

4%, 1%; cerebrospinal leak, both 3%; cerebellar damage and infection, 2%, <1%; and mortality <1%, 0% respectively. **Conclusions:** The reviewed literature revealed similar clinical outcomes with respect to pain relief for both approaches. Recurrence rate and incidence of complications, notably facial paresis and hearing loss were higher for MVD. We concluded that E-MVD appears to offer at least as good a surgical outcome as MVD, with possibly a shorter operative time, smaller craniectomy and lower recurrence rates.

C.02

Predictors of survival in a surgical series of Metastatic Spinal Cord Compression and a complete external validation of 8 models in a prospective multi-centre study

A Nater (Toronto) LA Tetreault (Cork) B Kopjar (Seattle) PM Arnold (Kansas City) MB Dekutoski (Sun City West) JA Finkelstein (Toronto) CG Fisher (Vancouver) JC France (Morgantown) ZL Gokaslan (Providence) LD Rhines (Houston) PS Rose (Rochester) A Sahgal (Toronto) JM Schuster (Philadelphia) AR Vaccaro (Philadelphia) MG Fehlings (Toronto)*

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Background: We aimed to identify preoperative predictors of survival in Metastatic Epidural Spinal Cord Compression (MESCC) patients surgically treated, examine how these predictors relate to eight prognostic models, and to perform the first full external validation of these models in accordance with the TRIPOD statement. **Methods:** 142 surgically treated MESCC patients were enrolled in a prospective, multicenter cohort study and followed for 12 months or until death. Cox proportional hazards (PH) regressions were used. Non-collinear predictors with <10% missing data, ≥ 10 events per stratum and $p < 0.05$ in univariable analysis were tested through a backward stepwise selection. For the original and revised Tokuhashi, Tomita, modified Bauer, van der Linden, Bartels, OSRI, Bartels and Bollen, we examined calibration and discrimination; survival stratified by risk groups with the Kaplan-Meier method and log-rank test. **Results:** Primary tumor, organ metastasis and SF-36v2 PC were associated with survival in multivariable analysis; corrected discrimination was 0.68. These three predictors were common to most current prognostic models. However, calibration was poor overall while discrimination was possibly helpful. **Conclusions:** Primary tumor type (breast, prostate and thyroid), absence of organ metastasis, and a lower degree of physical disability are preoperative predictors of longer survival in surgical MESCC patients. Clinicians should use these 8 prognostic models with caution.

C.03

Surgical complications with and without image guidance: meta-analysis of Ommaya reservoir insertions

JC Lau (London) SE Kosteniuk (London) T Walker (London) A Iansavitchene (London) DR Macdonald (London) JF Megyesi (London)*

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Background: There remains an important role for consolidating evidence on the utility of image guidance (IG) in neurosurgery. In 1963, Ayub Ommaya proposed a surgical technique for the placement of a subcutaneous reservoir and pump to allow access to

intraventricular cerebrospinal fluid. In this study, we sought to compile evidence from the literature about surgical outcome in ORI with and without IG. **Methods:** A systematic review was conducted in accordance with PRISMA guidelines. Overall surgical complication rate was considered a primary outcome and further classified into specific complication categories. **Results:** 40 studies were identified, including our own series, for a total of 1947 independent ORI procedures. Pooled rates of outcome for IG compared to non-IG were 6.0% versus 13.6% for overall complications; 2.0% versus 2.8% for catheter malfunction; 1.9% versus 2.3% for catheter malposition; 0.5% versus 4.0% for early infection; 4.3% versus 9.4% for any infection; and 0.4% versus 1.4% for mortality. **Conclusions:** We observed that IG ORI resulted in improved accuracy and decreased complications compared to non-IG. To our knowledge, this study comprises the largest observational analysis of operative outcomes demonstrating evidence for the utility of IG.

C.04

A systematic review and meta-analysis of 7551 patients with post-operative radiation for the management of functioning and non-functioning pituitary adenomas

OH Khan (Warrenville) N Samuel (Toronto) N Alotaibi (Toronto)*

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Background: Although surgery is the mainstay of treatment for most pituitary adenomas, post-operative radiotherapy has been shown to be of benefit in improving tumor control and recurrence-free survival. To understand potential side effects of radiotherapy we performed a systematic review and meta-analysis to determine the efficacy and safety of post-operative radiotherapy for pituitary adenoma. **Methods:** A systematic review was performed according to the Meta-analysis Of Observational Studies in Epidemiology (MOOSE) guidelines. We searched PubMed, MEDLINE and Cochrane databases with no language or publication date restrictions. Outcomes included 5- and 10-year progression-free survival and adverse events rates. **Results:** A total of 48 studies from 1986-2016 met the inclusion criteria, with 7551 cumulative patients. The cumulative 5- and 10-year progression-free survival rates were 90.8% (95% CI 86-94%) and 88.6% (95% CI 81-93%), respectively. The overall adverse events rate was 8% (95% CI 5-12%). All outcomes were associated with significant heterogeneity ($I^2 \geq 70\%$). No differences in survival rates or adverse events in relation to study date, tumor pathology, radiosurgery system used or dose of radiation. **Conclusions:** Post-operative radiotherapy for pituitary adenomas is effective and safe. Because of the significant heterogeneity and lack of matched controls in the literature, optimum timing and dosage are still unclear. Further prospective studies are needed.