

An Experience of Superficial Parotidectomy in Tertiary Care Teaching Hospitals

LIAQUAT ALI BHATTI¹, MUHAMMAD ASLAM JAVED², HINA KHAN³, MUHAMMAD ARSHAD⁴, KHALID JAVEED KHAN⁵^{1,3,5}Department of Surgery, Fatima Jinnah Medical University / Sir Ganga Ram Hospital Lahore.²Department of Surgery, Pak Red Crescent Medical and Dental College, Dina Nath.Correspondence to: Muhammad Aslam Javed, Email: aslamjaved0304@gmail.com, Cell: 03045713206

ABSTRACT

Background: Superficial parotidectomy is associated with a decreased incidence of transient facial nerve paralysis compared with that of total parotidectomy.

Aim: To analyze the clinical presentation, histopathology and complications following superficial parotidectomy performed for benign parotid tumors.

Methods: Two center study data was collected from the Surgical Unit I, Department of Surgery AIMC/Jinnah Hospital Lahore (1st January 2012 to October 2018) and Surgical Unit II, Department of Surgery, Sir Ganga Ram Hospital Lahore (November 2018 to 31st December 2020). All patients who underwent superficial Parotidectomy surgery for benign parotid tumors, from 1st January 2012 to 31st December 2020 were assessed for intra-operative and post-operative complications. Demographic data, intraoperative details, and postoperative outcomes of all patients who underwent superficial parotidectomy were collected. Patients with benign parotid tumors on FNAC were included while patients with malignant cells on histopathology were excluded.

Results: A total of 50 patients having benign parotid tumors on FNAC underwent superficial parotidectomy during this study period. There were 35 female patients (70%) and 15 male (30%), with female to male ratio of 2.3:1. The age range was 23-70 years with mean age of patients 35.6 years (5.65±SD). In 48% cases the tumor was on left side of face and in 52% cases it was on right side. Amongst 50 cases, on postoperative histopathology, 2 patients had malignant change.

Key words: Superficial parotidectomy, pleomorphic adenoma, facial nerve paralysis.

INTRODUCTION

The most common benign and malignant parotid gland tumors are the pleomorphic adenoma and mucoepidermoid carcinoma respectively.¹ The pleomorphic adenoma constitutes 45-60% of all benign salivary gland tumors. Approximately 80% occur in the inferior pole of the superficial lobe and less frequently, it can occur at the deep lobe or in the accessory parotid gland tissue.^{1,2}

Several surgical techniques have been suggested to treat parotid tumors. In 1895, Senn described enucleation as the treatment of choice for benign parotid gland tumors, however tumor excision was inadequate with an unacceptable rate of tumor recurrence.² Total parotidectomy involves removal of all parotid gland tissue deep and superficial to facial nerve, whereas superficial parotidectomy involves removal of parotid gland tissue only superficial to the facial nerve.³

Temporary and permanent paralysis of the facial nerve is one of the most serious complications that can occur following parotid gland surgery.¹ Approximately 30-65% of all patients who underwent superficial parotidectomy might experience some sort of temporary facial nerve weakness, and around 3-6% evolve with permanent nerve dysfunction resulting in significant negative impact in the quality of life.²

The potential risk for recurrence and malignant transformation of parotid gland pleomorphic adenomas creates difficulties that have forced Surgeons to undertake additional comprehensive parotid glands surgery with facial nerve dissection.⁴

The objective of this two center study was to assess the facial nerve paralysis and other surgical complications related to the formal superficial parotidectomy for pleomorphic adenoma located in the superficial lobe of the gland, and to identify the associated risk factors.

METHODS

Demographic and clinical data of patients were included: age and sex of patients, size and location of the tumor, mode of clinical presentation, duration of the operation, affected facial side, and

preservation of the facial and GAN (greater auricular nerve). The location of the tumor and diagnosis was confirmed in every case by carrying out fine needle aspiration cytology of the swelling. All data were meticulously entered in a predesigned proforma. Patients were followed up for 1 year.

All surgical procedures fulfilled two conditions: removal of the superficial lobe of the gland and dissection of the facial nerve. A modified facelift incision was designed (as shown in figure 1) and a SMAS flap was raised. (as shown in figure 2).



Figure 1: Incision



Figure 2: Raising the Flap

Received on 14-05-2021

Accepted on 13-10-2021

The main trunk of the facial nerve was identified after its exit from the stylo-mastoid foramen running over ramus of mandible about 1cm below tragal cartilage. All the peripheral branches of the facial nerve were followed in an ante-grade manner, while the superficial lobe of the gland was dissected.

