

Looking at more than just complications and outcomes;
how well can Jannetta procedures (microvascular
decompression) be performed in a community hospital
setting?

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Abstract

We analyzed certain measures that reflect value in all patients who underwent the Jannetta procedure, previously known as microvascular decompression (MVD) from January 1, 2009 thru December 31, 2013 at Mercy Medical Center, Springfield, Massachusetts. We report on surgical time, anesthesia time, morbidity, mortality, and surgical success rates from a community hospital setting. To the best of our knowledge, this is the first report of such results from a non-academic, community hospital. This report illustrates that a relatively uncommon, technically demanding neurosurgical procedure can be delivered effectively with high value and low cost in a community hospital setting.

The Jannetta procedure, previously known as microvascular decompression (MVD), is firmly established in the neurosurgical armamentarium. Seminal articles from its pioneer, Dr. Peter J. Jannetta, and others thoroughly discuss techniques, complications, and outcomes.^{2,8} The literature is also replete with papers comparing outcomes in major teaching hospitals to those of smaller community hospitals. A review of the literature by Ayanian and Weissman found “moderately strong evidence of better quality and lower risk adjusted mortality in major teaching hospitals” for a number of conditions.¹ Kalkanis, et. al reviewed morbidity and mortality data for microvascular decompression (MVD) in the United States and found significantly lower morbidity rates in high volume hospitals.⁶ High volume is generally associated with academic or tertiary care medical centers. With this in mind we analyzed certain measures that reflect value in all patients who underwent the Jannetta procedure from January 1, 2009 thru December 31, 2013 at Mercy Medical Center, Springfield, Massachusetts.

Methods

Data Collection

All patients who underwent the Jannetta procedure between January 1, 2009 and December 31, 2013 were included in the analysis. The patient list was obtained from an independent billing service using CPT code 61458 applied to the surgeon's (KKK) billing records during the study period. The anesthesia records were analyzed by two members of the anesthesia department (GA, PK). Data was also obtained from office and hospital charts. For final follow-up assessment, patients were contacted by telephone or their charts reviewed in March 2014 by a member of the hospital staff not directly involved with patient care.

Hospital Characteristics

Mercy Medical Center is 343 bed short term acute care hospital located in Springfield, Massachusetts. Mercy Hospital is a faith-based, non-profit organization. There are no residency or fellowship training programs. All patients spent at least one night in the medical-surgical intensive care unit (ICU). Care after ICU was provided on a regular surgical floor shared with the orthopedic service. Existing hospital infrastructure was utilized without adding any new personnel teams or processes.

Patient Characteristics

Only patients with typical, classical, type 1 trigeminal neuralgia (TN), hemifacial spasm (HFS), or glossopharyngeal neuralgia (GPN) were offered the Jannetta procedure.

Surgical Technique

All surgeries were done "skin to skin" by a single surgeon (KKK) without any resident or fellow assistants. The other members of the surgical team (surgical technicians, anesthesia staff, circulating nurses, and physician assistants) were fairly uniform throughout the study period. The surgical technique

was that learned during residency at University of Pittsburgh under Peter Jannetta, M.D. between 1990-1997 and shall not be detailed here.⁵ In short, no preoperative lumbar drains were used. There were no tissue glues or adhesives used for closure of the dura. All cases were performed with intraoperative neurophysiologic monitoring.

Results

Patient Characteristics

The patient group comprised 42 females and 17 males ranging in age from 30-78 years old. There were a total of 59 patients who each had a single Jannetta procedure during study period: 45 for TN, 13 for HFS, and one for GPN.

Surgical procedure time, anesthesia time, blood loss

Length of surgery (measured from incision to dressing application) averaged 109 minutes. Time of anesthesia (defined as the total time patient was under the care of anesthesia service) averaged 176 minutes. No patients required a blood transfusion during surgery or during the postoperative period.

Relief of Symptoms

Follow-up was available on all patients either via phone call or chart review of their last office visit. Length of follow up ranged from 3 months to five years. Though our intent was not to perform yet another outcome study on MVD, we used a very simple metric to judge short term surgical success. In March 2014 it was ascertained whether patients were free of TN with/without medication, free of HFS, or free of GPN. Of the patients with TN, 78% were free of TN (3 patients were still taking medication for TN). Ninety-two percent of patients with HFS were spasm free, and the sole GPN patient was free of pain.

