



STUDY OF POSTOPERATIVE MORBIDITY IN SUBMANDIBULAR GLAND EXCISION: FIVE YEAR CLINICAL ANALYSIS

Otolaryngology

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ABSTRACT

Aim:- Aim of this study is evaluation of postoperative morbidity in patient undergoing Submandibular gland excision in form of nerve injury, haemorrhage and wound infection etc.

Methods:- we carried out prospective and retrospective analysis of Submandibular gland excisions performed in our hospital over five year period and analysed post operative complications.

Results:- In our study 43 cases of Submandibular gland excision were carried out. Most common indication was sialoadenitis. Permanent paralysis of Marginal Mandibular branch of facial nerve seen in 1 patient (2.3%), temporary paralysis of the Marginal Mandibular branch in 5 (11.9%) patients and Hypoglossal nerve paralysis in 1 patient (2.3%). Total nerve injury was in 7 patient (16.2%). Postoperative wound infection was noted in 2 cases (4.65%). Haematoma at suture line was noted in 1 case (2.3%). The rate of neurological complication was higher in neoplastic group (66.66%) than inflammatory group (33.33%).

Conclusion:- Submandibular gland excision via transcervical approach is the best method for the procedure and has low complication rate. Neurological complications are the commonest and dreaded complications of Submandibular gland excision and were seen in 16.27% of the cases. Postoperative neurological complication can be decreased by careful dissection of the Submandibular gland.

KEYWORDS

Submandibular gland surgery, Morbidity, Marginal Mandibular nerve.

INTRODUCTION

Submandibular gland removal is commonly performed for recurrent obstructive sialadenitis, secondary to calculus formation.^(1,2,3,4,7) Other indication are benign and malignant tumours of gland. The removal of the Submandibular gland requires careful dissection to reduce the risk of injury to the Lingual, Hypoglossal, Marginal Mandibular and cervical branches of the facial nerve. The neurological injury after Submandibular gland surgery is usually temporary.^(1,3,4,5,7)

The Hypoglossal nerve and Lingual nerve have a consistent course in relation to the Submandibular gland and it is important to identify and preserve these nerves by directly visualising them. The lingual nerve lies superior to the Submandibular gland. The hypoglossal nerve lies deep to the gland, running superficial to hyoglossus and deep to digastric muscle. The Marginal Mandibular nerve is superficial to the facial vein, lying in the plane between platysma and the investing layer of the deep cervical fascia.^(9,10) Marginal Mandibular nerve passes 2cm below the inferior border of mandible. In 6% of these cases, the nerve continued below the mandible as far forward as the second premolar tooth.^(9,11)

Shaheen outlined three manoeuvres to minimise injury to Marginal Mandibular nerve:

1. A low, 'non-identification' approach to the gland at the level of the hyoid bone in which no formal attempt is made to identify the lower branches of the facial nerve.
2. Formal identification and subsequent protection of the marginal mandibular nerve as it leaves the tail of the parotid gland.
3. Division of the facial vessels low in the neck, thus retracting the nerve out of the surgical field by upward traction of the divided upper ligated stumps.⁽¹¹⁾

Complications of Submandibular gland excision includes wound infection, haematoma, recurrent disease, sinus formation, scarring, fistula formation, Chorda Tympani Syndrome and Stone Formation in Residual Duct etc.⁽⁵⁾

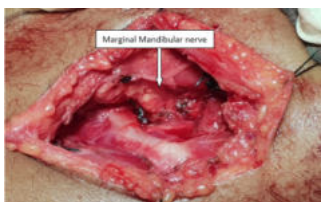


Figure 01 : Intraoperative photograph of Submandibular gland excision showing Marginal Mandibular nerve running below the lower border of mandible

METHOD

This is prospective and retrospective observational study conducted in department of Otorhinolaryngology, MDM Hospital, Dr. S.N. medical college Jodhpur Rajasthan, India and it includes the cases of Submandibular gland swelling who have undergone Submandibular gland excision between September 2015 to September 2019 (5 year).

Patients of Submandibular gland swelling who have undergone Submandibular gland excision due to inflammatory, neoplastic disease of Submandibular gland of all age group and sex were included in study. Patients who underwent Submandibular gland excision as a part of neck dissection were excluded from this study. The data regarding above mentioned cases were retrieved from record of patients from department of Otorhinolaryngology, MDM hospital Jodhpur and simultaneously new patients were enrolled and subjected post operative morbidity assessment. These patients underwent Submandibular gland excision by transcervical approach. After surgery patient were observed for any complication in postoperative period like incidence and duration of nerve injury. Marginal Mandibular nerve injury was recorded as weakness of ipsilateral lower lip depressor activity. Other complications like wound infection, and bleeding from stitch line were noted.

RESULTS

In our study 43 cases of Submandibular gland excision were carried out. In which 25 were male (58%) and 18 were female (42%). Male to female ratio was 1.38. All patients were operated on unilateral side. The age range was between 10 to 68 year and the mean age of patients was 34.23 year.

In postoperative complications, it was observed that permanent paralysis of Marginal Mandibular branch of facial nerve seen in 1 patient (2.3%), temporary paralysis of the Marginal Mandibular branch in 5 (11.9%) patients and Hypoglossal nerve paralysis in 1 patient (2.3%) which was malignant in nature. Total nerve injury was in 7 patient (16.2%). Temporary paralysis of Marginal Mandibular nerve resolved spontaneously within 6 months. Lingual nerve injury was not recorded in our study.