The posterior branch of the greater auricular nerve (GAN) was identified and preserved. After the superficial parotidectomy has been completed (as shown in figure 3), the SMAS was re-approximated and sutured back, a suction drain was placed under the flap.



Figure 3: Dissection Showing Facial Nerve and its Branches

Postoperative complications such as facial nerve paralysis, hemorrhage, hematoma, seroma, wound infection, salivary fistula, numbness around the earlobe, aesthetic deformity, and Frey's syndrome, were prospectively recorded. After surgery, patients were called on day 5 for stitch removal. Follow-up of patients was done every month for 3 months and then every 3 months for a year and complications were recorded. At 2 months follow up there was complete recovery of neuropraxia. All data were meticulously entered in a predesigned proforma.

RESULTS

Fifty superficial parotidectomies without neck dissection for benign parotid tumors were performed from 1st January 2012 through 31st December 2020. The patients ranged in age from 23 to 70 years and the mean age of patients was 35.6 years (5.65±SD). There were 35 (70%) female and 15 (30%) male patients. 48% of parotid tumors were located on the left side while 52% tumors were on the right side. On pre-operative FNAC all patients had benign parotid tumors.

Complications after Superficial Parotidectomy (N=50)

Complication	n	Female	Male
Transient Facial Nerve Paralysis	15(30%)	10(20%)	5 (10%)
Permanent Facial Nerve Paralysis	0	0	0
Transient Numbness of Ear Lobule	4(8%)	3(6%)	1(2%)
Flap Necrosis	0	0	0
Frey's Syndrome	0	0	0
Seroma formation	1	0	1(2%)
Wound infection	1(2%)	1(2%)	0

On post-operative histopathology amongst 50 cases, 48 cases had benign pleomorphic adenoma while only 2 cases had malignant changes. Out of 50 patients, 4 (8%), complained of temporary numbness of the ear lobule which gradually improved with time over a period of 4 weeks. Only one patient had wound infection postoperatively. No patient had permanent facial weakness, flap necrosis, hematoma or tumor recurrence. One patient had postoperative seroma formation. Temporary facial nerve paralysis was seen in 15 patients (30%). At 9 months follow-up, however,

recovery was complete, and we had no permanent nerve damage. Frey's syndrome was seen in none. Two patients had malignancy and they were subjected to radiotherapy and later on excision of deep lobe was done.

DISCUSSION

Pleomorphic adenomas are amongst the most common benign salivary gland tumors and, although they are usually present in the parotid gland, may also arise in the sublingual, sub-mandibular and other minor salivary glands.⁵ It occurs most often between the ages of 30 and 60 years and is found more commonly in females than in males.⁵ The main etiology of pleomorphic adenoma is unknown. The likelihood of malignant transformation increases with the duration of the lesion.⁵ Very rarely these parotid tumors can metastasize. The commonest indication for parotid gland surgery is pleomorphic adenoma.¹ The facial nerve traverses through the substance of the parotid gland dividing it into a major superficial lobe and a smaller deep lobe.⁶ The pleomorphic adenoma usually involves the superficial lobe and therefore the operation of choice in these cases is superficial parotidectomy.⁵ There are two primary points of concern during parotid gland surgery. Firstly, the facial nerve trunk and its tributaries must be located and preserved in order to prevent post-operative facial nerve paralysis, and secondly, the parotid tumor must be excised with a sleeve of tumor free parotid gland tissue to reduce the risk of local tumor recurrence.⁷

The risk of major complications like nerve paralysis is relatively low after surgery for previously untreated parotid pleomorphic adenomas. However, the risk of complications, particularly facial nerve injury, is relatively increased after salvage surgery for locally recurrent tumors.⁸

According to previous studies data, several factors have been reported to be associated with a greater risk of facial nerve paralysis in parotid gland surgery: it includes extent and type of surgical technique (higher incidence of complications in total parotidectomy as compared to superficial parotidectomy), age of patient, intra-operative time, tumor histopathology report (higher incidence in malignant tumors as compared to benign), size of tumor (greater risk of complications in large tumors) and location of tumor (higher incidence of complications in deep lobe tumors), and previous parotid gland surgery (higher incidence in cases of recurrent disease).⁹

The important complications of parotid gland surgery are local site hematoma formation, infection, flap necrosis, temporary or permanent facial nerve paralysis, sialocele, permanent numbness or dysesthesia of the ear lobe due to transaction of the greater auricular nerve, Frey's syndrome and tumor recurrence.⁸

In a study by Fareed *et al*,⁹ amongst 26 patients who underwent superficial parotidectomy, 86.67% of the patients had a pleomorphic adenoma tumor in the superficial lobe of the parotid, whereas only 13.33% of the patients had malignant neoplasm extending into the deep lobe. In our study on post-operative histopathology amongst 50 cases, 48 cases had benign pleomorphic adenoma located on the superficial lobes while only 2 cases had malignant transformation.

