E-138 SAFETY AND FEASIBILITY OF TRANSRADIAL APPROACH FOR CERVICAL CAROTID STENTING FOR TREATMENT OF CAROTID-ARTERY STENOSIS

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Background Traditionally, cervical carotid artery stenting is done through transfemoral or transcarotid approach. However, access site bleeding remains a significant challenge in both techniques, with a rate of about 4% in recent studies. In this study, we explore the feasibility of using transradial approach for cervical carotid stenting as a potential alternative.

Methods We collected data from the prospectively maintained registries of 6 centers in the United States to include consecutive patients who underwent carotid stenting for treatment of symptomatic carotid-artery stenosis using transradial approach from October 2018 until June 2019. Collected data included baseline characteristics, procedural variables, whether there was a crossover to transfemoral access, and complications. Our primary outcome was the complication rate related to the access site.

Results A total of 19 patients were included in this study. Mean age was 68.6 (±8), and 5 (26.3%) were females. The right radial artery access was used in all cases. Stenting of the right cervical internal carotid artery was done in 15 (78.9%) of the cases. Regarding the antispasmodic regimen used, Verapamil was used in 2 cases, Nitroglycerin was used in 6 cases, and a combination of both was used in 11 cases. Between 2000–5000 units of heparin were administered intraarterially or intravenously immediately after obtaining the access. A 6-French sheath was used in 13 cases, a 7-French sheath in 3 cases, and in 3 cases, the guide catheter (AXS Infinity, Stryker, USA) was exchanged over a 7-French sheath. Regarding guide catheters used, Benchmark (Penumbra, USA) was used in 14 cases, AXS Infinity in 3 cases, and Envoy (Codman Neuro, USA) in 2 cases. Mean contrast dose required was 93.3 (±48.4), radiation exposure was 14603 (±26118) mGy, and procedure duration was 24.6 (±14.2) min. None of the included patients had a complication related to access site, and only one patient required a crossover to transfemoral approach because of a device-related complication.

Conclusion Transradial approach is a feasible and safe option for cervical carotid stenting. The complication rate in our study is lower than previously reported numbers for transfemoral and transcarotid carotid stenting, but larger-scale studies are needed to confirm our findings.

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E-139 ENDOVASCULAR TREATMENT OF ANTERIOR CRANIAL FOSSA FISTULAS: THE SIGNIFICANCE OF RETROGRADE TRANSVENOUS APPROACH

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Purpose Anterior cranial fossa (ACF) Dural arteriovenous fistulae (DAVFs) are infrequent lesions, and usually treated by surgical disconnection or endovascular embolization via the ophthalmic artery. The retrograde transvenous route is a rarely used approach. This paper describes our experience in terms of safety and efficacy of embolization of DAVF of the anterior cranial fossa with different embolic agents through the venous side.

Materials and Methods Between September 2016 and January 2020 a retrospective review was performed. A total of 10 patients with DAVF of the anterior cranial fossa managed with embolization through the venous side with Onyx/PHIL were selected. Information on demography, symptoms and signs, angiographic examinations, interventional treatments, angiographic and clinical results, and follow-up was collected and analyzed.

Results Nine patients were included in this study, patients were between 14 and 79 years old (mean 45.6). Six primarily presented with intracranial hemorrhage. All fistulas were fed by the bilateral ethmoidal arteries arising from the ophthalmic artery and by the anterior branch of the middle meningeal artery. One case with history of type D CCF. The abnormal shunt drained into the superior sagittal sinus with interposition of the cortical veins in all nine patients. All of the cases had high-grade Cognard classifications (III-IV). 4(44%) patients had been treated via trans arterial embolization (TAE) via the AEA of the OA. All cases were treated via transvenous embolization (TVE), 8 of 9 (88%) were treated with the trans-SSS approach. Complete angiographic cure was achieved in all patients, without postprocedural complications. There were nearly no symptoms among the patients during follow-up.

Conclusion Embolization of DAVF of the anterior cranial fossa via retrograde using transvenous approach with embolic agents is safe, effective, and a good choice for management of this rare condition. Endovascular treatment (EVT) can completely obliterate the fistula point and correct the venous shunting. More cases are needed to verify these findings.

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E-140 EFFECT OF BODY MASS INDEX ON PERIOPERATIVE OUTCOMES IN MINIMALLY INVASIVE TRANS-KAMBIN POSTERIOR OBLIQUE LATERAL LUMBAR INTERBODY FUSION VERSUS OPEN FUSIONS: A MULTIVARIANT ANALYSIS

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Background Obesity is an increasing public health concern associated with increased perioperative complications and

expense in lumbar spine fusions. While open and mini-open fusions such as transforaminal lumbar interbody fusion (TLIF) and minimally invasive TLIF (MIS-TLIF) are more challenging in obese patients, new MIS procedures like oblique lateral lumbar interbody fusion (OLLIF) may improve perioperative outcomes in obese patients relative to TLIF and MIS-TLIF.

Purpose The purpose of this study is to determine the effects of obesity on perioperative outcomes in OLLIF, MIS-TLIF, and TLIF.

