

Key Hole Craniotomy for Microvascular Decompression for Trigeminal Neuralgia and Hemifacial Spasm: A Short Series of 4 Cases

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Abstract Micro vascular decompression is performed as a common procedure in neurosurgical field for trigeminal neuralgia, hemi facial spasm, tinnitus etc. Regular craniotomy or craniectomy amounts to significant concerns in length of incision, size of craniotomy, postoperative stay in hospital, complications encountered and outcome. Keyhole craniotomy is an answer to all these concerns [1]. We present here our short series of key hole craniotomies done for micro vascular decompression for various indications and confirming the favorable outcome.

Keywords: key hole craniotomy, micro vascular decompression

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1. Introduction

Trigeminal neuralgia, hemi facial spasms, positional vertigo are known disabling conditions which make the day to day life of the patient miserable and need urgent attention. Medical treatment is always the first line adopted and failing which surgical means come into play. Microvascular decompression (MVD) is the standard surgical means done to achieve the aim. MRI, MRA and MRV once confirm the vascular element requiring decompression, MVD is done. Standard MVD however requires a big incision, a big craniotomy a longer hospital stay and post op complications say wound healing, infection, pseudomeningocele formation etc. are frequently seen. Key hole craniotomy is the answer to it and we present our short series of 4 patients done in our institute. The outcome was encouraging and complications negligible.

2. Materials and Methods

In our institute 4 patients underwent key hole craniotomy and microvascular decompression of the trigeminal or facial nerves for trigeminal nerve and hemi facial spasm in last 5 years. Our 1st patient was a 66 year old male who presented with trigeminal neuralgia. 2nd patient was a 30 year old lady again with incapacitating facial pain as the presentation with failed medical treatment. 3rd patient was another lady 36 year old with trigeminal neuralgia after exhausting her medical means. 4th patient was 69yr old male and he presented with hemi facial spasm. MRI confirmed the vascular bundle compressing the related nerves. In 4th case vertebral artery with accompanying vein was the culprit. (as per [Table 1](#)).

Table 1. Master chart of the patients treated

Serial number	Hospital number	Age /sex	Diagnosis	Surgery done	Complications
1	730580	66yr/male	Trigeminal neuralgia	Keyhole microvascular decompression	nil
2	873313	30yr/female	Trigeminal neuralgia	Keyhole microvascular decompression	nil
3	837863	36yr/female	Trigeminal neuralgia	Keyhole microvascular decompression	nil
4	730543	69 yr/male	Hemi facial spasm	Keyhole microvascular decompression	nil

3. Results

All patients were carefully evaluated clinically and radiologically with a MRI, MRA and MRV. (Figure 1) After ensuring medical treatment has failed patients were given the option of microvascular decompression via a key hole approach. All possible complications of infection, bleeding, facial paresis etc. were explained. Patients were operated under intraoperative neuromonitoring. Patients after GA were positioned in a lateral position with head turned to opposite side and retromastoid craniotomy was performed. Taking care the skin incision not more than 5 cm and craniotomy less than 2 cm. (Figure 2 to Figure 6) After opening the dura the Doro retractor system was used to retract the cerebellum medially after releasing the CSF from cisterns. Microscope was brought into field and microvascular decompression of the compressing elements was performed by careful dissection of the arachnoid and Teflon sheet was placed between the nerve and the vascular bundle. (Figure 7 & Figure 9). No obvious complications were encountered in the postoperative period. All patients were discharged home after suture removal and are being followed up in outpatient clinic with significant improvement in their symptoms.



