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Total Superficial Parotidectomy: Pros and Cons

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Abstract

Background: Total superficial parotidectomy is the most commonly used approach in excising the tumors that affect the superficial lobe of the parotid gland, whether they're benign or malignant.

The aim of the study is to evaluate the benefits and drawbacks of total superficial parotidectomy for parotid gland tumors within five years of follow-up.

Patients and methods: Nineteen patients with lateral facial swelling affecting the parotid region were included in this study. All of them operated under general anesthesia with oral endotracheal intubation, where Modified Blair Incision (lazy S incision) was utilized in all cases.

Anterograde dissection with facial nerve identification was accomplished with total superficial parotidectomy.

Results: Fifteen patients had benign parotid tumors, and only four patients had well-differentiated mucoepidermoid carcinoma.

Skin necrosis of the distal tip of the postauricular flap was the most commonly observed postoperative complication, it occurred in five patients; facial nerve weakness was observed in the another three patients.

Conclusions: total superficial parotidectomy is an efficient, safe technique for benign and malignant tumors affecting the superficial lobe of the parotid gland with minimum postoperative complications.

Keywords:

Pleomorphic adenoma, Mucoepidermoid carcinoma, Total superficial parotidectomy

Introduction

The most frequently affected salivary gland lobe by tumors is the superficial lobe of the parotid gland; most of these tumors are benign, and 60–70% of these benign tumors are pleomorphic adenomas [1,2]. While malignant parotid gland tumors are rare and exhibit varied biological behaviors, mucoepidermoid carcinoma is the most common malignant salivary gland tumor found in the parotid gland [2].

Pleomorphic adenoma, despite being a benign tumor, had an incomplete capsule. For this reason, surgical resection with a free resection margin is the best treatment option for both benign and malignant parotid gland tumors [1].

Multiple approaches were used to manage parotid gland tumors. Whether the tumor is benign or malignant, there is no standardized way to determine the extent of resection margin, which depends on many factors like the position of the facial nerve, the extent of the tumor, and its grade [3,4].

Previously, intracapsular dissection was used to treat parotid gland benign tumors; however, this approach ended with a high recurrence rate. [5]

Today, Superficial parotidectomy with identifying of the facial nerve main trunk or one of its branches in an anterograde or retrograde approach is a widely accepted method. This approach is commonly used for benign and malignant tumors confined to the superficial lobe of the parotid gland with no signs of facial nerve impairment. It involves the removal of all parotid gland tissues lateral to the facial nerve [6].

However, facial nerve dysfunction, Frey's syndrome, flap necrosis, and salivary leakage with this approach are possible [7,8,9,10].

Facial nerve impairment is one of the most significant adverse effects of parotid surgery, which can further impair the patient's quality of life. About 10-65% of patients may experience temporary facial nerve weakness, and 14% of patients experience permanent damage to the facial nerve.

This study aims to evaluate the benefits and drawbacks of total superficial parotidectomy for parotid gland tumors within five years of follow-up.

Patients and Methods

Nineteen patients who complained of lateral facial swelling were referred to the maxillofacial consultation clinic at the Alkinday teaching hospital from March 2014 to September 2018. This study was carried out according to ethical principles and in compliance with the Declaration of Helsinki, and the patients gave informed consent.

After taking a medical history and performing a clinical examination, patients were sent for an ultrasound examination for the swelling and showed a well-defined hypoechoic mass within the parotid gland. To confirm the diagnosis, a fine needle aspiration was performed, followed by a computed tomographic scan to determine the exact position and size of the tumor.

All patients were operated on under general anesthesia with oral endotracheal intubation, where Modified Blair Incision (lazy S incision) was utilized in all cases. The incision begins with a vertical arm in the pre-auricular region, continues through the anterior border of the mastoid, and terminates in the sub-mandibular region.

To securely identify the main trunk of the facial nerve, anterograde dissection with identification of the tragal pointer and posterior belly of the digastric muscle was performed.

The dissection continued lateral to the main trunk of the facial nerve, separating the tumor with a cuff of normal glandular tissues around it and sent for histopathological examination. Fig.1

After that, hemostasis for all bleeding points with the use of bipolar electro-diathermy was done. A vacuum drain was placed and inserted from behind the ear and fixated with sutures. Then watertight closure for all facial planes and skin don followed by packing and pressure dressing over the surgical site.

