Microsurgical Resection of Spinal Cord Hemangioblastoma: 2-Dimensional Operative Video

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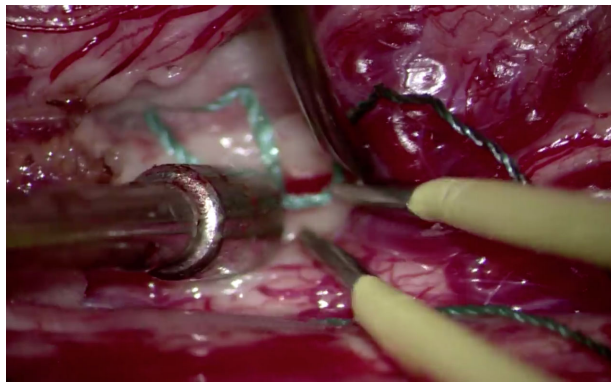

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This video demonstrates microsurgical resection of spinal cord hemangioblastoma. Hemangioblastomas are rare, benign, highly vascularized tumors classified as grade I according to World Health Organization classification systems. About 3% of all intramedullary tumors are hemangioblastomas.[1,2] Spinal cord hemangioblastomas are either sporadic[3,4] or manifestations of von Hippel-Lindau (VHL) disease in 20% to 45% of patients.[5,6]

A 30-year-old male presented with sudden onset urinary incontinence. Magnetic resonance imaging showed contrast enhancing intramedullary tumor with adjacent cyst in T11, and syringomyelia extending to C1. Surgical resection followed rules that apply to resection of arteriovascular malformations: coagulation of arterial feeders precedes the coagulation of the draining vein, which is preserved until the end of surgery.[2,4,5,7,8]

First, posterior midline myelotomy was performed and the tumor cyst was drained in order to develop a dissection plane. Following this, we continuously separated dorsal nerve roots from the tumor nodule using microsurgical technique. The key step in tumor resection is devascularization of the tumor, achievable in 2 ways.[2,7,9-13] The circumferential detachment of the normal pia from the tumor pia is crucial in developing a plane of dissection. The coagulation and division of arterial feeders while preserving the drainage vein further devascularizes the tumor. Once the tumor mural nodule was detached from the spinal cord, the drainage vein was coagulated last and the tumor was removed. The patient fully recovered from his incontinence and was neurologically intact. Screening for VHL disease was negative.

Written consent was obtained directly from the patient.

KEY WORDS: Hemangioblastoma, Sporadic, Spinal cord, Microsurgery, Resection

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Disclosure

The authors have no personal, financial, or institutional interest in any of the drugs, materials, or devices described in this article.

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COMMENTS

The authors explained in a representative video how to handle the nodule of intramedullary hemangioblastomas in a non-von Hippel-Lindau patient. Endovascular embolizations were safe with minimal complications with no mortality or permanent deficits.[1] To define the lesions, intraoperative fluorescence was used to identify tumor and spinal feeders.[2] Some authors recommend a dorsal myelotomy as the best approach for microsurgical resection of spinal hemangioblastoma.[3] Stereotactic radiosurgery was recommended to primarily address these lesions in some patients with nearly equal safety profile.[4] Prognosis is generally good.[5] Intraoperative monitoring will increase the safety of resection.[6]

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In this interesting manuscript, the authors report about a patient with urinary incontinence and an intramedullary hemangioblastoma in the thoracic spine accompanied of syringomyelia at the MRI studies. The tumor was microsurgically completely resected. After the surgery, the patient fully recovered from his incontinence with no new deficits. A postoperative MRI revealed an improvement of the syringomyelia and no residual tumor.

Spinal hemangioblastomas are rare, benign, and highly vascularized tumors often associated with von Hippel-Lindau disease.[1,2] Syringomyelia is frequently present and may favor the resection of the tumor. However, the most important factor for the outcome of these patients seems to be the preoperative level of neurological impairment.[3] Preoperative embolization is not necessary in most cases, but the use of intraoperative fluorescence angiography may be helpful in identifying the feeding arteries and draining veins during surgery.[4,5] Intraoperative neurophysiological monitoring is an important tool during resection and should be used in all cases.[6] Surgery is usually curative and because of that, total resection of tumor is the goal of surgical treatment.

Reports with microsurgical video illustrations like this are very important when discussing neurosurgical cases, giving the chance for experience exchange and improvement of the surgical technique.

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