

complication. To our knowledge, this is the second reported case of a cortical branch pseudoaneurysm in an adult. Careful consideration should be given to vascular anatomy when planning shunt insertions, and cruciate dural opening for local cortex visualization may help avoid this complication.

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Subarachnoid hemorrhage associated with a thromboembolic ischemic stroke- an unexpected observation

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Atherosclerosis is a significant risk factor for ischemic stroke, and is a frequent cause for extra- and intra-cranial vessels stenosis. Here, we present an unusual case of ischemic stroke associated with intra-cranial vessel stenosis and subarachnoid hemorrhage (SAH) secondary to carotid artery atheroma. A 64-year old female known for hypertension and dyslipidemia presented with a three-day history of three transient episodes (< 30 minutes) of dysarthria and right hand weakness. An initial brain CT scan revealed left frontal SAH. She was admitted to our Stroke Unit for observation and management. CT-angiogram revealed 90% ICAs stenosis bilaterally with several short focal stenotic lesions, involving several left MCA branches. Brain MRI revealed acute infarcts in the left insula, external capsule and inferior frontal gyrus. The clinical picture was attributed to a thromboembolic left MCA ischemic stroke. She was managed with maximum medical therapy, and later underwent successful left carotid endarterectomy. The presence of SAH on our patient's presenting CT scan lead to an initial radiological diagnosis of RCVS. However, subsequent imaging studies indicated that SAH had occurred in association with a thromboembolic ischemic stroke. Despite its rarity, this clinical association is important to recognize to avoid diagnostic confusion and guide appropriate management.

P.098

Primary closure versus expansile patch angioplasty for carotid endarterectomy: a single center series

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Background: Carotid endarterectomy (CEA) is a common treatment option for patients presenting with carotid stenosis; however, the optimal method for arterial closure remains unclear. Therefore, we examined our single center series to compare primary closure versus patch angioplasty for carotid endarterectomy. **Methods:** We reviewed all patients who underwent CEA from 2008 to 2016. Closure method was entirely based on the surgeon style (i.e., all patients treated by vascular surgeons underwent patch angioplasty and all individuals managed by neurosurgeons undergone primary closure). Data were reported as frequencies and outcomes as odds ratios (ORs) with corresponding 95% confidence intervals (CIs). **Results:** A total of 713 patients were included (349 in the primary closure group and 364 in the patch group). Underlying baseline characteristics were

similar between both groups. The risk of transient ischemic attack (OR, 7.08; 95%CI, 0.41-2.84; P=0.872), stroke (OR, 1.14; 95%CI, 0.58-2.22; P=0.697), myocardial infarction (OR, 1.10; 95% CI, 0.39-3.07; P=0.851), cranial nerve palsy (OR, 1.79; 95%CI, 0.65-4.91; P=0.248), and post-operative neck hematoma (OR, 1.04; 95%CI, 0.48-2.24; P=0.923) didn't differ significantly between the two closure options. **Conclusions:** Our findings suggest that primary closure and expansile angioplasty have similar safety and efficacy profiles as treatment closure options among patients undergoing CEA.

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Specialty centres for MVD surgery

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Background: The aim of this study is comparing the waiting time and patient's satisfaction of microvascular decompression (MVD) surgery between local Manitoba (MB) and out of province (OOP) patients, treated at our Centre for Cranial Nerve Disorder (CCND). **Methods:** Data from 100 consecutive patients (average age: 56.8±10.6 years), undergoing MVD surgery for Trigeminal Neuralgia (TN) and Hemifacial Spasm (HFS) were reviewed. The outcome measures included the time intervals between disease onset, diagnosis and referral to CCND, postoperative discharge, satisfaction with surgical outcome and referral process. **Results:** The preoperative time leading to CCND referral were longer for OOP patients, (onset to diagnosis/diagnosis to referral: 2.6±3.8/4.2±4.7 (OOP) versus 1.2±2.1/2.5±4.1 (MB) years; p=0.04/0.04), and referrals were more likely self-directed in OOP patients (62% (OOP), 21% (MB); p=0.007). Postoperative satisfaction with MVD outcome were 8.6/10 for OOP and 8.3/10 for MB patients. There was no significant difference in postoperative length of stay (38±50 (OOP)/43±42 (MB) hours); however, OOP patients were more likely discharged on the first postoperative day (58% (OOP), 31% (MB); p=0.17). **Conclusions:** Delays in diagnosis and surgical referral of TN/HFS are common, and many patients seek specialist's opinion in high volume surgical centers. For those OOP patients, travelling for treatment, MVD outcome were at least as good as for local patients.

