# Retraction Notice

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The Editorial Board would like to extend its sincere apologies for any inconvenience this retraction may have caused.

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# Pleomorphic Adenoma of Parotid Gland and Facial Nerve Dysfunction Post Superficial Parotidectomy: A Case Report

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## Abstract

**Background:** Pleomorphic Adenoma is the most prevalent salivary gland neoplasm accounting for about two-thirds of all salivary gland tumours. The facial nerve and branches are closely related to the parotid gland, hence facial nerve preservation and monitoring during parotidectomy is of paramount importance to avoid facial nerve injury. **Case Description:** A case of pleomorphic adenoma of the parotid gland in a 49-year-old female patient with subsequent facial nerve dysfunction after superficial parotidectomy is presented in this report. The objective of the case report is to highlight the importance of meticulous facial nerve dissection and intraoperative facial nerve monitoring to avoid facial nerve dysfunction postoperatively. **Conclusion:** Facial nerve dysfunction after surgery of pleomorphic adenoma is still an encountered complication of parotidectomy. Therefore, meticulous facial dissection, follow up of patient after facial nerve injury and facial nerve rehabilitation techniques should be practiced.

## Subject Areas

Oral Surgery

## Keywords

Pleomorphic Adenoma, Parotidectomy, Facial Nerve Injury

## 1. Introduction

Pleomorphic Adenoma is the most prevalent salivary gland neoplasm, accounting for about two-thirds of all salivary gland tumours [1]. The parotid gland is the most commonly affected site in major salivary glands and the palate is the

common location of pleomorphic adenoma in minor salivary glands [2]. Majority of parotid tumours are located in the superficial lobe of the parotid gland and treatment encompasses superficial parotidectomy. The facial nerve and branches are closely related to the parotid gland, hence knowledge of anatomical location of facial nerve and preservation techniques during parotidectomy are of paramount importance to avoid facial nerve injury [3].

The facial nerve exists the skull through the stylomastoid foramen and courses on to innervate the muscles of facial expression. To locate the main trunk of the facial nerve, surgical landmarks of reference are the tympanomastoid suture, the tragal pointer, the posterior belly of digastric muscle, and the styloid process. The facial nerve is positioned one cm inferiorly and medially to the tragal pointer and its depth may be estimated with that of the posterior belly of digastric muscle, lying on the lateral aspect of the styloid process. It then enters into the parotid gland and divides into its five main branches [4].

Facial nerve weakness can vary in severity from minor marginal mandibular asymmetry to complete facial paralysis. This can significantly affect the quality of life of the patient in cases where facial nerve function is severely compromised [5]. This is because facial nerve function is required for smiling, talking and emotional expression. Once innervation to the orbicularis oris muscle is compromised, the patient will be incapable of closing the eye and this can lead to cornea ulceration due to constant exposure and other ocular complications can ensue [6].

To reduce the occurrence of facial nerve damage during surgery, facial nerve preservation techniques and intraoperative facial nerve monitoring techniques have been developed. Intraoperative facial nerve monitoring has been evidenced to decrease the likelihood of facial nerve paralysis occurring postoperatively [7]. In cases where facial nerve paralysis has occurred, there are a range of therapeutic options, including drug therapy, neuromuscular re-education, physical therapy and surgical techniques to maintain proprioception of mimic musculature and tropism [8].

A case of pleomorphic adenoma with subsequent facial nerve dysfunction after superficial parotidectomy is presented in this report. Written informed consent was obtained from the patient for the case report write up and subsequent publication.

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## 2. Case Presentation

A 49-year-old female patient was referred to the Oral and Maxillo-Facial Surgery Department with complaint of a painless slow growing swelling on the right side of the face that started 3 years ago. Medical history and past surgical history are non-contributory. On extra-oral examination, mild facial asymmetry was noted. A diffuse ovoid swelling, measuring 3 cm × 3 cm, was seen on the right side of the face. The swelling extended superoinferiorly from the ear lobule to the lower border of the angle of the mandible and anteroposteriorly, it extended from mid body region of posterior mandible to the inferior aspect of the mastoid process. Ear lobule was slightly everted (**Figure 1**).

