Chronic subdural hematoma neuroendoscopy



Some authors recommend the endoscopic treatment of chronic subdural hematomas, especially the septated ones $^{1) (2)}$.

Fibrin membranes and compartmentalization within the subdural space are a frequent cause of failure in the treatment of chronic subdural hematomas (CSH). This specific subtype of CSH classically requires craniotomy, which carries significant morbidity and mortality rates, particularly in elderly patients.

Under local scalp anesthesia, a rigid endoscope is inserted through a parietal burr hole in the subdural space to collapse fibrin septa and cut the internal membrane. It also allows cauterization of active bleedings and the placement of a drain under direct visualization.

The endoscopic treatment of septated CSH represents a minimally invasive alternative to craniotomy especially for the internal membranectomy $^{3)}$.

Treatment of loculated chronic subdural hematoma using neuroendoscopy combined with closed system drainage is a minimally invasive method and a therapeutic alternative to the craniotomy-membranectomy technique ⁴.

The application of visualization features of soft neuroendoscopy in the treatment of CSDH can significantly improve hematoma clearance, shorten the time of drainage tube, reduce postoperative complications and recurrence rate, and improve surgical outcomes ⁵⁾.

Case series

Between January 2012 and October 2016, eight patients diagnosed with multi-lobular CSDH using computed tomography(CT)imaging underwent endoscopic evacuation. First, we established a 3×3cm craniotomy at a position where a rigid endoscope and aspiration tube would be able to reach as much of the hematoma cavity as possible in the longitudinal plane. Second, after identifying and removing the outer membrane of the CSDH with the scope, we evacuated the hematoma longitudinally, keeping the inner membrane intact. We also applied monopolar diathermy to any obvious bleeding points and the capillary network on the outer membrane of the CSDH, using the aspiration tube.

The mean duration of surgery was 42 minutes. Follow-up CT scan revealed no recurrence in any of the cases, and neurologic function improved in all patients postoperatively.

A multi-lobular CSDH can be drained quickly and effectively using a rigid endoscope and aspiration tube through a small craniotomy. In a cohort of eight patients, postoperative neurologic recovery was observed in all cases with no evidence of recurrence. This technique could be used in any facility with ready access to CT imaging and a rigid endoscope ⁶.

Case reports

A two-month-old male infant presented with a bulging and tense fontanel, a reduced level of consciousness, bradycardia, and significant macrocephaly. Computed tomography (CT) demonstrated massive bilateral, low attenuation subdural fluid collections, reaching a diameter of 4.5 cm. Emergency burr hole washout and insertion of subdural drains was performed. Despite prolonged drainage over 10 days, the protein level remained at 544 mg/dl and the mean erythrocyte count at 6,493/µl. Continuous drainage was required to avoid clinical deterioration due to raised intracranial pressure; however, the fluid condition was still considered incompatible with permanent subdural-peritoneal shunting. We, therefore, performed an endoscopic subdural lavage with a careful evacuation of residual blood deposits. No complications were encountered. Postoperatively, mean protein level was 292 mg/dl and mean erythrocyte count was 101/µl. Endoscopic lavage could be safely performed in a case of extensive subdural low attenuation fluid collections, where conventional burr hole drainage failed to improve protein and cellular contents as a prerequisite for successful permanent shunting. We conclude that adaptation of this technique can be helpful in selected cases as an alternative procedure ⁷¹.

A 78-year-old Japanese man with a history of colon cancer was referred to our department of neurosurgery for the management of asymptomatic left chronic subdural hematoma (CSDH). He was receiving bevacizumab therapy for colon cancer, and the size of the CSDH increased or decreased depending on bevacizumab administration. Simple drainage was performed because of the risk of a critical increase in the size of CSDH during bevacizumab therapy, but since the CSDH was organized and firm, the drainage was insufficient. Therefore, neuroendoscope-assisted craniotomy was performed, and the organized CSDH was almost completely removed. The present case indicates the possible involvement of bevacizumab in the occurrence of CSDH and the efficacy of the neuroendoscopic approach in the surgical treatment of organized CSDH ⁸.

3/3

References

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Rodziewicz GS, Chuang WC. Endoscopic removal of organized chronic subdural hematoma. Surgical Neurology. 1995 Jun;43:569–573.

Smely C, Madlinger A, Scheremet R. Chronic subdural haematoma — a comparison of two different treatment modalities. Acta Neurochirurgica. 1997;139:818–826

Berhouma M, Jacquesson T, Jouanneau E. The minimally invasive endoscopic management of septated chronic subdural hematomas: surgical technique. Acta Neurochir (Wien). 2014 Dec;156(12):2359-62. doi: 10.1007/s00701-014-2219-1. Epub 2014 Sep 16. PubMed PMID: 25223748.

Hellwig D, Heinze S, Riegel T, Benes L. Neuroendoscopic treatment of loculated chronic subdural hematoma. Neurosurg Clin N Am. 2000 Jul;11(3):525-34. PubMed PMID: 10918025.

Guan F, Peng WC, Huang H, Dai B, Zhu GT, Mao BB, Xiao ZY, Lin ZY, Hu ZQ. [Efficacy analysis of soft neuroendoscopic techniques in the treatment of chronic subdural hematoma]. Zhonghua Yi Xue Za Zhi. 2019 Mar 5;99(9):695-699. doi: 10.3760/cma.j.issn.0376-2491.2019.09.012. Chinese. PubMed PMID: 30831620.

Ishikawa T, Endo K, Endo Y, Sato N, Ohta M. [Neuro-Endoscopic Surgery for Multi-Lobular Chronic Subdural Hematoma]. No Shinkei Geka. 2017 Aug;45(8):667-675. doi: 10.11477/mf.1436203572. Japanese. PubMed PMID: 28790212.

Beez T, Schmitz AK, Steiger HJ, Munoz-Bendix C. Endoscopic Lavage of Extensive Chronic Subdural Hematoma in an Infant After Abusive Head Trauma: Adaptation of a Technique From Ventricular Neuroendoscopy. Cureus. 2018 Mar 2;10(3):e2258. doi: 10.7759/cureus.2258. PubMed PMID: 29725561; PubMed Central PMCID: PMC5931418.

Takahashi S, Yazaki T, Nitori N, Kano T, Yoshida K, Kawase T. Neuroendoscope-assisted removal of an organized chronic subdural hematoma in a patient on bevacizumab therapy-case report. Neurol Med Chir (Tokyo). 2011;51(7):515-8. PubMed PMID: 21785247.

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