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# Marginal Mandibular Nerve Preservation in Submandibular Gland Excision: A Comparative Study.

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**ABSTRACT**

**Objectives**: To compare results of marginal mandibular nerve preservation with and without identifying the nerve during submandibular gland excision in benign disease of the gland

**Method:** An hospital based prospective study involved 40 patients with submandibular swelling planned for submandibular gland excision in a study period between may, 2020 and june, 2022 in SMBT IMS & RC. All patients underwent ultrasonography and fine needle aspiration cytology followed by submandibular gland excision.

**Results:** Submandibular gland excision was performed on 40 patients. The study's youngest patient was 23 years old, and the oldest was 58 years old. The average age was 39.12 years. There were 23 male patients and 17 female patients. 26 patients had accompanied pain, and 15 patients complained of pain and swelling that increased in size with food intake. There were 17 cases of sialolithiasis, 27 cases of chronic sialadenitis, and 2 cases of mucocele. Under general anaesthesia, all patients had their submandibular glands excised. Following surgery, 3 patients (15.78%) with subfascial dissection and 2 patients (9.5%) with subplatysmal dissection developed transient nerve paralysis. Six months after surgery, all five patients had fully recovered.

**Conclusion:** There is no statistically significant difference in MMN injury with or without identifying the nerve in submandibular gland excision.

## Introduction:

The facial is a mixed nerve which is responsible for the motor innervations of muscles of facial expression, lachrymal secretion and control of the gustatory sensation of anterior two-thirds of the tongue.[1] Of the five terminal branches of the facial nerve, the Marginal Mandibular nerve supplies the muscles of lower lip i.e. Depressor Anguli Oris, the Depressor Labii Inferioris, the inferior fibers of the Orbicularis Oris and the Mentalis muscles.[2] Hence, paralysis of this nerve results in distortion of the expression of the smile as well as other facial expressions. The most frequent cause of paralysis of this nerve is iatrogenic injury during operations in the mandibular or parotid regions. Submandibular gland excision is one such procedure which puts the nerve under risk of injury. Various surgical techniques have been described to avoid injury to

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the marginal mandibular nerve during surgery in this region with and without identifying the nerve.
The marginal mandibular nerve may be preserved without identifying it by:

1. Elevation of the fascia of the submandibular gland from an inferior to superior direction that carries the marginal mandibular nerve superiorly away from the gland.
2. Elevation of the posterior facial vein will draw the marginal mandibular nerve superiorly away from the gland.

The marginal mandibular nerve may be identified, dissected, and elevated separately superiorly above the mandible.[3]
In this study we compare our results of marginal mandibular nerve preservation with and without identifying the nerve during submandibular gland excision in benign disease of the gland.

**Materials and methods:**

**Study place:** SMBT institute of medical sciences and research centre.
**Study period**: MAY, 2020 to JUNE 2022
**Study design**: Hospital-based prospective study
**Study population:** 40 patients with submandibular swelling planned for submandibular gland excision were included in the study.

**Observation and Results**:

40 patients who underwent submandibular gland excision in our hospital were included in the study. Youngest patient in the study was 23yrs old and the oldest was 58 years old. Mean age was 39.12 years. 23 patients were males and 17 patients were females. All patients presented with submandibular swelling, 26 patients had accompanied pain, 15 patients complained of pain and increase in size of the swelling with food intake. All patients underwent ultrasonography and fine needle aspiration cytology followed by submandibular gland excision. 17 patients had sialolithiasis, 27 patients had chronic sialadenitis, 2 patients had mucocele. All patients underwent submandibular gland excision under general anesthesia.
In 19 patients subfascial dissection of the gland was done and Marginal Mandibular Nerve was not identified, while in 21 patients marginal mandibular nerve identified and preserved using subplatysmal dissection.
Postoperatively 3 patients (15.78%) with subfascial dissection and 2 patients (9.5%) with subplatysmal dissection developed transient paralysis of the nerve. All five patients recovered fully 6 months postoperatively. The chi-square value of the above data is 0.4993 and p value is 0.4798 showing that there is no statistically significant difference between the two methods in terms of preservation of marginal mandibular nerve.

| Submandibular gland pathologies | No. of patients |
|---|---|
| Sialolithiasis | 17 |
| chronic sialadenitis | 27 |
| Mucocele | 2 |
| N | 40 |

