fourth ventricle. Results: While there was an early favorable outcome, the first fenestration closed over within one month, requiring a repeat endoscopic fenestration. Both procedures were complicated by transient seizures, requiring a pediatric intensive care unit (PICU) admission after the second intervention. Pre- and post-operative clinical and diagnostic imaging findings are reported. Conclusions: Endoscopic fenestration can be an effective treatment option for management of TFV. The patient, family, and treating team should be prepared to deal with acute peri-operative complications that may require PICU management.

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Comparison of interhemispheric and transcortical approaches for resection of colloid cysts of the third ventricle

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Background: Colloid cysts are rare benign lesions of the third ventricle that can cause hydrocephalus and intracranial hypertension. Their primary treatment is surgical removal. Although open surgery presents the best opportunity for total resection of the cyst, there is no consensus regarding the optimal choice between the interhemispheric and the transcortical approaches. We aim to compare these two approaches in regard of the radicality of excision, the recurrence rate, and the surgical imprint. Methods: Retrospective cohort study on all patients who underwent surgical resection of colloid cyst between 2003 and 2023 at CHU de Québec. Data on demographics, symptoms, complications, and imaging was gathered. Results: In a cohort of 28 patients (17 interhemispheric, 11 transcortical), the preliminary results demonstrate prolonging operative time (270min. vs. 187min.) and increasing blood loss (193cc vs 100cc) associated with the interhemispheric approach. Despite these results, the hospitalization duration remains similar (p=0.734). However, the interhemispheric approach results in significantly lower surgery-induced encephalomalacia (1.1cc vs. 4.4cc, p=0.006). Conclusions: The interhemispheric approach could lead to potentially lesser consequences due to the reduced volume of encephalomalacia left by the surgical intervention, at the cost of prolonged operating time and higher blood loss.

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Blood loss quantification and management strategies in cranial neurosurgery: a systematic review

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Background: Blood loss quantification and management are important facets of cranial surgery, having been linked with adverse outcomes if management is inadequate. While many studies report estimated blood loss (EBL) as an outcome measure, inconsistencies exist in EBL quantification and management strategies Methods: A systematic review of cranial surgery literature on blood loss measurement and management was conducted according to PRISMA guidelines utilizing a novel software platform, Nested Knowledge Results: Initial search yielded 1029 non-duplicated. 107 full-text studies were included. 70% of studies were retrospective. Most common treatment conditions were 41% craniosynostosis (44/107) and 36% tumor (39/107). Most common EBL measurement methods were comparison of pre-operative and post-operative hemoglobin/hematocrit in 46.7% (50/107), anesthesia record in 26.2% (28/107), and surgeon estimation in 9.3% (10/107). 53.3% of studies did not specify a quantification methodology. Blood loss management strategies also varied, with transfusion being the most common method in 64.5% (69/107) of studies Conclusions: EBL quantification and blood loss management remain important clinical and research metrics. Despite this, significant heterogeneity exists in blood loss quantification and management strategies, with most studies providing no data on EBL quantification. Standardization of EBL quantification/reporting should be undertaken to improve comparability and consistency across studies.

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Neurons in the lateral prefrontal cortex encode task features during virtual navigation

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Background: The lateral prefrontal cortex (LPFC) is uniquely found in primates and has been associated with contextual learning. This function is thought to be subserved by neurons that are tuned to abstract concepts and the combination of those concepts. LPFC neuron tuning remains to be fully investigated in naturalistic conditions. Methods: Two macaques were trained to perform a context-colour association task while using a joystick to navigate in an X-shaped maze. They were implanted with two 96-channel microelectrode arrays, targeting the LPFC. Mean firing rates were computed and multivariate linear regressions were used to determine tuning. Results: LPFC neurons were tuned to context (12.4%), color position (6.2%), target side (17.2%), and were selective to more than one feature (21.2%). LPFC neurons acquired tuning to task features in an ordered manner, starting with context (130.1±27.4ms), followed by the colour position (296.2±21.4ms) and then target side (493.3 ±19.3ms). Furthermore, most neurons (54%) changed their tuning over time. Conclusions: We demonstrate that single neurons can encode relevant features embedded in a naturalistic virtual environment. Our results support previous observations that LPFC neurons combine individual features and suggest that these features are also combined temporally. These findings contribute towards understanding the LPFC and have potential practical implications.

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