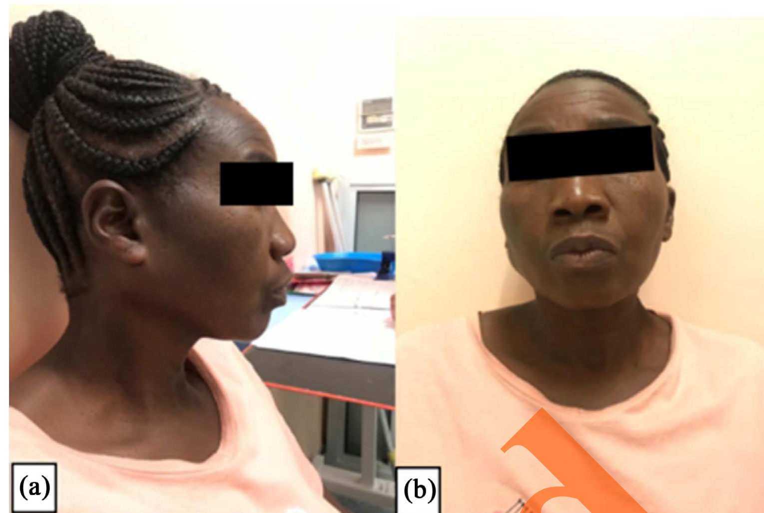


Figure 1. (a) Lateral and (b) frontal view of patient preoperatively, showing a diffuse swelling on the right parotid region.

The skin overlying the swelling was of normal colour and the swelling was firm in consistency and slightly tender on palpation. The swelling was not fixed to skin and underlying structures. Facial and eye movements were normal on examination. Intra-oral examination findings were unremarkable. Provisional diagnoses of benign parotid tumours were considered; pleomorphic adenoma, Warthin's tumour and myoepithelioma.

Fine Needle Aspiration cytology (FNAC) was done and revealed tridimentional clusters of epithelial cells with round to ovoid irregular hyperchromatic nuclei and scanty cytoplasm and concluded that, the lesion is an epithelial neoplasm with atypia and cystic changes hence excisional biopsy was advised. Results of haematological investigations were within normal range.

After informed consent was obtained, right superficial parotidectomy was performed under general anesthesia, using a Modified Blair incision. A flap was raised and dissection through fascia and muscle was done and henceforth an antegrade approach was utilized in attempt to preserve facial nerve trunk and branches. The superficial lobe of right parotid gland was excised together with the lesion (Figure 2).

The excised mass had the following dimensions: 5 cm × 3 cm × 3 cm. Histopathology results showed parotid tissue exhibiting a benign encapsulated neoplasm growing in solid sheets, cords and tubules of epithelial and myoepithelial cells with an intervening fibrous and fibromixoid stroma and excision margins were negative. Hence diagnosis of pleomorphic adenoma of right parotid gland was confirmed.

Three days post operatively, the patient complained of inability to close the right eye properly and also inability to move the lips to the right. Patient was started on treatment with oral prednisone and Vitamin B complex medications immediately to help with facial nerve function recovery. Figure 3 shows the right and left facial halves at rest three days operatively, confirming presence of right

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facial nerve injury. There was incomplete closure of the right eye and asymmetric motion of lips with maximum effort. Figure 4 reveals facial asymmetry at rest and

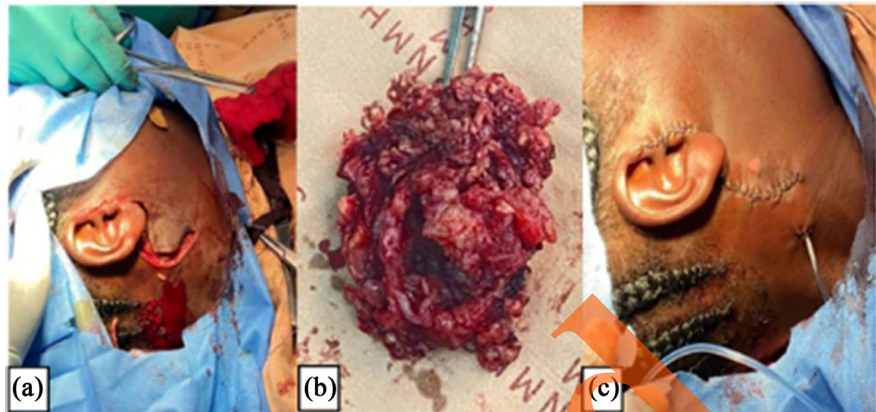

Figure 2. Intraoperative procedure showing (a) Modified Blair's incision done on the right preauricular region; (b) Excised superficial lobe of the right parotid gland and lesion; (c) Operated site after suturing (right parotid area).

Figure 3. Three days post operatively, (a) frontal and (b) lateral view of patient revealing asymmetry of right and left facial halves at rest.