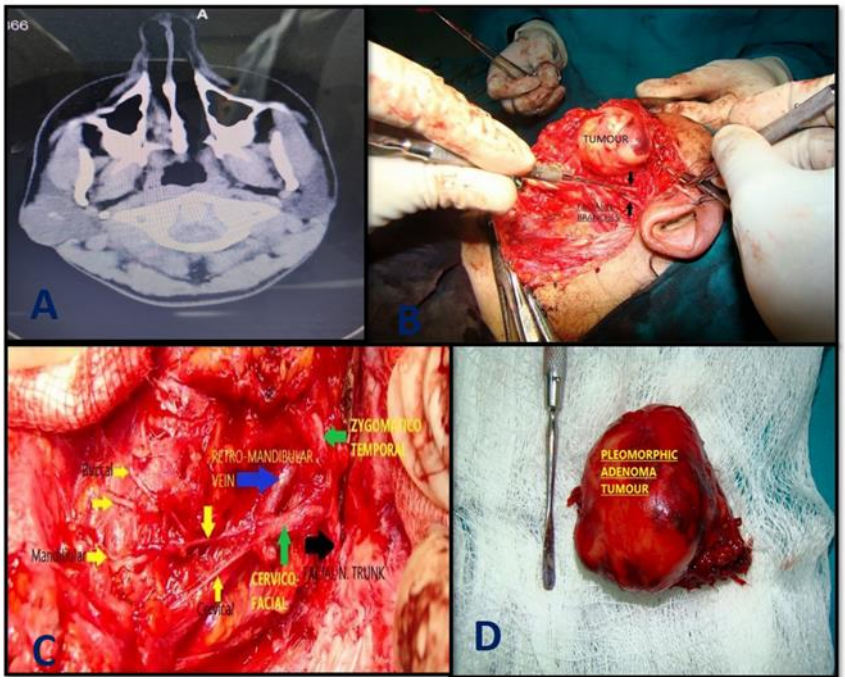

Fig.1 A: axial section of CT scan showing lobulated soft tissue mass within the posterior part of the superficial lobe of the left parotid gland, **B**: showing modified Blair incision with anterograde dissection identifying the main trunk of the facial nerve, **C**: total superficial parotidectomy with preservation of all facial nerve branches, **D**: the tumor mass with a cuff of normal parotid gland tissue.

Vacuum drains are checked every 12 hours for the amount of the collected fluids. The drain is removed when it collects less than 20 ml of fluids.

All patients were kept on Ceftriaxone 1 mg once daily, Decadron® 2 ampoules only (the first ampoule is given immediately after recovery and the second one given 12 hours later), and Paracetamol 1 gram three times daily for seven days.

Facial nerve function is evaluated immediately after recovery from general anesthesia and before developing facial swelling that may affect the function of the nerve in the next few hours.

Wound healing, the development of Frey's syndrome, and salivary leakage were evaluated in the next weeks of the follow-up period, which extended for three years.

Results

Nineteen patients (eleven females and eight males) were included in this study; patients' ages ranged from 19–67 years, with a mean age of 39 ± 14.49. All patients had unilateral facial swelling affecting the left side in 65% of the patients. They had been presented for 4.57 ± 1.83 years. The mean size of the parotid tumors was 4.35 ± 0.91 cm, as shown in Table (1).

After three months of monthly evaluations, the clinical assessment was completed every four months for the first year. then every year for the following two years, for a total of three years.

The ultra-sonographies were performed every six months for three years, and no computed tomography (CT) scan was performed in the follow-up period.

Table (1): Patients characteristics.

Item		No.
Mean age ±SD		**39 ± 14.49**
Gender	**Male**	8
	Female	11
Affected side	**Left**	12
	Right	7
Duration of presentation		4.57 ± 1.83 years
Mean size of the parotid tumors		4.35 ± 0.91 cm.

The histopathological results from Fine Needle aspiration (FNA) preoperatively and excisional biopsy of the total superficial lobe of the parotid gland postoperatively were accurate in 18 cases out of 19.

