Combined transmastoid middle fossa approach for giant cholesterol granuloma of the petrous apex: technique for “dual exhaust” drainage

JAMES K. LIU, M.D.1,2,3 AND ROBERT W. JYUNG, M.D.2,3

Departments of 1Neurological Surgery and 2Otolaryngology-Head and Neck Surgery, 3Center for Skull Base and Pituitary Surgery, Neurological Institute of New Jersey, Rutgers University, New Jersey Medical School, Newark, New Jersey

Cholesterol granulomas are cystic lesions that typically arise in the petrous apex as a result of an inflammatory giant-cell reaction to cholesterol crystal deposits that are formed when normal aeration and drainage of temporal bone air cells become occluded resulting in transudation of blood into the petrous air cells. Surgical strategies include simple cyst decompression, radical excision of the cyst wall, or fenestration and drainage with silastic tubing. The authors present a giant cholesterol granuloma compressing the cerebellopontine angle and brainstem in a 35 year-old male who presented with progressive facial nerve weakness, sensorineural hearing loss, and vertigo. A combined transmastoid middle fossa extradural approach was performed to remove the cyst contents and decompress the brainstem. A near total excision of the cyst wall was achieved with a small remnant adherent to the posterior fossa dura. Two separate silastic catheters were placed into the cyst cavity to provide “dual exhaust” drainage. One catheter drained the cyst cavity into the sphenoid sinus via a window made in the anteromedial triangle between V1 and V2. The second catheter drained the cyst cavity into the mastoidectomy cavity and middle ear. Postoperative MRI demonstrated regression of the cyst and excellent decompression of the brainstem. The patient experienced return of normal facial nerve function while hearing loss remained unchanged. He remained free of recurrence at 4 years postoperatively. The theoretical advantages of cyst wall removal combined with dual catheter drainage are longer term patency of cyst drainage and decrease of cyst recurrence. In this operative video atlas report, we describe the step-by-step technique and illustrate the operative nuances and surgical pearls to safely and efficiently perform the “dual exhaust” catheter drainage and resection of a giant cholesterol granuloma via a combined transmastoid middle fossa approach.

The video can be found here: http://youtu.be/iZpYBP26ghA.

Key Words • combined transmastoid middle fossa approach • giant cholesterol granuloma • “dual exhaust” drainage • video