

## Video Abstract

# Unedited microneurosurgery of a mixed germ cell tumor of the pineal region

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## Abstract

**Background:** Germ cell tumors comprise a heterogeneous group of neoplasms, classified as germinomas and nongerminomatous germ cell tumors based on clinicopathological features. The nongerminomatous group of tumors includes embryonal carcinoma, endodermal sinus tumor (yolk sac tumor), choriocarcinoma, mature and immature teratoma, and mixed germ cell tumors with more than one element. While germinomas are radiation-sensitive tumors, all other tumors have less response to radiotherapy, and it is suggested that gross total resection improves their overall survival and tumor-free survival rates. Herein, we present the microsurgical management of a histologically confirmed mixed-germ cell of the pineal region.

**Case Description:** A patient with a mixed germ cell tumor underwent sitting praying position and midline supracerebellar infratentorial approach. After opening of the dura, a midline cerebellar vein was coagulated and cut, and the pineal region was accessed over the superior cerebellar surface. A tight reactive dorsal membrane of the quadrigeminal cistern was widely opened with subsequent evaluation of the neurovascular structures by intraoperative angiography. Under high microsurgical magnification between both basal veins, the dorsal wall of the fibrotic and solid tumor was coagulated and opened aiming an internal debulking of the lesion. Water dissection and cotton dissection were useful tools to separate the lateral borders of the tumor from the surroundings. Bipolar coagulation was helpful shrinking the tumor as well. The superior borders of the lesion, firmly attached to the roof of the third ventricle, required a careful evaluation. Ring microforceps in the right hand and thumb-regulated suction tube in the left one allowed us to pull out the tumor in a piece under soft and continuous traction with dissection of the cleavage plane. The superior attachment of the tumor was coagulated and cut. Finally, bipolar coagulation and small pieces of surgicel ensured a proper hemostasis. Postoperatively, the patient had a partial gaze palsy that improved gradually. The patient underwent adjuvant radiochemotherapy and currently is alive, free of tumor recurrence >12 years after surgery.

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**Conclusion:** This unedited video offers all detailed aspects that a neurosurgeon as the senior author JH considers essential when performing an efficient and safe surgery for a mixed germ cell tumor.

**Videolink:** <http://surgicalneurologyint.com/videogallery/pineal-tumor-5>

**Key Words:** Mixed germ cell tumor, pineal region, sitting position, supracerebellar infratentorial approach, unedited microsurgical video

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