

## Out Come of Microvascular Decompression (MVD) for Hemifacial Spasm

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### ABSTRACT

**Objective:** To assess the efficacy of MVD for hemifacial spasm.

**Material and Method:** This study included (10) Ten case s of hemifacial spasm treated at the Department of Neurosurgery Quaid-e-Azam Medical College / Bahawal Victoria Hospital Bahawalpur during a period of (3) three year from January 2007 To December 2009, with follow up period of one year. Micrvascular Decompression (MVD) for 7<sup>th</sup> nerve was performed in all the cases.

**Results:** Eight (8) were female and (2) two were male patients with age range from 30 – 50 years. Duration of symptoms in all the patients were more than two years and all have used medical treatment already prior to surgery. All the patients were found to be cured from their illness during post-operative follow up period for one years. There were fewer complications those were treated satisfactorily.

**Conclusion:** Micro-Vascular Decompression (MVD) for Hemifacial spasm is an excellent procedure with about more than 90% cure rate, as mentioned in the international literature and was found in our series of cases as well.

**Key Words:** Hemi facial Spasm, Tonus, Microvascular Decompression.

**Abbreviations:** Hemi facial Spasm, Tonus, MVD: Microvascular Decompression.

### INTRODUCTION

First described by Gowers in 1884, hemifacial spasm represents a segmental myoclonus of muscles innervated by facial nerve. Irritation of facial nerve nucleus is believed to lead to hyper -excitability of the facial nerve nucleus while irritation of proximal nerve segment may cause ephaptic transmission within the facial nerve, either mechanism explains the rhythmic involuntary myoclonic contractions observed in hemifacial spasm.

This is a condition in which there is involuntary contraction of muscles which are innervated by the 7<sup>th</sup> cranial nerve. The condition has two forms: typical and atypical. In the typical case the twitching starts around the eye usually the lower lid. As time progresses, the twitching spreads to include the whole lid, then the cheek bone, then the lower jaw. As the progress usu-

ally continues, the muscles in the neck become involved.

In the atypical form, twitching starts in the lower face and progresses to involve the remainder of the facial muscles.

A common feature is the development of a twitch that does not stop. It is called TONUS. In the eye area, this causes the eye to close, a prolonged wink, which the sufferer cannot usually oppose. The tonus phenomenon lasts a few seconds, but can be prolonged.<sup>1</sup>

Hemifacial (HFS) spasm is a neuromuscular disorder that is characterized by paroxysmal bursts of tonic or clonic activity occurring in the muscles innervated by the facial nerve.

The disorder presents almost always unilaterally, although bilateral involvement may occur rarely in severe cases.

Hemifacial spasm may occur in both men and women, but a slight female preponderance exists. It most frequently affects women in their fifth or sixth decade of life, with no racial or ethnic predilection.<sup>2</sup>

**MATERIALS AND METHODS**

It is a series of (10) cases of hemifacial spasm treated surgically at the Department of Neurosurgery Quaid-e-Azam Medical College / Bahawal Victoria Hospital Bahawalpur, during a period of three years from January 2007 To December 2009, with follow up period of one years.

**RESULTS**

Eight were female and (2) two were male patients. Females were in the age range of 30 to 50 and two males were 40 and 45 years old respectively. Average age was 40 years at presentation and average duration of symptoms was 2 years.

Left side was involved in (8) eight females (2) males, right side of the face was affected by the disease.

In all the cases Micro vascular Decompression of the facial nerve was performed by standard method of retromastoid, posterior fossa approach.

In all the cases, a loop of Anterior Inferior Cerebellar artery (AICA) was found, compressing upon the facial nerve at its exit from the brain stem that was dissected and displaced away from the facial nerve.

**Table 1:** *Complications of Surgery (MVD) for Hemifacial Spasm.*

Sr. No.	Name of Complication	No. of Patients	Percentage
1.	Wound Infection	1	10%
2.	Transient Deafness	1	10%
3.	Vertigo	2	20%

**COMPLICATIONS**

One (1) 10%, patients out of (10) ten, developed transient deafness post operatively, two (2) 20% patients suffered from vertigo and one (1) 10%, has had wound infection with collection of pus within the wound.