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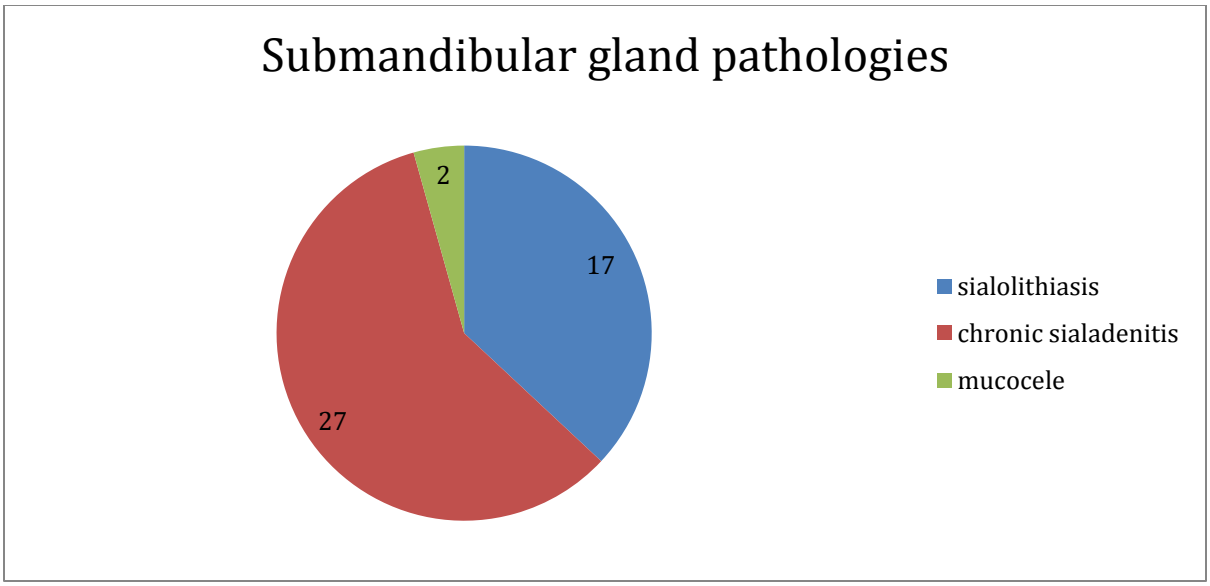
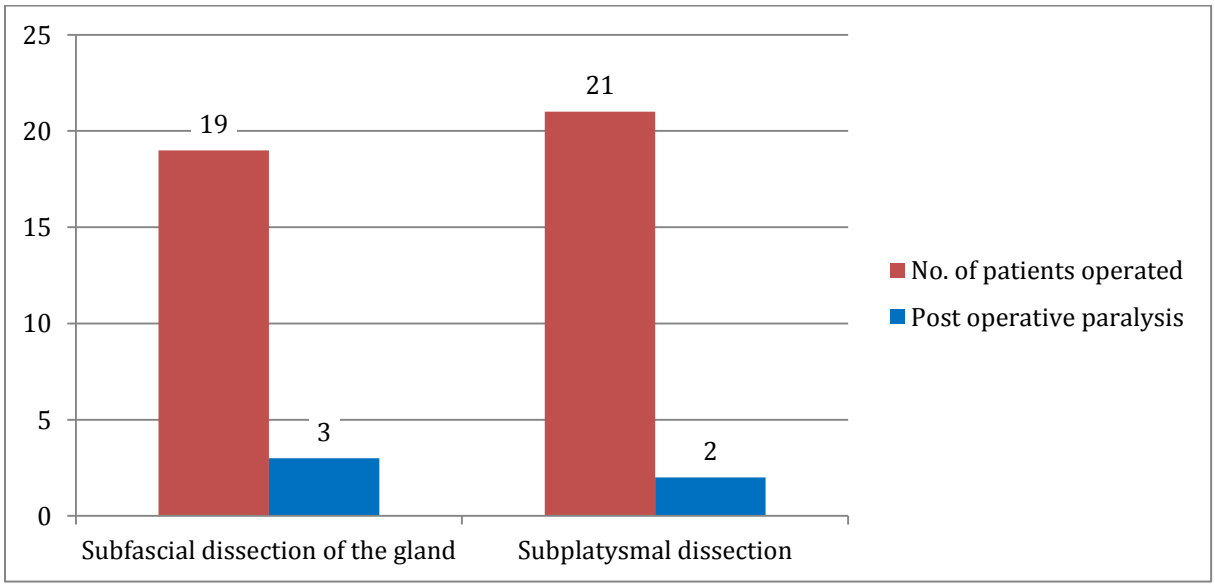



| | No. of patients operated | | Post operative paralysis | |
|---|---|---|---|---|
| Subfascial dissection of the gland | 19 | 47.5% | 3 | 15.78% |
| Subplatysmal dissection | 21 | 52.5% | 2 | 9.5% |
| Total | 40 | 100% | **Chi square** | **p-value** |
| | | | **0.4993** | **0.4798** |




**Discussion**: Injury to the marginal mandibular branch of the facial nerve (MMN) during surgery often results in poor functional and cosmetic outcomes.[4] Marginal mandibular branch of facial nerve is one of the main five terminal branches of the extracranial part of the facial nerve. It is given off within the substance of the parotid gland. There can be multiple rami of marginal mandibular nerve ranging from one to three.[5]

They run forwards and anteriorly towards the angle of the mandible deep to platysma and winds around the inferior border of the mandible. Then it turns upwards across the body of the

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mandible to pass under depressor angularis oris.[6] It further divides to supply Risorius and muscles of the lower lip and chin. Filaments given off at this point also communicate with the mental nerve.[7] Injury to the marginal mandibular nerve (MMN) can occur in numerous surgeries involving incisions near the inferior border of the mandible /submandibular region. One such surgery is submandibular salivary gland excision. Reported incidence of damage to the marginal mandibular nerve during submandibular gland removal is 0 to 20%.[8] In our study the rate of transient paralysis of MMN was 12.5%. We documented the rate of transient paralysis of the nerve as 15.7% while the nerve was not identified during the dissection and 9.7% while the nerve was identified intraoperatively. However, the difference was not statistically significant. Kikuoka Y et al performed 138 submandibular gland excisions and documented transient paralysis only in 7 patients.

They concluded that method of resecting the submandibular gland without identifying the marginal mandibular branch is an effective procedure associated with a low incidence of transient paralysis.[9]

**Conclusion**: There is no statistically significant difference in MMN injury in submandibular gland excision with or without identifying the nerve.

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