was found to have chronic, calcified occlusion of SMA after multiple presentations. Our endovascular treatment was to carefully cross the SMA with the aid of a torqueable sheath. After serial dilation, the takeoff of the RCHA was marked with intravascular ultrasound (IVUS) and excluded from our balloon expandable stent graft, followed by post-dilatation with the Shockwave L6™ lithotripsy balloon. It was noted that retrograde RCHA flow reconstituted the occluded SMA and reversed to antegrade following stenting. The patient recovered uneventfully and was discharged same day on Plavix. On follow-up, he was found to have resolution of post-prandial abdominal pain. Repeat duplex at six months showed the SMA stent to be widely patent.

Discussion: This case highlights the importance of knowledge of anatomical variation in revascularizing the SMA with RCHA, with the latter serving to maintain the patency of the SMA. Flow within RCHA was noted to be retrograde preoperatively and was reversed following SMA stenting. This phenomenon and angiographic finding has not been previously described in literature. Our patient's liver function tests were normal preoperatively, indicating that liver perfusion did not rely on the RCHA. IVUS was used to safely mark and spare the RCHA, supporting its use in accurate device deployment in unique and challenging anatomy.

Conclusion: This case presents a unique vascular challenge and angiographic finding for treatment of CMI. SMA stenting required the use of IVUS to ensure sparing of the RCHA, underscoring the importance of knowledge of the variation in hepatic artery anatomy during the planning of vascular intervention. The lack of antegrade perfusion in the RCHA had no implication in LFT and served to reconstitute the SMA past its occlusion.

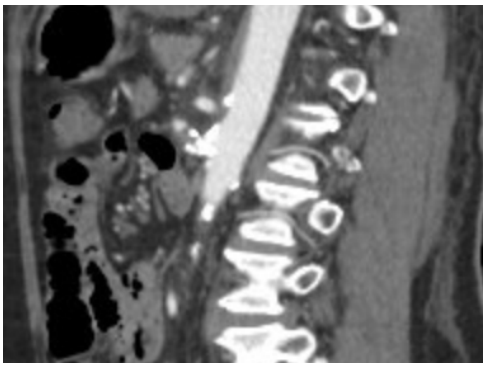

Figure 1: CTA demonstrating occlusion and calcification of

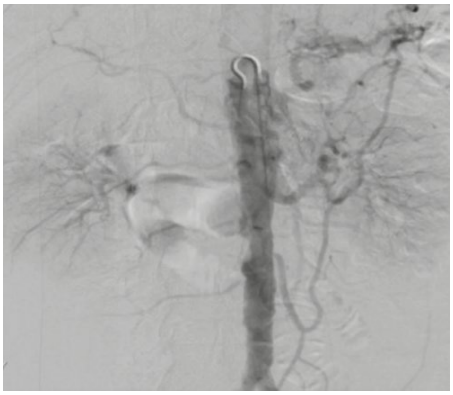

Figure 2: Catheter-Directed Wire Access into SMA

Figure 3: Deployment SMA Stent with Reversal of Flow into RCHA

Use of the CELT Device in the Brachial Artery: Initial Experiences From a Tertiary Care Center

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Introduction: The standard of care for brachial artery (BA) closure after angiographic procedures is manual compression. Although various plug-based vascular closure devices have been developed for use in groin access sites, they are not as commonly adopted in the BA given the relative proximity of the artery to the skin surface. The CELT ACD (Vasorum Ltd.) is a novel implant that could potentially address this limitation as it uses 2 permanent stainless-steel implants to compress the arteriotomy to achieve hemostasis. The use of this device in the BA has not been well studied. We report our experiences at our institution.

Methods: We designed a retrospective, single-center study examining all patients who underwent angiographic procedures via the BA between September 2022 and April 2024 (18mos) in which the CELT device was utilized. Primary outcomes included overall perioperative complication rate and device failure requiring open repair of the brachial artery. Secondary outcomes included post-anesthesia care unit (PACU) length of stay and 30-day complications rate.

Results: CELT devices were placed in the brachial arteries of 8 patients on 11 separate occasions. Two patients had multiple interventions via the BA during the 18-month period of study, with one having 3 CELT placements and the other having 2 placements. In 8/11 (72.7%) procedures, the CELT device was placed in a male patient. The average age and BMI for the 8 patients were 71.7 years and 24.9, respectively. Arterial closures with 5 Fr and 6Fr CELT closure devices were each utilized in 5 procedures and a 7 Fr device in one (9.1%) procedure. Of the 11 CELT devices placed, 1 failed requiring open exposure and repair of the BA, and 1 resulted in a small hematoma that was managed with manual compression only. Neither of the 2 patients with multiple CELT placements had any device-related complications**.** Average PACU length of stay was 107 minutes. 4 patients (50%) had a re-admission within 30 days, but none were related to the CELT device

Conclusion: In our initial experience, the CELT device appears to have low complication rates when used in the brachial artery and maintains the short recovery period described in the literature. Further studies with larger sample sizes are needed to confirm our findings and to compare its efficacy to other methods for brachial artery closure.