Delayed transmastoid facial nerve decompression surgery for the Ramsay Hunt Syndrome presenting complete paralysis

Yoshihiko Kumai, MD; Kohei Nishimoto, PhD; Haruka Kodama Takamura, MD, PhD;
Yutaka Toya MD, PhD; Satoru Miyamamru MD, PhD
Department of Otolaryngology Head and Neck Surgery Kumamoto University School of Medicine

Abstract

Objectives: To elucidate the efficacy of the delayed transmastoid facial nerve decompression for Ramsay Hunt Syndrome(RHS) presenting complete paralysis which were performed later than three weeks after the onset of paralysis.
Study Design: Retrospective case review
Methods: Fourteen RHS patients with complete facial nerve paralysis underwent transmastoid facial nerve decompression at later than 3 weeks after the onset of paralysis by single surgeon without any major complications. Average post-operative follow up was a minimum of 6 months. The time between the onset of the symptom and surgery ranged from 25-115 days (mean=56 days). Main outcome measured were, pre- and post-operative HB grade at 6 months after surgery, and presence or absence of intraoperative neural response(INR) stimulated at the portion of horizontal segment before decompression procedure. Correlation between each parameter and duration between onset and surgery (within or later than 30, 40, 50 and 60 days) was statistically analyzed using chi-square test.
Results: Preoperative HB grade was all grade V or VI. Six months after surgery, six (43 %) of the 14 patients showed a complete recovery (HB grade I or II), rest of the eight patients demonstrated grade of facial paralysis as followed. (6 for HB grade III, 2 for HB grade IV and none for grade V or VI). The timing of decompression did not statistically influence the outcome at all time points except for being compared between at shorter than 60days and later than 60days (p=0.0237). The INR statistically influences significantly the outcome evaluated by HB grade (p=0.0004).
Conclusion: The outcome of the delayed transmastoid facial nerve decompression for RHS at later than 3 weeks between onset and surgery was enhanced significantly by the duration within 60 days but not within 50 days. The INR stimulated at the portion of horizontal segment can be a good predictor for the post-operative prognosis.

Introduction

- In Ramsay Hunt Syndrome (RHS) patients, the favorable recovery rate has been reported to be a disappointing 10% in patients with complete paralysis, against 66% in those with incomplete paralysis [1]. Predicting the outcome of complete palsy and the surgical indication in RHS patients is clinically important, however, this was not well studied previously.
- Decompression surgery of facial nerve is generally considered in patients with low recovery chance and Ganz previously presented that the surgical decompression in delayed timing for RHS is often no longer recommended for its lack of evidence.[2]
- Recently, many authors have demonstrated the beneficial effects of delayed surgery [3.4]. Following the hospital ethical policy to prioritize patients of life threatening, relatively delayed facial nerve decompression surgery at later than three weeks from the onset is inevitable and mostly common in our institution.

The purpose of this study are

1) To elucidate the efficacy of the delayed transmastoid facial nerve decompression for RHS patients presenting the complete paralysis, performed at later than 3 weeks after the onset of paralysis.
2) to examine the significance of the intraoperative electrophysiologic test for predicting the prognosis of surgical outcome for RHS patients presenting the complete paralysis.

Methods and Materials

- Fourteen RHS patients with complete facial nerve paralysis underwent transmastoid facial nerve decompression at later than 3 weeks after the onset of paralysis by single surgeon without any major complications. Average post-operative follow up was a minimum of 6 months. The time between the onset of the symptom and surgery ranged from 25-115 days (mean=56 days).
- Main outcome measured were, pre- and post-operative HB grade at 6 months after surgery, and presence or absence of intraoperative evoked electromyographic neural response (INR) stimulated at the portion of horizontal segment before decompression procedure.
- Correlation between each parameter and duration between onset and surgery (within or later than 30, 40, 50 and 60 days) was statistically analyzed using chi-square test.

Results

- Initial HB grade at first admission was all grade V or VI. Six months after surgery, 6 (43 %) of the 14 patients showed a complete recovery (HB grade I or II), rest of the eight patients demonstrated grade of facial paralysis as followed. (6 for HB grade III, 2 for HB grade IV and none for grade V and VI) (Table I, II).
- The timing of decompression did not statistically influence the outcome at all time points(30,40,and 50 days) except for being compared between at shorter than 60days and later than 60days (p=0.0237)(Table III)
- The intraoperative neural response (INR) at horizontal segment of facial nerve statistically influences significantly the outcome evaluated by HB grade (I,II or III~VI) (p=0.000465).(Table IV)

Table I

	Age	Sex	Duration between onset and surgery (days)	ENoG denervation (%)	HB grade pre-operatively	HB grade at 6 months post-operatively	Intraoperative Neural Response (INR)
1	52	M	37	100	VI	III	−
2	50	F	30	100	VI	III	−
3	57	F	35	92	V	I	+
4	67	F	90	100	VI	III	−
5	16	F	25	100	V	II	+
6	30	F	45	100	VI	II	+
7	49	F	115	100	V	IV	−
8	39	M	60	100	VI	II	+
9	50	F	84	100	VI	IV	−
10	55	M	32	100	VI	II	+
11	48	M	88	100	VI	III	−
12	74	F	68	100	VI	III	−
13	60	F	30	100	VI	III	−
14	54	M	50	100	V	I	+
Average	51		56.35±28.35days				

Table II

	HB grade at first admission	HB grade at 6 months post-operatively
Grade I	0	2
Grade II	0	4
Grade III	0	6
Grade IV	0	2
Grade V, VI	14	0

Table III

	Shorter than 60 days	Longer than 61 days
Grade I, II	6	0
Grade III, IV, V	2	6

Chi-square test: significant difference (P=0.0237)

Table IV

	INR(+)	INR(-)
Grade I, II	6	0
Grade III, IV, V	0	8

Chi-square test: significant difference (P=0.000465)

Discussion and Conclusions

- The outcome of the delayed transmastoid facial nerve decompression for RHS presenting complete paralysis at later than 3 weeks between onset and surgery was enhanced significantly by the duration whether within 60 days or not but not within 50 days.
- Contrary to the previous papers demonstrating the contraindication of surgical approach for RHS, our data suggested that even presenting the complete paralysis, RHS patients have chance to receive surgery at ideally, shorter than 50 days from the onset.
- The presence of INR stimulated at the portion of horizontal segment can be a good predictor for the post-operative prognosis of RHS. This perspective might be useful for considering the ideal timing of post operative rehabilitation in terms of synkinetic regenerative process.

Contact

Yoshihiko Kumai MD, PhD
Department of Otolaryngology Head and Neck Surgery Kumamoto University School of Medicine
Email:kumayoshi426yk@gmail.com
Website:
Phone:+81-96-373-5255

References

1. Devriese PP, Moesker WH. The natural history of facial paralysis in herpes zoster. Clin Otolaryngol Allied Sci 1988;13:289–98.
2. Gantz BJ, Perry BP. Management of Bell's palsy and herpes zoster. In:Nadol JB, McKenna MJ, eds. Surgery of the ear and temporal bone. Philadelphia, PA: Lippincott Williams & Wilkins; 2005:251–255.
3. Sanus¸ GZ, Tanrio¨ver N, Tanriverdi T, Uzan M, Akar Z. Late decompression in patients with acute facial nerve paralysis after temporal bone fracture. Turk Neurosurg 2007;/17:/712.
4. Quaranta A, Campobasso G, Piazza F, Quaranta N, Salonna I. Facial nerve paralysis in temporal bone fractures: outcomes after late decompression surgery. Acta Otolaryngol 2001;/121:/6525.