Fifteen patients had benign parotid tumors (13 pleomorphic adenomas, 2 Warthin's tumors), and only four patients had well-differentiated mucoepidermoid carcinoma. The histopathological features of the pleomorphic adenoma group showed the presence of cartilaginous to myxoid tissue with benign-looking epithelial components surrounded by benign intact salivary gland lobules suggesting the diagnosis of pleomorphic adenoma. While in mucoepidermoid carcinoma, there has been a long-standing facial swelling for more than seven years, with sudden and painful, rapid growth in the last month before visiting the maxillofacial consultation clinic. With no facial nerve involvement.

Only three patients complained of temporary weakness of the mandibular branch of the facial nerve, and it resolved within three months. All of them had mucoepidermoid carcinoma.

Another patient developed a neuroma of the great auricular nerve branch, which was resolved by keeping the patient on gabapentin for three months.

Skin necrosis of the distal tip of the postauricular flap was observed in 5 patients and associated with salivary fluids discharge from the necrotic flap tip. It was controlled by giving the patient an anticholinergic drug with packing and pressure dressing for three weeks. Three of those patients had been diagnosed with pleomorphic adenoma and two of them with mucoepidermoid carcinoma.

At the end of the three years of follow-up, all patients were satisfied with the results, with no signs or symptoms of recurrence.

Discussion

Salivary gland tumors represent 3-10% of the head and neck tumors [(2)]. The most frequent benign tumor affecting the parotid gland is a pleomorphic adenoma, while the most frequent malignant tumor is mucoepidermoid carcinoma.

Failure to perform complete excision of these tumors ends in catastrophic consequences; these should be weighed against the possible drawbacks associated with total superficial parotidectomies like facial nerve weakness, facial scarring, Frey's syndrome, flap necrosis, and salivary leakage.

In this study, 11 out of 19 patients were females, with the female-to-male ratio being 1.7:1. This finding was on par with other studies [11,12,13], but in contrast to the other studies [14, 15,16].

Venkatesh et al. reported that there is a predilection for the left parotid gland to be affected more than the right one [17], and this coincides with the findings of this study. While the predilection was for the right side noticed in another study in Iraq.[13] However, no explanation drowns for this finding in the literature; the author thought that the limited number of patients included in these studies might lead to such findings.

In this study, 78.9 % of the patients had benign parotid tumors, and this finding is comparable to the known percentage of benign and malignant tumors affecting the parotid gland [1,2].

Stathopoulos *et al.* (2018) found that partial superficial parotidectomy is a highly efficient technique for excising benign parotid gland tumors by minimizing the complications associated with total superficial parotidectomy. However, he concludes that it is preferred to do more extensive surgical intervention (total superficial parotidectomy) when the tumor size exceeds four cm [5].

The mean size of the parotid tumors in this study is 4.35 ± 0.91 cm. these large-sized tumors are associated with a long history of parotid facial swelling (4.57 ± 1.83 years), and they need extensive surgical dissection to guarantee full tumor removal with a cuff of healthy salivary glandular tissues to prevent disease recurrence, which has been achieved in all 19 patients included in this study after five years of follow-up.

Fine needle aspiration provides a preoperative diagnosis for parotid tumors with an accuracy rate ranging from 90-95% of the cases [18]. This study showed an accuracy rate of 94.7%, which is comparable to the known accuracy rate of FNA.

According to Jin H et al., one of the most common causes of facial palsy after parotid surgery is the presence of deep-seated parotid tumors, large-sized tumors, revised parotid surgeries, or total parotidectomy [19].

15.7% of the patients in this study ended with temporary facial nerve weakness, and all of them had mucoepidermoid carcinoma; this may be explained by the fact that these malignant tumors in this study had a long-standing history of facial swelling with the sudden onset of painful rapid growth, resulting in large sized tumors.

The major postoperative complication in this study was the necrosis of the distal tip of the flap at the postauricular area with resultant salivary fluid discharged from this area. This complication occurs in 26.3% of the patients, notably in the first eight patients included in this study.

In the subsequent 11 patients, neither flap necrosis nor salivary fluid discharges were noticed. This was achieved by prescribing an anticholinergic drug with packing and pressure dressing for three weeks for all patients postoperatively.

Despite the limitations of this study (small sample size, short follow-up time), it can be concluded that the total superficial parotidectomy is an efficient, safe technique for benign and malignant tumors affecting the superficial lobe of the parotid gland with minimum postoperative complications.

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