Original Article

Surgical Management of Traumatic Facial Paralysis: A Case Review Study

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AbstractObjective To evaluate efficacy of surgical treatment in traumatic facial paralysis. **Methods**: Thirty-three cases were reviewed, including temporal bone fracture and iatrogenic facial nerve injury. All the patients were treated with various surgical methods according to their pathogeny. **Results** The mean percentage facial function improvement (House-Brackmann Grade Ⅰ-Ⅱ) was 86% in temporal bone fracture and function was improved after proper operation to iatrogenic facial nerve injury. **Conclusions** Patients with traumatic facial paralysis receive proved outcomes itreaed with proper surgical methods according to their particular condition of nerve injury.

Key words traumatic facial paralysis; temporal bone fracture; surgical therapy ;iatrogenic facial nerve injury

Facial paralysis (FP) as a disease of serious impact on patient's lives has currently aroused increasing attention. FP can be divided into two types, central and peripheral, with the latter being more common. Many factors, including inflammation, trauma, tumors and congenital factors can cause FP. With the increase of traffic accidents, traumatic facial paralysis (TFP) has also increased and iatrogenic facial nerve injuries (IFI) are increasingly common too. This paper summarizes the data of 33 patients with TFP treated in our department, including TBF and IFI, and evaluates the outcomes of surgical treatment in these patients.

Clinicaldata

From January, 2007 to March, 2011 ,33 patients with TFP were treated in our department, including 17 males and 16 females, aged from 1 to 65 years (average 33 years). The injury was on left in 15 cases and right in 18 cases. Temporal bone fracture was involved in 28 cases, including longitudinal fracture in 14 cases, transverse fractures in 7 cases, and mixed fractures in 7 cases as shown by high resolution CT scan. IFI was found in 5 cases, including postoperative FP after removal of acoustic neuroma in 4 cases and of the parotid gland in 1 case. House-Brackman (H-B facial nerve function, time from injury to treatment and other data of the 33 cases are shown in table 1. All the patients received routine preoperative tests, including pure tone audiometry, taste test, lacrimal gland secretion test, facial nerve electroneuronography (ENOG) and electromyography (EMG) to determine the injury site and severity. Patients were followed up for 3 months to 3 years.

Methods

Different surgical techniques were useddepending onthespecificTFPcondition.

For temporal bone fracture facial nerve decompression was approached via a mastoid-epitypanum approach. The surface of the damaged nerve tissue was exposed, bone chips and blood clots were removed, the facial nerve sheath was incised and the

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decompression was finished. When the injured site was around the geniculate ganglion and the auditory ossicles hindered exposure, dislocation of the incudomalleolar joint and anterior-inferior displacement of the incus were done for decompression of the geniculate ganglion and the distal labyrinthine segment through the supralabyrinthine recess, followed by restoration of the incudomalleolar joint. In the 1 case of transverse temporal bone fractures with totally deafness, the translabyrinthine approach was used to expose the entire facial nerve to the cerebellar pontine angle. The injury site in the labyrinthine segment was repaired and the internal auditory canal was tamped with muscle tissue graft to prevent postoperative cerebrospinal fluid leakage. In a case of tympanic segment transection, end-to-end anastomosis with about 1 cm great auricular nerve graft was performed as direct anastomosis with tension was difficult. The nerve graft was embedded in bone slots milled specially for nerve transplantation. Four cases of postoperative FP underwent facial – hypoglossal nerve anastomosis. Decompression of facial nerve in the 1 case of parotid gland excision was achieved by excision of the scar in the stylomastoid foramenas as it comppressed the facial nerve trunk.

Postoperative treatment and rehabilitation

All patients were given similar treatments including antibiotics and support treatments. Stitches were removed after a week and acial function rehabilitation exercises began.

Table 1 Case data

Etiology	Total No.	Pre-op H-B	Duration Before Surgery	Injury Site	Surgical Technique	Post-op H-B
TBF	28	III (n=5 IV (n=16) V (n=7)	1-3 m (n=13) 4-6 m (n=12 7-9 m (n=3)	VS (n=8) AGG (n=18 LS (n=1) NTP (n=1)	MEA (n=26 TLA (n=1) NTP (n=1)	I (n=15) II (n=8) III (n=1) IV (n=2)
IFI	5	V (n=5)	12-18 m (n=5)	PFPAN (n=4) PGE (n=1)	FHNA (n=4) SED (n=1)	III (n=3) IV (n=2)

VS = vertical segment, LS = labyrinthine segment, NT = nerve transection, AGG = around the geniculate ganglion, IS = injury situation, PFPAN = postoperative FP of acoustic neuroma, PGE = parotid gland excision, mastoid-epitypanum approaches = MEA, translabyrinthine approach = TLA, nerve transplantation = NTP, facial-hypoglossal nerve anastomosis = FHNA, scar excision+decompression = SED,, m = months