Improved Early Visual Outcomes in Patients with Ophthalmic Region Aneurysms Undergoing Anterior Clinoidectomy using the Ultrasonic Aspirator Compared to the use of the High Speed Drill

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Introduction

Ophthalmic region aneurysms present unique surgical challenges given their proximity to the skullbase, optic canal and anterior clinoid process. Adequate exposure of the aneurysm neck for microsurgical clipping typically requires anterior clinoidectomy. The visual outcomes following this maneuver using the Ultrasonic Aspirator compared to standard use of a high-speed drill is not well known.

Methods

We retrospectively reviewed an IRB approved, prospectively maintained institutional database to identify patients with ophthalmic region aneurysms in whom an anterior clinoidectomy was performed from January 2010 to January 2014. Age, sex, race, aneurysm location, size, use of temporary clipping, rupture status, length of hospital stay and early visual outcomes, defined as those which occurred before hospital discharge, were recorded. Visual function was rated as either 1)no new visual deficits or 2) any new visual deficits.

Results

Thirty-three patients underwent 33 craniotomies for the treatment of 42 aneurysms. An anterior clinoidectomy was performed in all patients using either the Ultrasonic Aspirator or a high-speed drill. There was no difference between these two groups for median age (p=0.52), sex (p=0.53), race (p=0.65), the use of temporary clipping (p=0.83), ruptured status (p>0.99) or length of hospital stay (p=0.10). There was a small but statistically significant difference in median aneurysm size between the Ultrasonic Aspirator group (3.25mm, range:0.5-10.0mm) and the high-speed-drill group (5.0mm, range:3.2-8.7mm) (p=0.01). There was a significant difference in early visual outcomes between groups. Only 12.5% of patients (n=2) in the Ultrasonic Aspirator group had new early visual deficits compared to 47.1% (n=8) in the high-speed drill group (p=0.04).

Conclusions

The use of the Ultrasonic Aspirator for anterior clinoidectomy is associated with improved early visual outcomes for ophthalmic region aneurysms compared to the use of the high-speed drill. Further studies are needed to better understand the mechanism behind this finding.

Pre-Clinoidectomy Surgical View

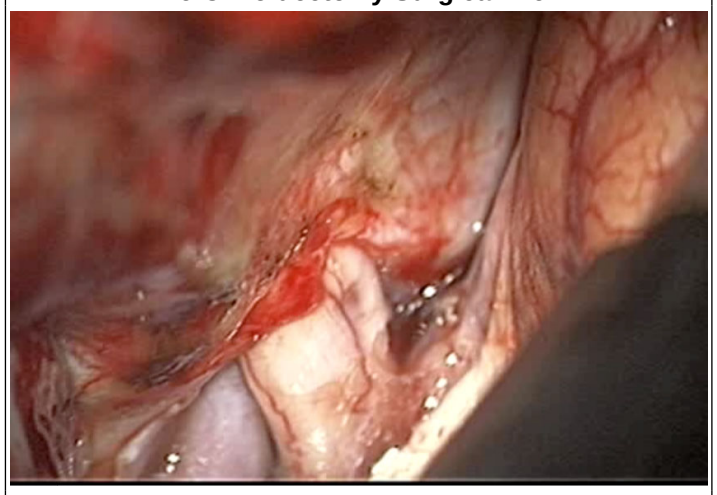

Figure #1

Learning Objectives

By the conclusion of this session, participants should be able to: Understand the use of the Ultrasonic Aspirator for anterior clinoidectomy is associated with improved early visual outcomes in patients with ophthalmic region aneurysms when compared to the use of the high-speed drill.

Intraoperative Photography Demonstrating the use of the SONOPET for Clinoidectomy

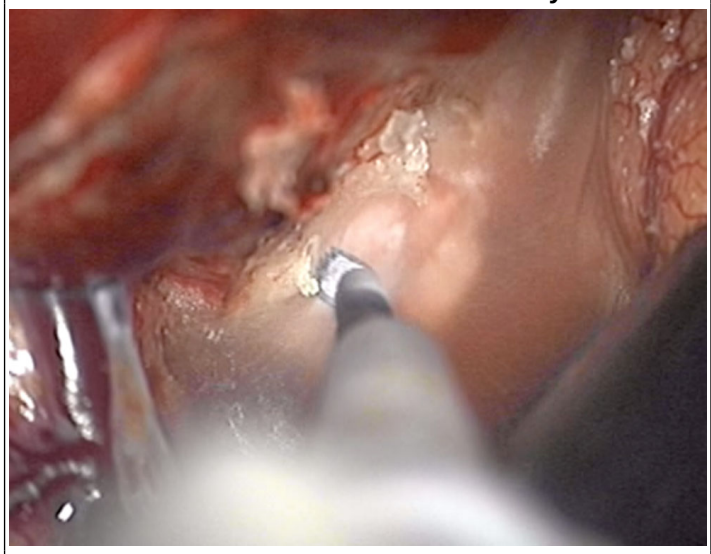

Figure #2

Intraoperative Photograph Demonstrating Post-Clinoidectomy Surgical View

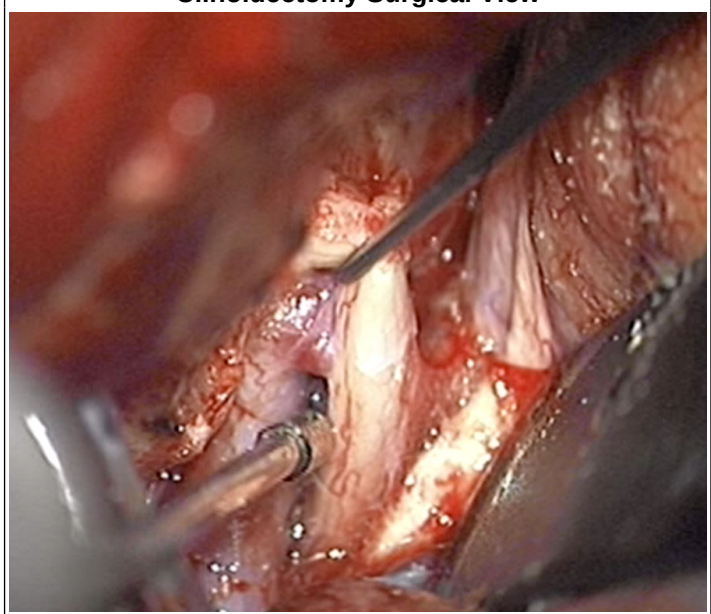

Figure #3