P.100

Endovascular Thrombectomy (EVT) for stroke: experience in a Canadian teaching hospital

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Background: EVT is now recommended as standard of care for stroke in Canada, but its implementation still poses challenges. We studied the delivery of EVT in our hospital, a participating site in the ESCAPE trial, which serves the province of Nova Scotia. **Methods:** Patients who underwent EVT December 2011 – December 2016 were identified prospectively. Demographics, process measures, imaging characteristics (Alberta Stroke Program Early CT Score [ASPECTS], collateral score, Thrombolysis in Cerebral Infarction [TICI] score), and outcomes, including modified Rankin score [mRS] ~ 90 days post-EVT, were collected retrospectively. Effectiveness was assessed by comparison with outcomes in the ESCAPE trial. **Results:**

91 patients (M:F= 48:43; mean age 64 years) presented to hospital after 194 min \pm 230 min from last seen normal. In 58%, the ASPECTS was ≥ 7 . 80% had good/intermediate collaterals. Alteplase was administered to 72% (75% in ESCAPE, $p=0.97$). EVT mean duration was 70 min \pm 62 min. Successful recanalization (\geq TICI 2b) was achieved in 76% (vs 72.4% in ESCAPE, $p=0.97$). Among the 54 patients recanalized, mRS scores of 0-2, 3-5 and 6 were seen in 57.4, 24.1 and 14.8% respectively; ESCAPE comparators 53, 37 and 10%, $p=0.96$, 0.86 and 0.91. **Conclusions:** EVT at our hospital yielded results similar to the ESCAPE trial.

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Lateral medullary syndrome due to left vertebral artery occlusion in a boy post flexion neck injury

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Background: Wallenberg's syndrome (WS), or lateral medullary syndrome is rare in pediatrics, but is not uncommon in adults. It is characterized by neurological deficits due to an ischemic lesion in the lateral medulla. **Methods:** Case report **Results:** We describe a 17-year-old boy who developed WS in the context of hyperflexion injury to the neck while diving in shallow water with vertebral dissection as a presumed etiology. He had 'crossed' neurological deficits above and below the neck. His MRA showed intra and extracranial left vertebral artery occlusion and his MRI showed T2W/FLAIR signal abnormality involving the left lateral medulla and inferomedial aspect of the cerebellum in keeping with infarcts secondary to the left vertebral artery thrombosis and occlusion of the left posterior inferior cerebellar artery. He was started on anti-coagulation after spinal surgery. On discharge, he had persistent dysphagia which prompt a gastrostomy tube placement prior to transfer to a rehabilitation center. **Conclusions:** Our case demonstrates that WS can occur post flexion injury in the pediatric population. The presence of crossed neurological findings above and below the neck in the context of neck injury is an important diagnostic clue that should prompt imaging study focusing on the brain stem and the posterior fossa vascular structures.

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Endoscopic harvesting of a saphenous vein graft for EC-IC bypass followed by proximal artery occlusion of a pediatric giant fusiform MCA aneurysm

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Background: Minimally invasive techniques for graft procurement are the norm in cardiac surgery and yet their use in neurosurgery is only in its infancy. We present the case of a 10-year-old boy presenting with fluctuating right facial and upper extremity weakness who was found to have a giant, partially thrombosed, fusiform aneurysm of the M1 segment of the left MCA. **Methods:** Endoscopic harvesting of the saphenous vein was performed with a procedure time of 30 minutes. The graft was used as an interposition graft between the common carotid artery and the superior M2 division of the MCA, which was tunneled subcutaneously. Once Doppler ultrasound

confirmed good flow through the graft, an aneurysm clip was then secured on the M1, proximal to the saccular component of the fusiform aneurysm and just distal to the anterior temporal branch. **Results:** Intraoperative 2D and 3D angiogram confirmed a patent extracranial to intracranial bypass with thrombosis of the giant fusiform M1 aneurysm. By 1-month post-operatively, he had returned to school and routine activities. He continues to do well 6 months post-operatively with a minimal and well-healed donor site scar. **Conclusions:** Endoscopic graft harvesting is an emerging option in the pediatric population undergoing extracranial to intracranial bypass, associated with lower wound complications and improved cosmesis.

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Persistent primitive hypoglossal artery with an associated posterior circulation aneurysm

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Background: Persistent fetal carotid-vertebrobasilar anastomoses are rare, with an incidence of $<1\%$. The most common anomaly seen in this group is a persistent primitive trigeminal artery; others such as a persistent hypoglossal artery account for less than 15% of all persistent fetal anastomoses, making this finding exceedingly rare. **Methods:** We present the case of a 32-year-old-female with Poland syndrome (right-sided), who presented with thunderclap headache and reduced level of consciousness secondary to diffuse subarachnoid hemorrhage and hydrocephalus. CT and catheter angiography demonstrated an aneurysm of the V4 segment of the right vertebral artery arising from a persistent right hypoglossal artery, with an absent ipsilateral vertebral artery proximal to the anomaly. **Results:** Hydrocephalus was treated with an EVD, followed by a successful embolization of the V4 aneurysm with Axium coils. Subsequent MR studies demonstrated minimal recanalization of the aneurysm, and small foci of possible infarcts in the hippocampi. Four months later, the patient has some persistent short term memory difficulties but is otherwise neurologically intact. **Conclusions:** We present a rare finding of a persistent fetal hypoglossal artery with an associated vertebral aneurysm. The aneurysm was successfully treated endovascularly through coil embolization with minimal residual neurological deficit. This vascular anomaly was ipsilateral to her Poland Syndrome defects.

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Peri-cavity atrophy after minimally invasive evacuation of intracerebral hemorrhage

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Background: Intracerebral hemorrhage (ICH) remains a significant cause of morbidity and mortality. While traditional surgical techniques have shown marginal clinical benefit of ICH evacuation, minimally invasive techniques have shown some promise. Endoscopic evacuation of the hemorrhage may reduce the peri-hematoma edema and subsequent atrophy around the hemorrhage cavity. This study aims to quantify the changes in cavity volume following hematoma evacuation. **Methods:** Patients from the INVEST registry of