

Percutaneous Transforamen Ovale Biopsy: An Institutional Series and Relative Contraindications Joshua David Hughes MD; Michael J. Link MD; John L. D. Atkinson MD Department of Neurologic Surgery, Mayo Clinic, Rochester MN

Introduction: Percutaneous transforamen ovale biopsy (PTC-TFOB) is a possible alternative to open cranial biopsy for lesions of the cavernous sinus (CS) and Meckel's cave (MC). However, there is only one prior study on PTC-TFOB's diagnostic utility.

Methods: An electronic search of operative records found 15 PTC-TFOB performed in 13 patients at our institution from 1999–2012. All procedures used CT or fluoroscopic guidance. Records were reviewed for patient and imaging characteristics and diagnostic outcome.

Results: Median age was 61 (31–80) years. The most common presenting symptom was trigeminal nerve pain or numbness in 10 patients. Eight patients had left- and 5 had right-sided biopsy.

There were no complications. Diagnostic tissue was obtained in 7 (54%) patients and included meningioma (n=3), adenocarcinoma (n=1), adenocystic carcinoma (n=1), metastatic melanoma (n=1), and neurosarcoidosis (n=1). One patient had a non-diagnostic biopsy, but a second was diagnostic. All patients had a mass lesion with a median size of 2.4 (1.5-3.3)cm that clearly involved the foramen ovale (**Fig 1**).

Six (46%) patients had a nondiagnostic biopsy. All non-diagnostic tissue showed nerve fibers indicating correct location. Four patients had abnormal enhancement of the V3 division of the trigeminal nerve (**Fig 2**) and were ultimately diagnosed with lymphoma (n=2) and metastatic squamous cell carcinoma (n=2) by open cranial (n=2), facial nerve (n=1), or skin lesion (n=1) biopsy. One patient had CS enhancement, but only patchy enhancement over the foramen ovale (Fig 3) and was diagnosed with an inflammatory condition after symptom and imaging resolution. One patient had a 4.8 cm CS mass and questionable foramen ovale involvement. Open cranial biopsy showed lymphoma.

Figure 3



Figure 2



References

Messerer, Mahmoud, et al. "Percutaneous biopsy of lesions in the cavernous sinus region through the foramen ovale: diagnostic accuracy and limits in 50 patients: Clinical article." Journal of neurosurgery 116.2 (2012): 390-398.