Figure 1. MRI revealing vascular compression of the neural elements

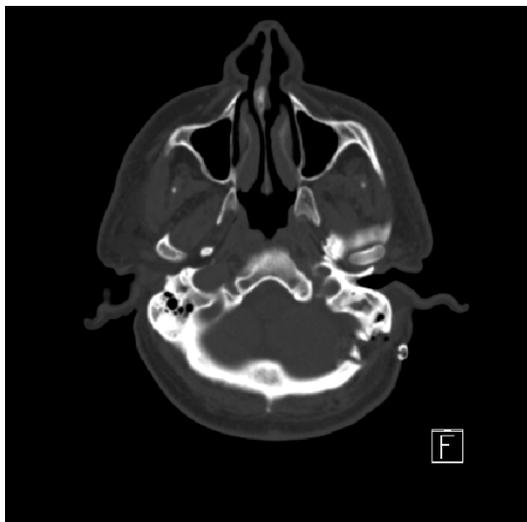


Figure 2. Post op CT showing the craniotomy size

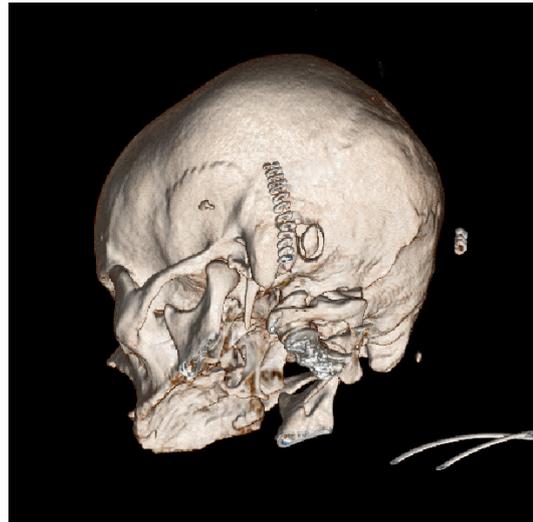


Figure 3. Post op CT showing the craniotomy size

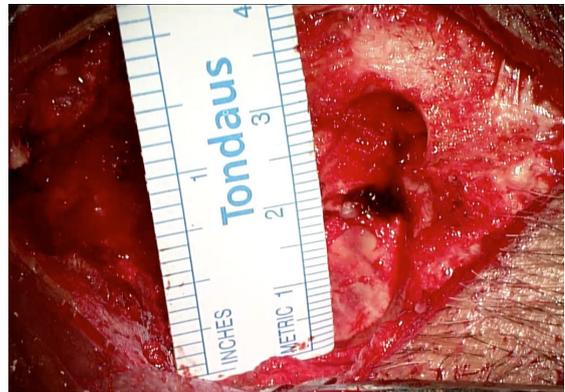


Figure 4. Intraop pictures showing the size of craniotomies



Figure 5. Intraop pictures showing the size of craniotomies



Figure 6. Intraop pictures showing the size of craniotomies

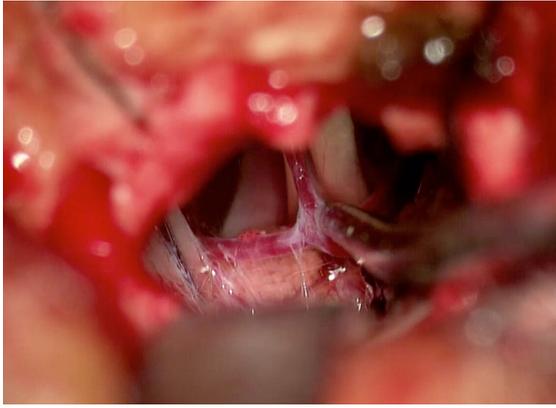


Figure 7. Intraop picture of vascular compression of the trigeminal nerve

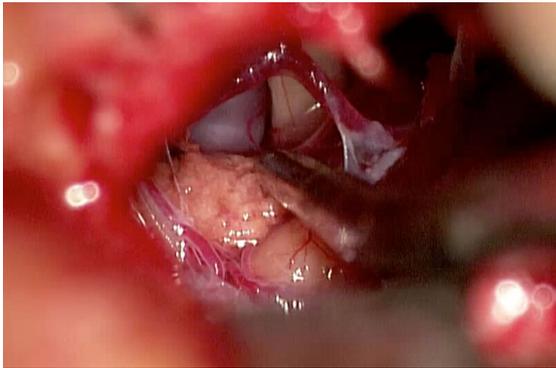


Figure 8. Intraop pictures of microvascular decompression being attained by placing Teflon patch



Figure 9. Intraop pictures of microvascular decompression being attained by placing Teflon patch

4. Discussion

In 2007 P. Charalampaki described their series of keyhole craniotomies in 65 cases done with endoscopic assistance for trigeminal neuralgias and concluded the procedure to be less traumatic [1]. In 2004 Rak R described

the importance of endoscopic assisted craniotomy for micro vascular decompression of trigeminal neuralgia, hemi facial spasm and positional vertigo and tinnitus however their group was of conventional craniotomy only [2]. Kabil M S in 2005 described a comparison of micro vascular decompression done via a conventional microscopic approach versus endoscopic group [3]. Isu T in 1983 emphasized the micro vascular decompression role in set of conditions say trigeminal neuralgia, hemi facial spasm, paroxysmal tinnitus and nystagmus by neurovascular decompression [4]. Holley P in 1996 stressed the importance of time of flight MRI sequence in diagnosing the vascular compression of the posterior fossa conditions requiring microvascular decompression [5]. Tanaka T in 2005 laid the emphasis on utility of magnetic resonance cisternography using three-dimensional fast asymmetric spin-echo sequences with multiplanar reconstruction: the evaluation of sites of neurovascular compression of the trigeminal nerve [6].

5. Conclusion

In our series the microvascular decompression we could attain with the key hole approach satisfactorily without encountering any significant morbidity. Key hole craniotomy hence is the answer to this disabling condition minimizing postoperative complications. Things can be further made easier by use of endoscope assistance as suggested in literature [2].

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