

# Microvascular Decompression for Hemifacial Spasm : Difficult Case Caused by Abnormal Location of Sigmoid Sinus

– Case Report –

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Microvascular decompression (MVD) surgery has become the most definitive treatment for hemifacial spasm (HFS). Today, retromastoid craniectomy for MVD surgery is widely performed and standardized surgical technique has settled. Complications of this procedure are related to the injury of cranial nerves and vessels in the lower cerebellopontine angle. We experienced a rare case of abnormal running sigmoid sinus. Here, we must attend to the preoperative imaging studies such as MR images while surgical procedures are performed.

**KEY WORDS:** Microvascular decompression (MVD) · Hemifacial spasm (HFS) · Sigmoid sinus.

## INTRODUCTION

In 1962, Gardner and Sava proposed the vascular decompression for treatment of trigeminal neuralgia and hemifacial spasm.<sup>2)</sup> Fifteen years later, the pioneering work of Jannetta, et al. provided a great contribution to our understanding of the pathophysiological mechanism of this rhizopathy.<sup>4)</sup> Microvascular decompression (MVD) operation has become a definitive treatment for Hemifacial spasm (HFS) because it is less invasive and produces excellent results including the preservation of vascular and neural function, with only few complications.<sup>7)</sup> MVD is usually performed with the patient in a lateral recumbent position.<sup>1,4)</sup> A retromastoid craniectomy is performed with high-speed pneumatic perforator and then, more craniectomy is performed with rongeurs until sigmoid sinus is observed. Focal opening of the dura is made near the foramen magnum, and clear cerebrospinal fluid (CSF) is drained out sufficiently from the cisterna magna. Here, we report a case of abnormal location of sigmoid sinus which we had problem performing above procedures.

## CASE

A 54-years-old female had suffered with severe right

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HFS for seventeen years, associated with right periorbital twitching. MR image and MR angiogram, pure tone audiometry/impedance audiometry (PTA/IA) and facial electromyography (EMG) were performed for preoperative examinations. There was no significant abnormal finding in PTA/IA. Degenerative ratio of right side face was 24.2% in facial EMG. The offending artery was confirmed right posterior inferior cerebral artery (PICA), and abnormal running sigmoid sinus was observed in MR images (Fig. 1). We performed careful craniectomy to avoid the rupture of sigmoid sinus. It was difficult to open the dura near to the foramen magnum for sufficient CSF drainage because the sigmoid sinus was running through abnormal location (Fig. 2). So we had to drain CSF by retraction of cerebellum. After MVD was performed, the patient's HFS was subsided, and there were no complications such as facial weakness or hearing difficulty.

## DISCUSSION

The microsurgical technique for MVD was similar to that devised by Jannetta, et al.<sup>4)</sup> The cerebellopontine angle (CPA) and root entry zone (REZ) were explored through a small (approximately 2.5cm in diameter) retromastoid craniectomy.<sup>3)</sup> The burr hole was positioned approximately 3.0cm above the mastoid tip and medial to the mastoid groove, to avoid damaging the transverse and sigmoid sinus.<sup>5,6,8)</sup> When craniectomy is performed, it is important to take caution about preventing injury of both sinuses. Dura opening is generally performed with Y-shape fashion. Initial CSF drainage is important for

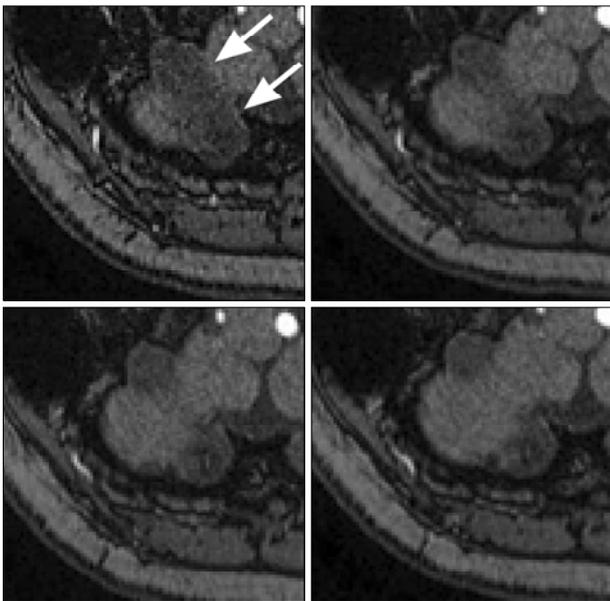


Fig. 1. Preoperative MR image. Abnormal running right sigmoid sinus is observed (white arrows).

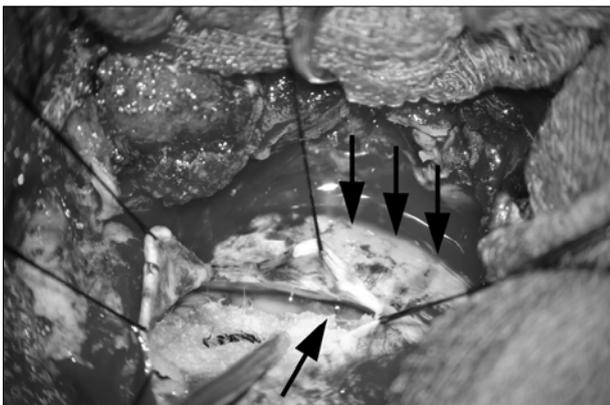


Fig. 2. Intraoperative microscopic view. Dural opening is made at upper border of sigmoid sinus (black arrows).

relaxation of the cerebellum and opening of surgical corridor to the deeper arachnoid cisterns. To obtain sufficient CSF drainage, it is necessary that craniectomy and dura opening is performed as possible as near to the foramen magnum so to open the arachnoid cistern. For these procedures, we must attend to the preoperative MR images. MR imaging is the most reliable method for assessment of HFS.<sup>9)</sup> The main role of preoperative

MR imaging is to identify the abnormal neurovascular relationships at the REZ. Furthermore, possible anatomical abnormalities have to be detected with MR images. If we were not prepared with the patient's abnormal anatomy from the preoperative MR images, we may encounter more severe difficulties.

## CONCLUSION

Retromastoid craniectomy for MVD surgery is widely performed and surgical technique has settled with standardization. However, anatomical abnormalities are observed in some cases. Therefore, we must attend to the preoperative imaging studies such as MR images and take caution during the surgical procedures are performed.

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