Study Design This is a retrospective cohort study.

Patient sample We included patients who underwent OLLIF, MIS-TLIF, or TLIF on three or fewer spinal levels at a single Minnesota hospital after conservative therapy had failed. Indications included in this study were degenerative disc disease, spondylolisthesis, spondylosis, herniation, stenosis, and scoliosis.

Outcome Measures We measured demographic information, body mass index (BMI), surgery time, blood loss, and hospital stay.

Methods We performed summary statistics to compare perioperative outcomes in MIS-TLIF, OLLIF, and TLIF. We performed multivariate regression to determine the effects of BMI on perioperative outcomes controlling for demographics and number of levels on which were operated.

Results OLLIF significantly reduces surgery time, blood loss, and hospital stay compared to MIS-TLIF, and TLIF for all levels. MIS-TLIF and TLIF do not differ significantly except for a slight reduction in hospital stay for two-level procedures. On multivariate analysis, a one-point increase in BMI increased surgery time.

Conclusions Obesity is associated with increased surgery time and blood loss in TLIF and with increased surgery time in MIS-TLIF. Increased surgery time may be associated with increased perioperative complications and cost. In OLLIF, BMI does not affect perioperative outcomes. Therefore, OLLIF may reduce the disparity in outcomes and cost between obese and non-obese patients.

Disclosures H. Abbasi: None.

E-141 MINIMALLY INVASIVE DIRECT THORACIC INTERBODY FUSION (MIS-DTIF): TECHNICAL NOTES OF A SINGLE SURGEON STUDY

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Background Minimally invasive direct thoracic interbody fusion (MIS-DTIF) is a new single surgeon procedure for fusion of the thoracic vertebrae below the scapula (T6/7) to the thoracolumbar junction. In this proof of concept study, we describe the surgical technique for MIS-DTIF and report our experience and the perioperative outcomes of the first four patients who underwent this procedure.

Study Design/Setting In this study we attempt to establish the safety and efficacy of MIS-DTIF. We have performed MIS-DTIF on six spinal levels in four patients with degenerative disk disease or disk herniation. We recorded surgery time, blood loss, fluoroscopy time, complications, and patient-reported pain.

Methods Throughout the MIS-DTIF procedure, the surgeon is aided by biplanar fluoroscopic imaging and electrophysiological monitoring. The surgeon approaches the spine with a series of gentle tissue dilations and inserts a working tube that establishes a direct connection from the outside of the skin to the disk space. Through this working tube, the surgeon performs a discectomy and inserts an interbody graft or cage. The procedure is completed with minimally invasive (MI) posterior pedicle screw fixation.

Results For the single level patients the mean blood loss was 90 ml, surgery time 43 minutes, fluoroscopy time 293 seconds, and hospital stay two days. For the two-level surgeries, the mean blood loss was 27 ml, surgery time 61 minutes, fluoroscopy time 321 seconds, and hospital stay three days. We did not encounter any clinically significant complications. Thirty days post-surgery, the patients reported a statistically significant reduction of 5.3 points on a 10-point sliding pain scale.

Conclusions MIS-DTIF with pedicle screw fixation is a safe and clinically effective procedure for fusions of the thoracic spine. The procedure is technically straightforward and overcomes many of the limitations of the current minimally invasive (MI) approaches to the thoracic spine. MIS-DTIF has the potential to improve patient outcomes and reduce costs relative to the current standard of care. We are currently expanding this study to a larger cohort and recording long term outcomes and costs.

Disclosures H. Abbasi: None.

E-142 DUAL LUMEN PICC LINE FOR TREATMENT OF REFRACTORY MULTILEVEL CSF LEAK BY FIBRIN GLUE

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Background and Purpose Epidural blood patch has been the standard of care for treating Cerebrospinal fluid (CSF) leaks that fail conservative management whether it is related to post-dural puncture or spontaneous. The use of fibrin glue and mixed blood/fibrin patches have been described to be effective in multiple reports. However, in many cases of CSF leak, identifying the level(s) of the leak to direct the treatment poses a challenge leading to refractory symptoms post treatment, especially in spontaneous CSF leak. We describe a novel approach for treating refractory CSF leakage using peripherally inserted central catheter (PICC) lines in the epidural space.

Materials and Methods Two patients presenting with recurrent attacks of progressive positional headache (one spontaneous and one post traumatic) were proven by myelograms to be secondary to CSF leak. After failure of conservative management, epidural blood patch was decided.

Results In the post-traumatic patient, epidural contrast extravasation was seen in the ventral epidural space extending between C6 and T4 levels, centered at the T1/T2 disc space with 2 sites of leak suspected at C7/T1 and the other between T3 and T6 level. After 5 unsuccessful attempts of epidural blood and fibrin patches and failed hemilaminectomy with transpedicular repair over a 2-month period, a 4 F sheath was placed at L2/3 level followed by navigation of a diagnostic catheter over a guide wire to the upper thoracic levels, the catheter was then exchanged for a 4F PICC line and 13 cc of fibrin glue was injected all the way from T4 level down to L2/3 level. Following treatment, the patients' symptoms significantly improved with no further treatment required. In the