Transposition in microvascular decompression for hemifacial spasm

- Glue-transposition technique for hemifacial spasm involving vertebrobasilar dolichoectasia: a comparative study and literature review
- Which surgical technique has a superior clinical outcome in microvascular decompression? a systematic review and meta-analysis study of transposition versus interposition for trigeminal neuralgia and hemifacial spasm
- In Reply: Evaluation of 2 Surgical Techniques-Transposition Versus Interposition Microvascular Decompression for Hemifacial Spasm: A Systematic Review of 19 437 Patients
- Letter: Evaluation of 2 Surgical Techniques-Transposition Versus Interposition Microvascular Decompression for Hemifacial Spasm: A Systematic Review of 19 437 Patients
- How I do it: combined interposition-transposition technique for microvascular decompression in primary hemifacial spasm
- Dynamic changes of abnormal muscle response during decompression procedures in double compression-type hemifacial spasm
- Evaluation of 2 Surgical Techniques-Transposition Versus Interposition Microvascular Decompression for Hemifacial Spasm: A Systematic Review of 19 437 Patients
- Bridge-layered decompression technique for vertebral artery-involved hemifacial spasm: technical note

The first description of transposition for treating hemifacial spasm was that by Fukushima [1]), who used PTFE (Teflon) tape. Since then, various materials have been employed in transposition procedures, including strips of dura or fascia, sutures, and tape or a tube made of silicone (polydimethylsiloxane) or ePTFE

Sato et al. enrolled 175 consecutive patients with HFS who underwent MVD between 2012 and 2018. The endpoint was defined as the time point at which the patient became spasm-free based on the outpatient interview. Patients were divided into six groups depending on when they became spasm free after the operation, as follows: <7 days (n = 62), 7 days to 1 month (n = 28), 1 to 3 months (n = 38), 3 to 6 months (n = 25), 6 to 12 months (n = 17), and >12 months (n = 5). The median time to become spasm free after MVD was 30.0 days. Association of 11 factors (age, sex, laterality, number of offending arteries, vertebral artery compression, number of compression sites, compression at root detachment zone, preoperative Botox treatment, indentation of the brain stem on preoperative magnetic resonance image, transposition, and interposition) with the spasm-free rate was assessed using the Cox's proportional hazards model. Spasm-free rate curve after MVD for the significant factor was obtained using the Kaplan-Meier method. In univariate and multivariate analyses, non transposition was significantly related to delayed HFS cure after MVD (hazard ratio [HR], 0.60; 95% confidence interval [CI], 0.42, 0.87; p = 0.0068 and HR, 0.60; CI, 0.43, 0.85; p = 0.042, respectively). The spasm-free rate was higher in the transposition than in the non transposition group (p = 0.0013). As shortening the time until spasm free after MVD improves patients' quality of life, transposition should be recommended. Prediction of spasm-free time could relieve the anxiety of postoperative patients [2].

Fully endoscopic MVD was performed using 4-mm 0- and 30-degree endoscopes. The endoscope was fixed with a pneumatic holding system, and a bimanual technique using single-shaft instruments was performed. Transposition was performed with Teflon felt string and fibrin glue. Surgical results were evaluated using the scoring system proposed by Kondo et al. Results The endoscope was introduced via a retrosigmoid keyhole. The 0-degree endoscope was advanced through the lateral aspect of the cerebellar tentorial surface to the trigeminal nerve in cases of trigeminal neuralgia and through the petrosal surface of the cerebellum to the facial nerve in cases of hemifacial spasm. Neurovascular conflicts and perforators from the offending artery were clearly demonstrated under the 30-degree endoscopic view, and transposition of the offending artery was safely performed with the preservation of perforators. Clinical symptoms improved without permanent complications. Conclusion Endoscopic MVD with the transposition technique is feasible. Superb endoscopic views demonstrate perforators arising from the offending artery behind the corner, allowing damage to perforators to be avoided during the transposition technique. Endoscopic MVD using the transposition technique is expected to offer excellent surgical results [3)]

1)

Fukushima T: [Results of posterior fossa microvascular decompression in the treatment of hemifacial spasm]. Facial N Res Jpn 4: 9– 14, 1984. (Japanese

2)

Sato Y, Shimizu K, Iizuka K, Irie R, Matsumoto M, Mizutani T. Factors Related to the Delayed Cure of Hemifacial Spasm after Microvascular Decompression: An Analysis of 175 Consecutive Patients. J Neurol Surg B Skull Base. 2021 Dec 29;83(5):548-553. doi: 10.1055/s-0041-1740970. PMID: 36097503; PMCID: PMC9462961.

3)

Komatsu F, Imai M, Hirayama A, Hotta K, Hayashi N, Oda S, Shimoda M, Matsumae M. Endoscopic Microvascular Decompression with Transposition for Trigeminal Neuralgia and Hemifacial Spasm: Technical Note. J Neurol Surg A Cent Eur Neurosurg. 2017 May;78(3):291-295. doi: 10.1055/s-0036-1592077. Epub 2016 Sep 5. PMID: 27595274.