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Original Research Article

Incidence and Management of Complications of Parotid Surgery in a Tertiary Care Center

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Abstract:

Introduction: The parotid gland is the largest of the paired major salivary glands, located in the parotid space. It secretes predominantly serous saliva via the parotid duct into the oral cavity to facilitate mastication and swallowing. Tumors of parotid can be benign or malignant. Most parotid gland tumours grow slowly over a long period of time without causing symptoms. The patient with a parotid tumour eventually becomes aware of a mass that is steadily getting bigger behind the angle of their jaw in the retromandibular region, in front of the tragus or in the cheek. The gold standard management for parotid tumors is surgery. Complications post-surgery depends on type of surgery, extent of disease and experience of surgeon.

Aims: To study the relative occurrence of benign and malignant parotid tumors in all age groups and both genders. To study the immediate and late complications of parotid surgery.

Methods: This is a descriptive retrospective study comparing the incidence of benign and malignant tumors of parotid gland and the complications of parotid surgery in the Otorhinolaryngology department of Gauhati Medical College.

Conclusion: Parotidectomy is a challenging surgery and best means of reducing iatrogenic facial nerve injury still remains a clear understanding of the anatomy, good surgical technique with the use of multiple anatomic landmarks. The goals, rationale, and risk of the operation, such as the general complications associated with the surgical procedure and facial nerve palsy, cosmesis should be explained to the patients.

Keywords: parotid surgery, complications, facial nerve.

Introduction

The parotid gland is the largest of the paired major salivary glands, located in the parotid space. It secretes predominantly serous saliva via the parotid duct into the oral cavity to facilitate mastication and swallowing.

The great auricular nerve arises from the cervical plexus and provides sensation to the lower two-thirds of the pinna as well as to the parotid fascia and it is often possible to preserve at least its posterior branch during parotid surgery. The facial nerve and parotid duct emerge from this surface and run forwards deep to the anterior border. The facial nerve passes through the gland and may vary in it's course.

Tumors of parotid can be benign or malignant. Most common tumor of parotid is the benign pleomorphic adenoma followed by Warthin's tumor. The Malignant tumors most commonly include Adenoid cystic carcinoma and Mucoepidermoid carcinoma. Accurate and rapid pre-operative diagnosis is imperative, in order to diagnose malignancy.

Most parotid gland tumours grow slowly over a long period of time without causing symptoms. Most benign tumours will be smooth, relatively mobile and painless to palpate. The following symptoms and signs suggest the tumour may be malignant or be undergoing malignant transformation:

- pain
- paraesthesia (especially adenoid cystic carcinoma)
- rapid growth or an increase in rate of growth
- facial nerve palsy/other nerve palsy
- skin involvement
- fixity

- Irregularity.

The patient with a parotid tumour eventually becomes aware of a mass that is steadily getting bigger behind the angle of their jaw in the retromandibular region, in front of the tragus or in the cheek. Deep lobe parotid and parapharyngeal space tumours may displace the tonsil and palate medially and are often impalpable from outside.

The gold standard management for parotid tumors is surgery. [1] Complications post-surgery depends on type of surgery, extent of disease and experience of surgeon. [2]

The anatomical relationship of a tumour to the facial nerve (or branch) in the parotid gland is nearly always intimate and the potential for a catastrophic cosmetic handicap can make surgery challenging. Consequences of suboptimal surgery include incomplete tumour resection and facial palsy as potentially catastrophic for the patient.

Aims

- To study the relative occurrence of Benign and Malignant parotid tumors in all age groups and both genders.
- To study the immediate and late complications of parotid surgery.

Methods

This is a descriptive retrospective study comparing the incidence of benign and malignant tumors of parotid gland and the complications of parotid surgery in the Otorhinolaryngology department of Gauhati Medical College. Forty two patients were selected for the study.

Inclusion Criteria

1. Patients presenting with parotid tumors as indicated by USG and FNAC.
2. Patients of all age groups and both genders.

Exclusion Criteria

1. Patients with inflammatory swellings of parotid gland were excluded
2. Recurrent cases / operated cases of parotid gland were excluded.

Results

Forty two patients were enrolled in the study. Male: female ratio was 1.1:1 with 22 (52.3%) male patients and 20(47.6%) female patients.

All patients underwent parotid surgery. Superficial parotidectomy was done on 30 (71.4%) patients for pleomorphic adenoma (24, 57.1%) and Warthin's tumor (4, 9.5%). Twelve patients underwent total parotidectomy for deep lobe tumors (4, 9.5%), mucoepidermoid carcinoma (low grade) [3, 7.1%], mucoepidermoid carcinoma (high grade) [2,4.7%], Adenoidcystic carcinoma (2,4.7%) and acinic cell carcinoma (1,2.3%). Complications were seen in 25(59.5%) patients. Six patients had facial palsy post total parotidectomy. 2 patient had grade 4 and four patients had grade 3 facial palsy. Ten patients had transient marginal mandibular nerve dysfunction which resolved completely in 2 weeks post operatively. Eight patients had flap necrosis at the distal tip of the post auricular region evident around 4th postoperative day.

