

GENERAL NEUROSURGERY

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Recovery from chronic secondary adrenal insufficiency in patients with pituitary disorders

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Background: Patients with pituitary disorders may be placed on steroid replacement for secondary adrenal insufficiency (SAI), generally after pituitary surgery; however, data regarding recovery of long-term SAI are lacking. We conducted a study to assess the longer term recovery rate of SAI in patients with pituitary disorders. **Methods:** We identified all SAI patients from prospectively entered data in the Halifax Neuropituitary Database from November 1, 2005 to September 30, 2014, who had required glucocorticoid therapy for > 3 months, and a minimum follow-up of 6 months. Exclusion: ACTH-secreting adenomas; peri-operative glucocorticoid treatment only; glucocorticoids for non-pituitary conditions. **Results:** 55 patients fulfilled the criteria, 41 (75%) of which had transsphenoidal surgery. Nine (16.4%) patients had complete recovery of SAI over a median of 20 months (range: 8 – 51). Smaller tumour size and initial cortisol > 175 nmol/L had increased likelihood of recovery; those with secondary hypogonadism or growth hormone deficiency were less likely to recover. **Conclusions:** This is the first study to examine long-term recover of SAI in patients with pituitary disorders: approximately 1 in 6 patients recover adrenal function, up to 5 years after diagnosis. Consequently, patients with SAI should undergo regular testing to prevent unnecessary chronic glucocorticoid therapy.

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A systematic review of the risks and benefits of venous thromboembolism prophylaxis in traumatic brain injury

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Background: Patients suffering from traumatic brain injury (TBI) are at increased risk of venous thromboembolism (VTE). However, initiation of chemoprophylaxis (VTEp) may cause further intracranial hemorrhage. We reviewed the literature to determine the post-injury time interval at which VTEp can be administered without risk of TBI evolution and hematoma expansion. **Methods:** MEDLINE and EMBASE databases were searched. Inclusion criteria were: studies investigating timing and safety of VTEp in TBI patients not previously on oral anticoagulation. Two investigators extracted data and graded the papers based on levels of evidence. **Results:** A total of 408 studies were screened. Forty-five studies were reviewed in-entirety and 21 were included in the systematic review. There were 2 prospective randomized trials and 19 comparative studies. Eighteen total studies demonstrated that VTEp post injury in patients with stable head computed tomography scan does not lead to TBI progression. Fourteen studies demonstrated that VTEp administration specifically

24 – 72 hours post injury is safe in patients with stable injury. Four studies suggested that administering VTEp within 24 hours of injury in patients with stable TBI does not lead to progressive ICH. **Conclusions:** Literature suggests that administering VTEp 48 hours post-injury may be safe for patients with low-hemorrhagic risk TBIs and stable injury on repeat imaging.

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Intracerebral hemorrhage secondary to multiple myeloma: a systematic review

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Background: Multiple myeloma (MM) as a cause of spontaneous intracranial hemorrhage has not been well established. **Methods:** We report a patient who developed a spontaneous intracerebral hemorrhage secondary to MM and conduct a systematic review of the literature. In addition, we discuss the underlying pathophysiology. **Results:** A 67-year-old relatively healthy female with a recent history of low back pain presented with an altered level of consciousness and left sided hemiplegia. CT demonstrated a large right temporal intracerebral hemorrhage. CT angiogram ruled out a vascular abnormality; however, multiple abnormal bony lesions were incidentally noted. Other causes for intracranial bleed were ruled out. She underwent a craniotomy for hematoma evacuation. Intra-operatively, the skull was noted to be abnormal and hematoma was not associated with a mass lesion. In addition, serum and urine electrophoresis were found to be positive for monoclonal free kappa light chains. Subsequent bone biopsy confirmed the diagnosis of MM. Our literature search identified 2 reported cases of spontaneous subdural hematomas and 2 patients with spontaneous intracerebral hematomas secondary to MM. Moreover, only 4 reports in the literature document intracranial hemorrhage secondary to a mass developed from MM. **Conclusions:** Multiple myeloma is perhaps an under-reported possible cause for spontaneous intracerebral hematoma.