Hypoesthesia of ear lobe due to greater auricular nerve damage is a frequent complication of parotid gland surgery. In our study out of 50 patients, 4 (8%) patients complained of temporary numbness of the ear lobule while in a study conducted by Cossio *et al*.¹⁰ amongst 79 patients who underwent superficial parotidectomy 57 (72.4%) patients had hypoesthesia at 1st week postoperatively.

In a study conducted by Cossio ¹⁰, 79 patients undergoing formal superficial parotidectomy, 77.2% of the patients presented transient facial paresis at 1 week, with the marginal-mandibular branch being the most commonly affected and the clinical occurrence of Frey's syndrome was 11.4%. In our study on 50 cases, the transient facial nerve paresis was seen in 15 (30%)

patients, with 20% patients were unable to close ipsilateral eye properly and 10% had complaint of drooling of saliva from angle of mouth, and no incidence of Frey's syndrome occurred. In another study conducted by Fareed *et al.*⁹ on 26 patients it was found that temporary facial nerve paresis involving all branches of the facial nerve occurred in 7 patients (26.9%).

Frey's syndrome is a significant complication after parotid surgery, showing an incidence that varies greatly from 6% to 96%.¹¹ Papadogeorgakis *et al.* reported that Frey's syndrome affected 18% of patients who had undergone superficial parotidectomy.¹² In a study by Emodi *et al.* Frey's syndrome occurred in 27.7% of the patients: 4 cases treated with superficial parotidectomy and 9 cases treated with partial superficial parotidectomy.¹² In our study none of our patients developed this syndrome.

CONCLUSION

The results of our study suggested that superficial parotidectomy with the modified facelift incision and reconstruction with SMAS is a safe procedure, with few complication rate post-operatively. The knowledge of the potential risks and complications associated with superficial parotidectomy are relevant for preoperative planning and to achieve better long-term outcomes.

REFERENCES

1. Venkatesh S, Srinivas T, Hariprasad S. Parotid Gland Tumors: 2-Year Prospective Clinicopathological Study. *Ann Maxillofac Surg.* 2019;9(1):103-9.
2. Bittara R F, Ferraroa H P, Ribasa M H, Lehna C N. Facial paralysis after superficial parotidectomy: analysis of possible predictors of this complication. *Braz J Otorhinolaryngol.* 2016;82(4):18.
3. Mutlu V, Kaya Z. Which Surgical Method is Superior for the Treatment of Parotid Tumor? Is it Classical? Is it New? *Eurasian J Med.* 2019;51(3):273-76.
4. Larian B. Parotidectomy for Benign Parotid Tumors. *Otolaryngol Clin North Am.* 2016;49(2):395-413.
5. Mc Loughlin L, Gillanders SL, Smith S, Young O. The role of adjuvant radiotherapy in management of recurrent pleomorphic adenoma of the parotid gland: a systematic review. *Eur Arch Otorhinolaryngol.* 2019;276(2):283-95.
6. Takezawa K, Townsend G, Ghabriel M. The facial nerve: anatomy and associated disorders for oral health professionals. *Odontology.* 2018;106(2):103-16.
7. Brennan PA, Ammar M, Matharu J. Contemporary management of benign parotid tumours - the increasing evidence for extracapsular dissection. *Oral Dis.* 2017;23(1):18-21.
8. Correia M, Noronha FP, Audi P. Superficial parotidectomy an excellent procedure in the management of benign parotid tumors - outcome of various complications and tumor recurrence. *Med J DY Patil Univ.* 2016;9:600-4.
9. Fareed M, Mowaphy K, Abdallah H, Mostafa M. Temporary facial nerve paralysis after parotidectomy: the mansoura experience, a prospective study. *Egypt J Surg.* 2014;33:117-24.
10. Cossio PI, Cardero EG, Garcia AGP, Latorre EM, Perez JLG, Golczer EP. Complications after superficial parotidectomy for pleomorphic adenoma. *Med Oral Patol Oral Cir Bucal.* 2018;23(4):e485-92.
11. Jin H, Kim BY, Kim H, Lee E, Park W, Choi S, et al. Incidence of postoperative facial weakness in parotid tumor surgery: a tumor subsite analysis of 794 parotidectomies. *BMC Surg.* 2019;199:1.
12. HUANG G, YAN G, WEI Y, HE X. Superficial parotidectomy versus partial superficial parotidectomy in treating benign parotid tumors. *Oncol Lett.* 2015;9(2):887-90.