Laser-assisted microsurgical resection of thoracic intramedullary spinal cord ependymoma

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The surgical management of intramedullary spinal cord ependymomas remains a formidable challenge amongst neurosurgeons because of the potential risk of surgical morbidity. From an oncological perspective, complete resection—if technically feasible—should be the goal of surgery, since this can result in excellent local control and progression-free survival. Advances in microsurgical techniques, intraoperative neurophysiological monitoring, and the use of lasers have contributed to our ability to achieve gross-total resection. This is also largely dependent on the presence of an identifiable surgical plane of dissection between the tumor and spinal cord, which appears to have a positive prognosis with overall neurological improvement. In this operative video manuscript, the author demonstrates an illustrative step-by-step technique for microsurgical resection of a thoracic intramedullary spinal cord ependymoma (T-3 to T-5) associated with an extensive cervicothoracic syrinx. The application of a handheld non-contact CO₂ laser for performing the midline myelotomy is also highlighted. The operative technique and surgical nuances, including the surgical approach, extradural tumor removal, and closure, are illustrated in this video atlas.


**Key Words**: laser-assisted, intramedullary, spinal cord, ependymoma, thoracic, video