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Ommaya reservoir placement for intraventricular chemotherapy: a retrospective case series in the image-guidance era

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Background: In 1963, Ayub Ommaya proposed a surgical technique for placement of a subcutaneous reservoir and pump to allow access to intraventricular cerebrospinal fluid (CSF). Currently, the most common indication for Ommaya reservoir insertion in adults is for patients with hematologic or leptomeningeal disorders who require repeated injection of chemotherapy into the CSF space. Historically, the intraventricular catheter has been inserted blindly based on anatomical landmarks. The purpose of this study was to determine short-term complication rates from Ommaya reservoir placement in the image-guidance era. **Methods:** We retrospectively evaluated all operative cases of image-guided Ommaya reservoir insertion from 2004-2014 by the senior author (JFM). Patient demographic data and peri-operative complications were collected. **Results:** We identified

28 patients over the study period (43.3 +/- 17.3 years; 64.3% male). Indications for placement included acute lymphoblastic leukemia, diffuse large B-cell lymphoma, and leptomeningeal carcinomatosis. There was one asymptomatic peri-operative intracranial hemorrhage (3.6%), and one early infection (3.6%). All catheters were well-positioned and functional. *Conclusions:* In our retrospective single-centre case series, all catheters were placed accurately. Our results support routine use of intra-operative image guidance for proximal catheter insertion in elective Ommaya reservoir placement for intraventricular chemotherapy.

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Pulsatile tinnitus due to obstruction of transverse sinus by tentorial meningioma

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Background: The etiology and treatment of pulsatile tinnitus is difficult and there are different causes for it. To our knowledge, an obstruction of the transverse sinus due to tentorial meningioma has not been reported. *Methods:* A 66 year old female presented a year ago with a sudden onset of a hissing sound in her ear which has persisted since. Neurologically she was intact. She was seen by otolaryngology who identified no cause for her tinnitus. A CT scan and MRI showed a tentorial meningioma on the right side with partial obstruction of the transverse sinus with evidence of partial chronic thrombus. *Results:* Removal of the meningioma with decompression of the transverse sinus resulted in immediate disappearance of the pulsatile tinnitus. *Conclusions:* This report can be added to the etiology of the difficult entity of pulsatile tinnitus particularly as it relates to its management.

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Modified Obwegeser temporal approach to the infratemporal fossa: four cases and review of literature

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Background: The infratemporal fossa is an anatomically complex region. Lesions that arise in the infratemporal fossa are uncommon; however, their surgical resection remain challenging. Here we present a modified preauricular subtemporal approach initially described by Obwegeser et al. used in four patients with large skull base lesions. *Methods:* Retrospective case series of 4 patients *Results:* Four patients with various lesions of the infratemporal fossa (aneurysmal bone cyst, giant cell tumor of the bone, recurrent melanoma and recurrent clival chordoma) underwent surgical resection using the modified Obwegeser approach. A multidisciplinary team cared for patients consisting of maxillofacial surgery, otolaryngology and neurosurgery. After either nasotracheal intubation or tracheostomy, the patient's jaw was temporarily wired shut. A curvilinear incision was fashioned and the root of zygoma was exposed (masseter attached) and osteotomized followed by inferior mobilization. The mandibular condyle is osteotomized next and TMJ disarticulated with temporalis muscle still attached and reflected superiorly. Surgical resection

of tumor then proceeded centered around the region bridging the temporal and infratemporal fossae. Reconstruction was carried out using plates and screws. *Conclusions:* The modified Obwegeser approach can provide safe and direct access to certain infratemporal fossa lesions with good cosmesis and functional outcome for patients without substantially increasing OR time.

NEURO INTERVENTIONAL

P.095

Clinical outcomes following carotid angioplasty and stenting in patients over age of 75: Careful patient selection overcoming the age-effect

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Background: CAS is reported to have higher complication rates in elderly compared to younger patients. This effect may be a surrogate for unfavourable anatomy (tortuosity, arch/access vessel atheroma burden) for endovascular treatment. We report our experience with 42 highly selected patients with favourable anatomy in spite of age. *Methods:* From a cohort of 217 consecutive patients undergoing CAS at St Michael's Hospital from 2010-2016, stroke and a composite outcome of stroke, MI or death at 30 days post procedure was recorded. We compared outcomes in patients below and above the age of 75. *Results:* In 217 patients, 175 (80.7%) were below and 42 (19.3%) were above age 75 years. The stroke rate was 1.7% (n=3) and 2.4% (n=1), for patients below and above age 75 years respectively (p=0.58). The composite outcome rate was 4.0% (n=7) and 4.8% (n=2) for patients below and above age 75 years respectively (p=0.69). *Conclusions:* Patients without high-risk anatomic features were selected for CAS treatment. In this selected group, outcomes for those older than 75 years are comparable to the younger age category. Complication rates were comparable to the results in major randomized symptomatic carotid trials.

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A single institution experience with 217 average risk patients undergoing carotid angioplasty and stenting in the post CREST era, a real life experience

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Background: The CREST trial remains the most influential study regarding choice of treatment modality for carotid revascularization in the modern era. The effect of the CREST trial on patient outcomes and changes to clinical practice are yet to be fully elucidated. *Methods:* We report a cohort of 217 consecutive symptomatic average risk patients undergoing CAS at St. Michael's Hospital, between 2010 and 2016. Outcome measures were stroke, MI and death at 30 days post procedure. Of the 217 patients, 42 were above the