Table 1:

Male	Female
22(52.3%)	20(47.6%)
1.1	1

Table 2:

Surgery	
Superficial parotidectomy	30(71.4%)
Total parotidectomy	12(28.5%)

Table 3:

Parotid tumours	
Pleomorphic adenoma	24 (57.1%)
Warthin's tumor	4(9.5%)
Deep lobe Pleomorphic adenoma	4(9.5%)
Mucoepidermoid carcinoma (low grade)	3(7.1%)
Mucoepidermoid carcinoma (high grade)	2(4.7%)
Adenoid cystic carcinoma	2(4.7%)
Acinic cell carcinoma	1(2.3%)

Table 4:

Complications	**25(59.5%)**
Facial palsy	6
Marginal mandibular nerve palsy	10
Flap necrosis	8
Seroma	1
Frey's syndrome	0
Hematoma	0

Figure 1: Flap necrosis post parotidectomy

Figure 2: Debridement done for flap necrosis

Figure 4: Grade 4 facial palsy post total parotidectomy

*patients eyes not covered to show facial palsy. Proper consent taken.

Discussion

Parotid tumours have a slight male preponderance (1.2 times) with pleomorphic adenoma as the most common benign tumor (57.1%) as seen in this study. Atif Hafeez Siddiqui et al. In 2020, in his study also observed that the most prevalent benign parotid tumour was pleomorphic adenoma (78.6%). Superficial parotidectomy was done in 71.4% patients and total parotidectomy in 28.7% patients. [3] In another study, Musani MA et al, reported that among the total of 235 patients undergoing parotidectomy with 188 (80%) underwent superficial parotidectomy while 47 (20%) underwent total parotidectomy. [4]

Complications were seen in 25(59.5%) patients in this study. Six patients had facial palsy post total parotidectomy. One patient had grade 4 and two patients had grade 3 facial palsy in this study. Ten patients had transient marginal mandibular nerve dysfunction which resolved completely in 2 weeks post operatively. In a similar study by Shashinder S et al, facial nerve dysfunction was reported in 28% cases immediately after surgery. [5] Rehman et al also observed 26.6% temporary facial weakness post operatively [6]. Also, Ramadan et al, observed 34% transient facial weakness post-surgery. [7] Transient facial nerve dysfunction was noted by Adeyoma et al. in 30% of cases. [8]

In this study, 8 patients had flap necrosis at the distal tip of the post auricular region evident around 4th postoperative day. R Marchese-Ragona et al. observed that Skin-flap necrosis is rare and is usually located in the distal tip of the post-auricular skin flap as seen in this study. [2]

Choice of Superficial or total parotidectomy depends on the nature of the disease (benign or malignant), the position (superficial or deep lobe) and extent of disease. Due to the anatomical placement of facial nerve in the parotid gland, it was the most frequent nerve to be injured according to several studies. Marginal mandibular nerve is a branch of facial nerve that courses near to the body of mandible was also injured in some cases .This can be caused by mechanical trauma, such as crushing and compression during surgery or ischemic injury during nerve dissection. After anatomical preservation, nerve stretching could be the most possible aetiology of transient facial nerve dysfunction. It was observed that dissection along the plane of nerve and proper identification of the main trunk and branches could prevent injury. [9]

The marginal mandibular nerve lies beneath the deep fascia in this region and hence the dissection plane is established in subplatysmal tissue, reflecting the platysma away from the deep cervical fascia till the inferior mandibular margin, thus maintaining a tissue bridge that protects the nerve from iatrogenic injuries is found to be helpful. The dysfunction is treated completely conservatively and with physiotherapy.[10] Skin flap thickness and sharp angle of the tip of post-auricular flap are factors resulting in necrosis of part of flap due to hampered oxygen and blood supply. [2]

Other associated factors include smoking, prior radiation, diabetes, lengthy procedures, and not keeping the flap moist. Oral pentoxyfylline and antibiotics were used along with debridement of the necrosed part. Complications like stroma, hematoma, parotid fistula and Frey's syndrome was not found in this study.

Conclusion

Parotidectomy is a challenging surgery and best means of reducing iatrogenic facial nerve injury still remains a clear understanding of the anatomy, good surgical technique with the use of multiple anatomic landmarks. The goals, rationale, and risk of the operation, such as the general complications associated with the surgical procedure and facial nerve palsy, cosmesis should be explained to the patients. In conclusion, proper knowledge of anatomical landmarks and careful dissections is imperative for satisfactory postoperative outcomes. [9]

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