Microvascular Decompression – an ACS-NSQIP-Database Analysis of Factors Associated with 30-Day Readmission and Reoperation Risk

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Introduction

- Microvascular Decompression (MVD) is the preferred treatment for refractory trigeminal neuralgia (TN), hemifacial spasm (HFS), and glossopharyngeal neuralgia (GN).
- Despite its effectiveness across a variety of patients and indications, MVD carries risk of complications, including posterior fossa hemorrhage, stroke, and cranial nerve injury.
- In this study, we use the American College of Surgeons–National Surgical Quality Improvement Program (ACS-NSQIP) database to examine outcomes following MVD and identify risk factors associated with adverse outcomes.

Methods

- A retrospective review of the ACS-NSQIP database was performed, with CPT Code 61458 (craniotomy, suboccipital; for exploration or decompression of cranial nerves) queried between 2007 and 2014.
- Only cases with ICD-9 codes 350.1 (trigeminal neuralgia), 351.8 (other facial nerve disorders), 351.9 (facial nerve disorder), and 352.1 (glossopharyngeal neuralgia) were considered.
- Patient demographics, comorbidities, and 30-day outcomes were analyzed. Univariate and multivariate regression analyses were performed to identify predictors of reoperation and adverse events.

Results

- 506 craniotomies were studied: 406 for TN, 91 for HFS, and 9 for GN.
- 19 (5.4%) instances of 30-day readmission were reported, with 14 (2.8%) patients returning to the OR.
- The most common cause for readmission was postoperative pain, seen in 3 patients, CSF leak, seen in 2, meningitis in 1, and miscellaneous neurologic symptoms in 4.
- The most common reoperations reported included CSF leak repair, seen in 5 patients, followed by wound revision in 3 and shunt placement in 1. No incidences of death or hemorrhage requiring operation were reported.
- The most common medical risk factor was hypertension, seen in 175 patients (34.6%).
- Morbid obesity ($p=0.03$, Fisher's Exact Test) and Diabetes ($p=0.017$, Fisher's Exact Test) were associated with reoperation risk.
- Age, ASA class, operative time, and indication for surgery (TN, HFS, or GN) were not associated with significant differences in outcomes.

Learning Objectives

By the conclusion of this poster, participants should be able to:

1) Characterize common complications following Microvascular Decompression (MVD) and the overall complication rate.
2) Recognize common risk factors in the MVD population, and factors that place patients at elevated risk for complications.
3) Identify the NSQIP Database as a research tool to study the outcomes of neurosurgical operations.

Conclusions

- Microvascular Decompression is a safe, effective procedure for refractory TN, HFS, and GN, with low rates of 30-day readmission (5.5%) and reoperation (2.8%).
- Age, ASA class, and indication for surgery are not associated with poor outcomes.
- Although safe, risks for MVD persist despite optimal surgical management. Diabetes and morbid obesity are associated with increased risk for reoperation, and may warrant further precautions.