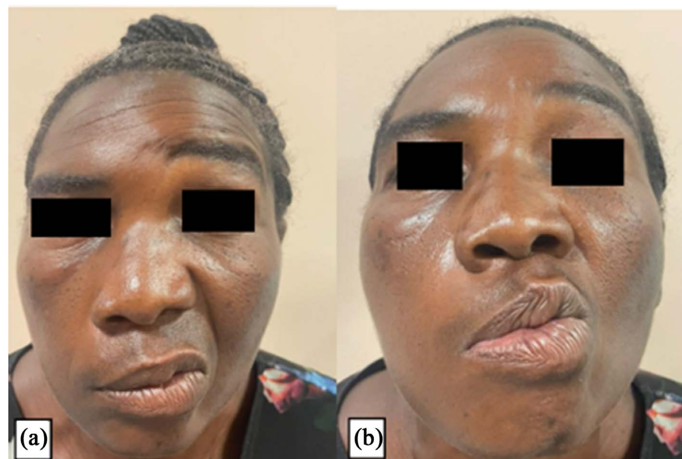

Figure 4. Three months postoperatively, frontal view (a) at rest and (b) during function.

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during function of the same patient after three months with no improvement in function of the right facial nerve.

The patient was also referred to the ophthalmology department for management of possible ocular complications that can result since the right eye was incapable of complete closure and the patient also complained of blurred vision in bright light. The ophthalmology department prescribed artificial tears and various eye ointments to prevent exposure keratopathy and also referred patient to a private facility to obtain eyeglasses to aid better vision and to protect the right eye [4].

## 3. Discussion

Pleomorphic adenoma presents as a slow growing mass that is asymptomatic and not associated with facial nerve weakness. Histologically, there are three components in pleomorphic adenoma; epithelial, myoepithelial cell and mesenchymal component. The epithelial component shows variable patterns and maybe interwoven in a myxoid, mucoid and chondroid tissue. The histopathologic features are pathognomonic [9].

Parotidectomy is a common surgical management method in parotid gland tumours. Before the development of facial nerve preservation techniques, occurrence of facial nerve paralysis was considerably higher following surgical excisions of parotid pleomorphic adenomas compared to when facial nerve dissection techniques have been introduced. Antegrade and retrograde facial nerve dissection are the two approaches utilized to preserve the facial nerve during parotid surgery [10].

In the present case report, despite the tumour being slightly tender on palpation in the period before surgery, all other clinical and histopathologic features were consistent with those of pleomorphic adenoma. The patient described is in her fourth decade of life and pleomorphic adenoma has a predilection for females in their third to fifth decade of life [1].

In a case series by Singh *et al.*, (2015), three superficial parotidectomies were done under local anesthesia using an antegrade facial nerve dissection approach. No complications of facial nerve paresis were noted post parotidectomy. In contrast to the present case, where parotidectomy was performed under general anesthesia, local anesthesia provides the advantage of avoiding inadvertent facial nerve injury since the patient may complaint of discomfort when the dissection is too close to nerve sheath [11].

A study by Siddiqui *et al.* (2020) reported that 74% of patients who underwent parotidectomies did not succumb to nerve complications, and 26% of the patients had facial nerve injuries. Although the incidence of facial nerve injury after parotidectomy have reduced, it is still a possible and grave complication of parotid surgery just like it ensued in the present case report [3].

To minimize the risk of facial nerve injury, facial nerve preservation and intraoperative facial nerve monitoring (FNM) techniques are essential. FNM during

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surgery aids with identification of nerve trunk, dissection of facial nerve branches and validation of facial nerve function and prognostication of facial expression postoperatively [12]. Sood *et al.* (2015) demonstrated that the incidence of facial nerve weakness post-parotidectomy was lower (22.5%) in patients were FNM was practiced and higher (34.9%) in patients where FNM was not done [5].

In the present case report, facial nerve monitoring techniques were not employed, only facial nerve preservation and reliance on anatomical landmarks was utilized to avoid facial nerve damage. It is therefore recommended that intraoperative facial nerve monitoring should be in place and utilized by oral and maxillofacial surgeons during parotidectomies and surgical procedures in close proximity to the facial nerve to reduce the occurrence of facial nerve weakness thereafter.

In case facial nerve injury ensues, facial paralysis treatment should be sought and tailored to the specific patient. Treatment for facial paralysis can either be surgical management or non-operative management taking into account the affected facial zones. Surgical treatment can range from primary neurorrhaphy, nerve grafting, muscle transfer, slings and weights etc. Non-operative treatment options encompass supervised physical therapy, in a form of neuromuscular retraining in front of the mirror or with an electromyography (EMG) device. Botulinum toxin A has also been used to re-establish symmetry when injected on the unaffected side and helps overcome synkinesis [4].

## 4. Conclusion

Facial nerve dysfunction after surgery of pleomorphic adenoma is still an encountered complication of parotidectomy and careful facial nerve preservation approaches and monitoring should be carried out during parotid surgeries. In cases where facial nerve paralysis occurs, an attempt should be made to improve facial nerve function or recovery and patient should be followed up. If surgical treatment cannot be done, then non-operative rehabilitative techniques should be explored. Referral of the patient to other departments such as ophthalmology, physiotherapy and social worker should also be done to better manage the patient.

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## Conflicts of Interest

The authors declare no conflicts of interest.

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