Postoperative wound infection was noted in 2 cases (4.65%). Haematoma at suture line was noted in 1 case (2.3%). Orocutaneous fistula was not recorded in our study. The rate of neurological complication was higher in neoplastic group (66.66%) than inflammatory group (33.33%).

Table 1: Showing neurological complications after Submandibular gland excision

Neurological complications	Number	Percentage (%)
Temporary Marginal Mandibular nerve palsy	5	11.6

Permanent Marginal Mandibular nerve palsy	1	2.3
Hypoglossal nerve injury	1	2.3
Lingual nerve injury	0	0
Total	7	16.27

DISCUSSION

In our study, neurological complication after Submandibular gland excision was the most common complication. The Marginal Mandibular nerve palsy was 13.9% in which temporary Marginal Mandibular nerve palsy was 11.6% and permanent Marginal Mandibular nerve palsy was 2.3%. Hypoglossal nerve injury was 2.3% which was permanent. Wound infection after Submandibular gland excision was 4.65% and hematoma formation was present in 2.3 % of cases.

A Study by Yazici D et al¹⁰ in 2018 found that Marginal Mandibular nerve palsy was 6.3% in which temporary was 4.7% and permanent was 1.6%. Orocutaneous fistula was present in 1.6% of cases. A Study by Erbek et al⁷ in 2016 saw that Marginal Mandibular nerve palsy was 7.8% in which temporary was 15.6% and permanent was 2.2%. Hypoglossal nerve injury was 2.2 % which was temporary and orocutaneous fistula was present in 2.2% of cases. A study by De M et al¹³ in 2006 found that Marginal Mandibular nerve palsy was 18% in which temporary was 6% and permanent was 12%. Lingual nerve injury was present in 4% of cases in which 2% was temporary and 2% was permanent. Hematoma formation was present in 1% of cases. A Study by Yilmaz et al⁶ in 2013 Marginal Mandibular nerve palsy was

12.1% in which temporary was 7.7% and permanent was 4.4%. Incidence of wound infection was 4.4% and hematoma formation was 2.2 %. A Study by Kukuckova B et al⁴ in 2011 Marginal Mandibular nerve Palsy was 16.3% in which temporary palsy was 14% and permanent palsy was 2.3%. Hypoglossal nerve injury was 1.2% which was temporary. Wound infection was present in 1% of cases and Hematoma formation was present in 2% of cases. A Study by W P Smith et al¹ in 1993 Marginal Mandibular nerve palsy was present in 36% of cases which was temporary. Lingual nerve injury was present in 5% cases which was temporary. Wound infection was present in 8% of cases and hematoma formation was present in 5% of cases. A Study by Milton et al² 1986 Marginal Mandibular nerve palsy was 18% in which 11% was temporary and 7% was permanent. Hypoglossal nerve injury was present in 7% of cases which was temporary. Lingual nerve injury was present in 3% of cases which was permanent. Wound infection was present in 90% of cases and hematoma formation was present in 10% of cases.

An analysis of studies of various authors show that the incidence of Marginal Mandibular nerve injury, Hypoglossal nerve injury, Lingual nerve injury ranges from 6 to 36%, 0 to 7%, 0 to 5% respectively. These figures are roughly similar to our results. An analysis of studies of these authors has shown that the incidence of wound infection, hematoma, orocutaneous fistula ranges from 0 to 9%, 0 to 10% and 0 to 2.2% respectively. These figures are roughly similar to our results. Injury to Marginal Mandibular nerve is the most common complication reported in all the studies.

Table 2: Comparison of different postoperative complication of Submandibular gland excision in different studies:

	Milton et al ² 1986	W p smith et al ¹ 1993	Kukuckova B et al ⁴ 2011	Yilmaz et al ⁶ 2013	De M et al ³ 2006	Erbek et al ⁷ 2016	Yazici D et al ¹⁰ 2018	Our study 2019
Marginal Mandibular Nerve Palsy:	18%	36%	16.3%	12.1%	18%	17.8%	6.3%	13.9%
1. Temporary	11%	36%	14%	7.7%	6%	15.6%	4.7%	11.6%
2. Permanent	7%	0	2.3%	4.4%	12%	2.2%	1.6%	2.3%
Hypoglossal Nerve Injury	7%	0	1.2%	0	0	2.2%	0	2.3%
1. Temporary	7%		1.2%			2.2%		
2. Permanent	0		0			0		2.3%
Lingual Nerve Injury	3%	5%	0	0	4%	0	0	0
1. Temporary	0	5%			2%			
2. Permanent	3%	0			2%			
Wound Infection	9%	8%	1%	4.4%	0	0	0	4.65%
Haematoma	10%	5%	2%	2.2%	1%	0	0	2.3%
Orocutaneous fistula	0	0	0	0	0	2.2%	1.6%	0
Total Complication Rate(%)			22.1%	18.8%			9.4%	

CONCLUSION

Submandibular gland excision via transcervical approach is the best method for the procedure and has low complication rate. Postoperative neurological complication can be decreased by care full dissection of the Submandibular gland. Neurological complications are the commonest and dreaded complications of Submandibular gland excision. Among the neurological complications Marginal Mandibular nerve injury is the commonest.

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