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# Does Immediate Post-Operative Severity of Facial Nerve Palsy Predicts Its Recovery in Parotidectomy Patients – Our Experience

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**ABSTRACT**

Background: Facial nerve palsy after parotid surgery is one of the common problems faced by patients. Recovery of facial nerve palsy will occur in more than 80% of the patients. Few patients may have permanent palsy. Evaluating the predictor of facial nerve recovery in these patients is important to know the prognosis.

Methods: In this 3-year retrospective cohort study, 37 patients were analyzed to know whether the initial severity of facial nerve palsy will predict its recovery during postoperative period.

Results: All 37 patients with immediate post-parotidectomy facial nerve dysfunction experienced weakness of the marginal mandibular branch; 4 patients had coexisting zygomatic branch dysfunction. 33 patients achieved complete recovery. The cumulative rates of recovery at 1 month, 3 months, 6 months, and 1-year post-parotidectomy were 42%, 70%, 83%, and 89%, respectively. Immediate post-parotidectomy facial nerve dysfunction higher than House–Brackmann (H–B) grade III seen in 4 patients. All had permanent dysfunction.

Conclusion: Immediate post-parotidectomy facial nerve dysfunction greater than H–B grade III was a significant predictor of permanent facial nerve dysfunction.

**Keywords:** NIL

## INTRODUCTION

Parotidectomy is a well-recognized and common surgical procedure used to treat tumors in the parotid gland. Facial nerve palsy after parotid surgery is one of the common problems faced by patients even though the nerve anatomically undisturbed [1]. Facial nerve dysfunction not only causes cosmetic and social problems, but also increases ocular complications and significantly impacts on a patient's quality of life [2, 3]. Facial nerve injury mechanisms during parotidectomy include nerve division, stretch, compression, ligature entrapment, thermal and electrical injuries, and ischemia [4]. As per literature, postoperative transient facial nerve dysfunction occurs up to 46.1 % of cases, permanent damage is much less common, occurring in 1.9–3.9 % [5, 6]. Dysfunction of the 7th nerve occurs most frequently in marginal mandibular branch—64.1 %, followed by buccal—20.5 %, zygomatic and temporal branches at 7.7 % [6]. It is reasonable to assume, therefore, that long-term disfigurement from facial nerve injury will not affect the overwhelming majority of patients; most cases of postoperative facial nerve paralysis resolve within 6 months if the facial nerve remains intact during parotid surgery [7, 8].

The prognostic factors for patients with immediate facial nerve dysfunction after parotidectomy have not been fully studied. Patients who develop immediate post-parotidectomy facial nerve dysfunction are always concerned about their prognosis and the period of recovery. Those with anticipated spontaneous recovery should be observed rather than scheduled to undergo surgery for facial palsy.

It is important to clarify the expected duration of facial nerve dysfunction, and to know the predictors of final facial nerve function in these patients

The purpose of this study was to review the results and time to recover in patients with immediate facial nerve dysfunction after parotid surgery and to know whether the severity of initial presentation of facial nerve palsy predicts the recovery outcomes.

## MATERIALS AND METHODS

Out of 95 Parotidectomies performed 37 patients with post-operative facial nerve palsy included in this study. All the clinical details reviewed. Post-operative data were noted. All of the parotidectomies were performed with the patients under general anesthesia with standard technique. Intraoperatively, the facial nerve was localized by the landmarks of the tragal pointer, tympanomastoid suture, and the posterior belly of the digastric muscle. With careful blunt dissection the main trunk of the facial nerve identified. The surgeon made every effort to keep the nerve intact during the operation. Although some minor branches unrecognizable to the naked eye might be removed intraoperatively, the facial nerves and their main branches were preserved in all of the patients.

### Follow-up

Post parotidectomy facial nerve dysfunction was recorded using the House–Brackmann (H–B) grading scale, which ranges from I (normal) to VI (no movement).[10] The degree of immediate facial nerve dysfunction was recorded on patient's Medical Chart.