Morbidity, Mortality

There were no deaths in this series. No patients suffered from cerebrospinal fluid (CSF) rhinorrhea, wound infection, meningitis, or immediate postoperative deficit of cranial nerves VII-XII.

There were three patients who suffered from complications. One patient developed a CSF leak from the wound on postoperative day 3 and was initially treated with a lumbar drain and then, wound revision. One patient with severe vertebro-basilar compression of the brainstem had slow emergence from anesthesia. Though extubated and following commands, an immediate postoperative CT scan demonstrated a “tight” posterior fossa. An immediate re-exploration and a precautionary lateral cerebellar resection were performed. The patient recovered without deficit and had complete resolution of HFS. One patient developed delayed facial nerve palsy 12 days after surgery for HFS. The facial palsy resolved completely by the seventh week postoperatively and the patient remained free of HFS.

Length of Stay

Length of stay (LOS) in the hospital averaged 2.3 days (range 30 hours- 14 days).

Discharge Disposition

All patients were discharged home postoperatively.

Discussion

Microvascular decompression, pioneered by Peter J. Jannetta, M.D., is firmly established as the treatment of choice for patients that suffer from TN, HFS, or GPN. Techniques, complication rates, and success rates are well reported in the literature.^{2,6} It was not the purpose of this paper to reconfirm this, but rather, add to the growing discussion about value in healthcare.⁹ As costs of healthcare are in the spotlight nationally, additional measures that usually are not reported but entail cost (either directly or indirectly) will likely also be analyzed. These may include the cost associated with the hospital setting (community versus academic) and resource utilization (surgical procedure times, LOS, etc.) Longer surgical procedure times and LOS have been associated with higher complication rates.⁷ LOS can be “a surrogate marker of...coordinated care as well as a marker of efficient, complication-free surgery.”⁸

Reporting these measures is scarce in the neurosurgical literature.⁹ The group from UCLA recently reported on value of care in 49 patients having MVD. They demonstrated the “impact of coordinated implementation of processes” in improving various metrics that previously have not often been taken into account in the neurosurgical literature. In their series, average surgical procedure time was 230 minutes, LOS was 3.27 days, and 8 patients had complications. Their report is important as it establishes the importance of these metrics as a measure of value. They also emphasized the importance of protocols and processes to achieve better value.⁹

Posterior fossa microsurgery is technically demanding and complex care is thought to be delivered better in academic hospitals.^{1,6,11} To the best of our knowledge, there has not yet been a report on operative times, anesthesia times, complications and outcomes as they apply to MVD, the Jannetta procedure, performed in a community hospital setting. Community hospitals differ from large academic institutions in many ways. They are usually smaller, may offer less complex care, and are usually not teaching residents and fellows¹¹. Patient satisfaction rates, however, may be higher in nonteaching hospitals.¹¹ In the state of Massachusetts, academic medical centers, specialty hospitals, and teaching hospitals tend to have higher than average relative prices across all payer networks.⁴ In contrast, community hospitals tend to have lower prices across all payer networks.⁴ In some situations, community hospitals are reimbursed at rates up to 40% lower than network averages.⁴

Utilizing only processes common to the community hospital setting and without any additional administrative or protocol measures, we report on some measures of value regarding performance of the Jannetta procedure over a 5 year period. The preoperative assessment, surgery, and postoperative outpatient care were all performed by a single physician (KKK). The results compare very favorably to those reported in the literature.^{5,6,8,9,10} In 59 consecutive cases, the average operative time and anesthesia time were 109 and 176 minutes, respectively. There were no deaths and 3 patients had complications that did not lead to any long term problems. LOS was 2.3 days without excluding any outliers. Short term

surgical success rates were in keeping to those reported in the literature with 78 and 92% of patients with TN and HFS, achieving relief of symptoms, respectively .

Conclusions

This report illustrates that a relatively uncommon, technically demanding neurosurgical procedure can be delivered effectively with high value and low cost in a community hospital setting.

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Disclosures

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