There was severe pain, redness and tenderness over the wound and neck, with fever in the patient

with wound infection so the wound had to be opened to drain the pus. Antibiotic cover was given after getting the culture and sensitivity report. Twice daily dressings of wound were also performed so that the wound completely healed within two weeks.

One (1) case who developed mild deafness after surgery, it was fully resolved within (2) two months of surgery.

Two (2) other patients who developed vertigo after MVD, they took longer period to be fully cured from their vertigo and at about four (4) months after surgery, they were fine with no complaint of vertigo.

Eight (8) 80%, patients out of ten (10) have had relief of their symptoms of hemifacial spasm immediately post operatively.

In two (2) 20%, patient there were recurrent episodes of the spasm for four months after surgery and then it settled down completely.

**DISCUSSION**

In essentially all the cases, Hemifacial spasm (HFS) is caused by an ectatic blood vessel that irritates the facial nerve (or nucleus) by compressing or forming a loop around the nerve at the cerebellopontine angle at its exit from the brainstem, as was found a loop of anterior inferior cerebellar artery (AICA) compressing upon the facial nerve at its exit from the brainstem in all of our cases.<sup>3</sup>

Compressive lesions (e.g. Tumours, Arteriovenous Malformations, and Pagets Disease) and non-compressive lesions (Stroke, Multiple Sclerosis Palque, Basilar Meningitis) may present as hemifacial spasm.

Medical history and neurological examination are usually suggestive for the diagnosis of hemifacial spasm. An MRA / MRI is performed to exclude the small but definite probability of a mass lesion in the region of the cerebellopontine angel and to identify the blood vessel irritating the facial nerve. All of our cases were diagnosed by clinical history and examination and MRI in all the cases was performed to exclude any tumour in that region.<sup>3</sup>

Differential diagnosis of the condition is from craniofacial tremors found in Parkinson's disease or thyroid dysfunction, essential blepharospasm which is bilateral twitching confined to eyelid and the forehead, Meige's syndrome and facial myokymia.<sup>3,4</sup>

In the mild and early cases twitching can be controlled through the use of some anti-seizure drugs or

minor tranquilizers but the definitive treatment is Micro vascular Decompression of the facial nerve at its exit from the brain stem. The offending vessel is moved away from the nerve which is padded with small piece of Teflon. So in all our cases we performed Micro vascular Decompression of the facial nerve at its exit from the brain stem.

Micro vascular decompression of the facial nerve root entry zone eliminates the irritation causing Hemifacial spasm. This allows the hyperactivity of the facial nerve nucleus to settle towards normal condition. While spasm may disappear immediately after surgery, usually the hemifacial spasm gradually subsides and is cured over a course of several weeks or months.

In our experience, over 85% of patients with typical hemifacial spasm are cured with MVD surgery, and another 5 – 10% have significantly reduced spasms. The risks of surgery have been small.

Hearing loss, new weakness of the face and swallowing difficulties are rare and usually dissipate.

Other rare complications include infection, inflammation and healing difficulty leading to CSF leak.

The risk of serious MVD surgery complications due to stroke, bleeding or brain swelling have been less than 0.33%.<sup>5</sup>

Micro vascular decompression is directed to the cause of the problem, i.e vascular compression. The goal is to move the vessel (artery or vein) away from vulnerable site on the nerve and provide a pad to prevent future compression. Complications can include infection 1%, CSF leak 3%, facial weakness 1.4%, hearing loss 0.86% and stroke < 0.5%. Successful spasm relief ranges from 79 – 95%.

Recovery from the procedure usually takes six week. The spasm can persist in 44% of patients, taking up to 18 months for complete resolution. 90% of patients are spasm free by 12 week after surgery.<sup>6</sup>

In our series of cases the results of Micro vascular decompression were very good. Although there were few complications after surgery but the ultimate prognosis was excellent matching with the international series.

## CONCLUSION

Micro vascular Decompression (MVD) is very useful Neurosurgical procedure for the treatment of hemifacial spasm, because there is no effective medical remedy for this disease and at the end of the day surgical procedure has to be decided.

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