All the patients were assessed for facial nerve function at 2 weeks, 1 month, 2 months, and 3 months postoperatively, and then every 3 months thereafter if facial nerve dysfunction persisted. Those with persistent facial nerve dysfunction were followed for at least 1 year. Permanent dysfunction was diagnosed if weakness persisted for more than 1 year. Patients with partial improvement, but not total recovery, were also classified as having permanent dysfunction.

| **Table – 1: Histopathology** | | **No. of Cases** |
|---|---|---|
| **Benign tumor** | Pleomorphic adenoma | 17 |
| | Schwannoma | 1 |
| | Sialadenitis | 5 |



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| | | |
|---|---|---|
| **Malignant tumor** | Lymphoepithelial carcinoma | 1 |
| | Mucoepidermoid carcinoma | 2 |
| | Adenocarcinoma | 11 |

## RESULTS

Of the 37 patients with immediate post-parotidectomy facial nerve dysfunction, 16 parotidectomies performed on right side, 21 on the left side. Mean age group was 48.3years. Partial parotidectomy was performed in 16 cases and total parotidectomy in 21 cases. Histopathology of all cases summarized in table 1. There were 23 benign lesions and 14 malignant lesions.

All 37 patients with immediate post-parotidectomy facial nerve dysfunction experienced weakness of the marginal mandibular branch; 4 patients had coexisting zygomatic branch dysfunction. 33 patients achieved complete recovery. The cumulative rates of recovery at 1 month, 3 months, 6 months, and 1-year post-parotidectomy were 42%, 70%, 83%, and 89%, respectively. Immediate post-parotidectomy facial nerve dysfunction higher than House–Brackmann (H–B) grade III seen in 4 patients. All had permanent dysfunction. Immediate post-parotidectomy facial nerve dysfunction greater than H–B grade III was the poor prognostic factor for recovery of facial nerve function.

## DISCUSSION

Adequate assessment of the facial nerve function after parotidectomy requires attention to the individual facial nerve branch deficits and their degree of function. The most commonly used *Global House–Brackmann* grading system (GHB) was developed to assess the paresis of the facial nerve after surgery of the ponto-cerebellar angle tumors. In this scale, grade I is assigned to normal function, and grade VI represents complete paralysis. Intermediate grades vary according to function at rest and with effort. Immediate post-parotidectomy facial nerve dysfunction greater than H–B grade III was the poor prognostic factor identified in our study. However, 78% of the patients with permanent facial nerve dysfunction had partial improvement in facial nerve function during the follow-up period.

In this series, the marginal mandibular branch of the facial nerve was prone to injury during parotidectomy. All of the patients with immediate post-parotidectomy facial nerve dysfunction experienced weakness of the marginal mandibular branch, and only 7% had coexisting zygomatic branch dysfunction. Possible reasons for these observations include the relatively fewer connecting anastomoses and the thinner diameter and longer tracts of the marginal mandibular branch embedded in the parotid gland [9].

Some authors suggest that mechanical trauma to the peripheral nerve requires 6 to 12 weeks for recovery [10, 11]. In this study, all the transient facial nerve dysfunction cases had recovered normal facial nerve function at 6-month follow-up. Although the severity of immediate post-parotidectomy facial nerve dysfunction was a prognostic factor for permanent dysfunction, more severe H–B grade was not associated with a longer recovery period to restore normal facial function. Thus, the period required for nerve repair did not seem to be related to the severity of facial nerve dysfunction. This may be explained by the similar regenerative processes of each nerve fiber despite the number of damaged nerve fibers.

## CONCLUSIONS

Of all the patients with immediate post-parotidectomy facial nerve dysfunction, 90% patients experienced dysfunction only in the marginal mandibular branch of the facial nerve and 10% had coexisting zygomatic branch dysfunction. Eighty-nine percent of the patients achieved total recovery of facial nerve function. Only 6% of patients achieved improvement beyond 6 months postoperatively, and all improvements occurred within 12 months postoperatively. 4 patients had permanent facial nerve palsy and all these patients had H–B grade III. Immediate post-parotidectomy facial nerve dysfunction greater than H–B grade III was the significant predictor of permanent dysfunction.



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