

Aquamantys

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Adequate [hemostasis](#) in cranial and [spinal tumor surgery](#) is of paramount importance in neurosurgical [practice](#). Generalized ooze bleeding from the surgical walls cavity, coming from neoplastic [vessels](#) or nervous tissue, may be problematic. Recent technical advances have dramatically reduced [intraoperative complications](#) related to [blood loss](#). Several techniques are usually employed to control hemostasis in [tumor surgery](#), including [preoperative embolization](#), intraoperative [hypotension](#), [electrical coagulation](#), and local application of [fibrin sealants](#) or hemostatic matrix, which influence coagulation.

Clinical Trial

The aim in a study was to evaluate the efficacy and the safety of the Aquamantys® system (Medtronic Advanced Energy, Portsmouth, NH, USA), a bipolar coagulation device that incorporates a new bipolar coagulation technique. This device has been used in 10 consecutive patients affected by cerebral tumor along with the standard microsurgical technique and well-known intraoperative tools. The technique is associated with simultaneous delivery of bipolar radio frequency energy and

conductive fluid through its electrode tip. The volume of saline passing by the electrode tip prevents charring and maintains a clean tip. This cools the tissue as it raises the temperature sufficiently to shrink the collagen of veins and arteries.

Effective hemostasis was achieved in all the cases. No complications or unwanted reactions associated with the device have been observed ¹⁾.

Aquamantys® is a novel [bipolar coagulation](#) device that employs a new bipolar coagulation technique combining [radiofrequency](#) energy and [saline](#) to achieve hemostatic [sealing](#) by denaturing [collagen fibers](#). This offers the possibility of achieving adequate [hemostasis](#) even in giant [intraventricular tumors](#) in [infants](#) to obtain GTR resection with minimal [blood loss](#) ²⁾.

Grasso et al. prospectively compared the reherniation rate in 75 patients (Group 1) undergoing single-level lumbar disc surgery completed with the radiofrequency bipolar system Aquamantys® (Medtronic, Minneapolis, MN, USA) to that of a historical control group (n = 75) matched for variables related to herniation level and characteristics (Group 2). Patients were followed up to 4 years. Reherniations were assessed, pain and function were monitored throughout, and imaging was performed at annual follow-up.

Results: The overall symptomatic reherniation rate was 4%. In particular, one case (1.3%) was observed in Group 1 and five (6.7%) in Group 2 ($P < 0.05$). Magnetic resonance imaging identified a total of 4 (2.7%) asymptomatic reherniations at 12 months, 6 (4%) at 24 and 36 months, and 7 (4.7%) at 48 months. Overall, Group 1 contained one (1.3%) asymptomatic reherniation case, while six (8%) were observed in Group 2 ($P < 0.05$).

Conclusions: The low reherniation rate in patients treated by the coblation-assisted microdiscectomy suggests that this technique may reduce the reherniation risk. Clinical outcomes for pain and function at 4 years follow-up compared favorably with literature data. Randomized controlled trial could confirm these results ³⁾.

Transcollation devices appear to be an effective and safe addition to the armamentarium of neurosurgical hemostatic options in intracranial tumor resection in which there is a high risk of intraoperative hemorrhage ⁴⁾

Case reports

A 3-yr-old girl presented following a fall and was found to have a giant CPP growing from the right lateral ventricle. Given the vascularity of the tumor and the low intravascular reserve in a small child, a transcollation device was used to reduce blood loss intraoperatively.

Gross total resection was achieved with approximately 300 mL of blood loss without complications. The patient did well postoperatively. Imaging performed at 3 mo after resection revealed return of normal brain architecture.

Transcollation devices appear to be an effective and safe addition to the armamentarium of neurosurgical hemostatic options in intracranial tumor resection in which there is a high risk of intraoperative hemorrhage ⁵⁾

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³⁾

Grasso G, Torregrossa F, Landi A. Prevention of lumbar reherniation by the intraoperative use of a radiofrequency bipolar device: A case-control study. J Craniovertebr Junction Spine. 2019 Apr-Jun;10(2):94-99. doi: 10.4103/jcvjs.JCVJS_47_19. PMID: 31402829; PMCID: PMC6652257.

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Asmaro K, Pawloski J, Skoch J. Giant Choroid Plexus Papilloma Resection Utilizing a Transcollation System. Oper Neurosurg (Hagerstown). 2020 Jan 1;18(1):47-51. doi: 10.1093/ons/opz096. PMID: 31065711.

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