

# Fully endoscopic microvascular decompression for hemifacial spasm

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# Financial disclosures

- None

# Introduction

- Hemifacial spasm (HFS): unilateral tonic and/or clonic contractions of facial muscles
- Endoscope advantages:
  - Enhanced and safe visualization of neurovascular conflict
  - Panoramic view enlarges surgical field
  - Eliminates cerebellar/brainstem retraction
  - Angled lenses allow visualization around corners
- Limited data on fully endoscopic microvascular decompression (E-MVD) for HFS
- Goal: one surgeon's case series of HFS patients undergoing E-MVD illustrates safety and efficacy of this technique

# Methods

- Single-center retrospective study
- January 2013 to October 2016: 27 patients with HFS, 28 separate E-MVD cases
- E-MVD by senior author (J.Y.K.L.) with 0° and 30° angled endoscope
- Intraoperative brainstem auditory evoked potentials (BAEPs) and lateral spread resolution (LSR) reviewed
- Outcome based on clinical status of the patient at last contact point with senior author
- Complications: facial weakness, hearing loss, ataxia, dysphagia, any adverse event able to be attributed to surgical procedure

# Intra-operative findings

OR time	Average	119.7 minutes
	Range	87 to 206 minutes
BAEP changes	Y	19 (67.9%)
	N	9 (32.1%)
BAEP return to baseline prior to dural closure	Y	5 (26.3%)
	N	14 (73.7%)
LSR with decompression	Y	16 (57.1%)
	N	10 (35.7%)
	Unknown	2 (7.1%)
Vessel	AICA	19 (67.9%)
	AICA and other vessel	2 (7.1%)
	Other (i.e. vertebral artery, transverse pontine vein)	3 (10.7%)
	Unknown	4 (14.3%)

# Post-operative findings

Length of stay	Average	3.0 days
	Range	2 to 7 days
Last follow-up	Average	2.9 months
	Range	0.25 to 27 months
	Mode	1 month
Permanent complications	Partial hearing loss	1 (3.7%)
	Cardiac event	0
	Stroke	0
	Death	0
Subjective/transient complications	Transient facial palsy	3 (11.1%)
	Permanent facial palsy	0
	Ataxia	1 (3.7%)
	Dysphagia	1 (3.7%)
	Otitis	1 (3.7%)
	CSF leak	0

# Resolution of symptoms

Complete resolution	17 (60.7%)
Near complete resolution	4 (14.3%)
50% reduction	2 (7.1%)
Minimal reduction	1 (3.6%)
No relief	4 (14.3%)

## Intraoperative LSR in prediction of spasm-free outcome

	Univariate analysis (p-value)	Logistic regression analysis (Odd's ratio)
100% spasm relief	0.15	3.3
≥ 90% spasm relief	0.074	4.5
≥ 50% spasm relief	0.036	7

### Multivariate analysis: intraoperative LSR in prediction of spasm-free outcome

- Variables: gender, age (years), prior botox injection, prior ipsilateral MVD, duration of symptoms (years)

	100% spasm relief	≥ 90% spasm relief	≥ 50% spasm relief
p-value	0.103	0.050	0.020
Odd's ratio (OR)	4.58	6	26.59

# Discussion

- LSR as intraoperative surrogate for adequate facial nerve decompression
- Prior studies have indicated LSR correlates with symptom relief in HFS
- Neurovascular conflict identification occurred in 100% of cases in present study
- Smaller durotomy may decrease post-operative headaches

# Conclusions

- The endoscope provides an excellent view of the neurovascular conflict in HFS patients
- Exclusive use of the endoscope is safe and feasible for HFS
- The angled 30° endoscope allows safe access to deeper structures in MVD
- Intraoperative resolution of lateral spread correlates with clinical outcome