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Case Report
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Facial Nerve Preservation During Cervico-Parotid Surgery: Concerning Two Cases And A Literature Review

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Abstract

Background: *Facial nerve preservation is a major challenge during cervico-parotid surgery due to the close anatomical relationship between the facial nerve and lesions involving the parotid region. Nerve injury may result in significant functional and aesthetic consequences.*

Case Presentation: *We report two cases highlighting facial nerve preservation during cervico-parotid surgery. The first case involved a 2-year-old child with a cystic lymphangioma extending into the cervico-parotid region. The second case concerned a 23-year-old woman with a parotid mass initially suspected to be a pleomorphic adenoma but ultimately diagnosed as an inflammatory pseudotumor associated with intraparotid calculi. In both cases, meticulous surgical dissection and identification of the facial nerve and its branches enabled complete lesion excision while maintaining nerve integrity.*

Results: *No postoperative facial paralysis or neurological complications were observed. Histopathological examination confirmed the diagnoses and demonstrated the importance of tissue analysis in differentiating inflammatory lesions from true neoplasms.*

Conclusion: *Successful facial nerve preservation during cervico-parotid surgery relies on detailed anatomical knowledge, careful surgical technique, and appropriate preoperative imaging. Meticulous dissection can significantly reduce facial nerve morbidity even in lesions closely associated with nerve branches.*

Keywords: Facial nerve, Cystic lymphangioma, parotid tumors, Parotidectomy.

Introduction

Facial nerve dissection represents a critical and delicate step in head and neck surgery, particularly during interventions on the parotid gland or cervical masses such as cystic lymphangiomas. Preserving the functional integrity of this nerve is essential to avoid major aesthetic and functional complications. This article presents two surgical cases: a cystic lymphangioma in a 2-year-old child extending to the parotid gland, and an inflammatory pseudotumor of the parotid gland in a 23-year-old woman. Through these cases, we discuss the techniques and strategies for facial nerve preservation.

Case Reports

Case 1

A 2-year-old child presented to the Gabriel Touré University Hospital Center in Bamako with a right laterocervical mass that had been progressively evolving for 1 year. The mass was right laterocervical, soft, painless, with normal-appearing overlying skin, and it was transilluminable. A cervical CT scan was requested, which revealed a hypodense, multiloculated mass with fluid content, developing at the expense of the right cervico-parotid region. Management was surgical and consisted of excision with careful dissection of the facial nerve and preservation of all its branches, despite their proximity to the cyst components. The postoperative course was favorable, with no facial paralysis [1,2].

Figure1: Intraoperative view of the cervical mass extending to the right parotid.

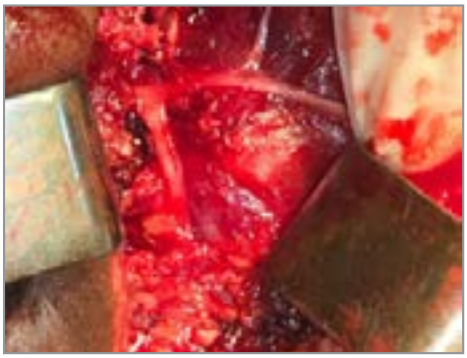

Figure 2: Intraoperative view: the facial nerve and its branches.

Case 2

A 23-year-old female patient presented to the Kamenge University Hospital Center in Bujumbura with a left parotid swelling; the mass had been evolving since a young age and was progressively increasing in size. The mass was painless and mobile relative to the underlying planes; the overlying skin appeared normal. An ultrasound was performed and showed a well-defined, hypoechoic nodular formation located within the superficial lobe of the parotid gland, with sharp contours and peripheral vascularization, altogether suggestive of a pleomorphic adenoma .Management was surgical and consisted of a superficial (exofacial) parotidectomy, with meticulous antegrade dissection of the facial nerve and its branches, allowing for complete excision of the tumor while respecting the nerve branches. Intra-parotid calculi (stones) were discovered during the procedure .The postoperative course was uneventful. The histological examination of the specimen came back in favor of an inflammatory pseudotumor of the parotid gland. The patient was seen 3 months after surgery, and there were no abnormalities [3-5].

Figure 3: Left parotid mass.

Figure 4: The facial nerve and its branches

Figure 5: Surgical specimen and intraparotid calculi

Discussion and Literature Review

Lesions of the parotid gland represent a true challenge in head and neck surgery due to the anatomical proximity of the facial nerve. The preservation of this nerve remains a major concern during any parotid surgery to avoid sometimes severe functional and aesthetic sequelae.

Epidemiological Data

Age

Cystic lymphangiomas are mainly observed in children. Kennedy T L reports that the majority of cases are diagnosed before age 2, which corresponds to our first patient, who was 2 years old. Regarding benign parotid lesions, several authors describe a preferential occurrence in young adults. In Musani M A's series, the mean age of patients was 34 years, while Siddiqui A H found a mean age of 38.7 years. Our observation of a 23-year-old patient aligns with these data [6,7].

Sex

A female predominance is frequently reported in benign tumors of the parotid gland. Musani M A noted a female proportion of 67.6% in his series. In our study, the inflammatory pseudotumor also affected a young woman.

Clinical Data

Consultation Delay

The delay before consultation is often long in benign parotid pathologies due to their slow evolution and the mildly symptomatic nature of the lesions. In our two observations, the patients presented with a mass that had been evolving progressively for several months or even several years before management[8].

Location

Benign lesions of the parotid gland most frequently involve the superficial lobe. Musani M A reports involvement of the superficial lobe in 81% of cases. Our second case also presented a superficial localization. In the first case, the extension of the lymphangioma toward the parotid region made the dissection particularly delicate due to the close relationships with the branches of the facial nerve.

Facial Paralysis

The absence of preoperative facial paralysis generally serves as an argument in favor of a benign lesion. According to O'Brien C J, the presence of facial paralysis should primarily evoke a malignant condition. Neither of our patients presented any facial deficit before the intervention [9].

Paraclinical Data

Imaging plays an important role in the workup of cervico-parotid masses. In our first patient, the cervical CT scan allowed for the assessment of the lesion's extension toward the parotid gland as well as its anatomical relationships. In the second patient, the ultrasound revealed a well-circumscribed nodular formation of the superficial lobe of the parotid, initially suggestive of a pleomorphic adenoma. However, the histopathological examination ultimately concluded an inflammatory pseudotumor associated with intraparotid calculi. This diagnostic difficulty can be ex-

plained by the fact that certain chronic inflammatory lesions of the parotid can radiologically simulate a benign tumor [10,11].

Surgery

The Surgical Procedure

The treatment of parotid masses and cystic lymphangiomas remains essentially surgical. The goal is to achieve complete excision while preserving the facial nerve and its branches. In the case of the cystic lymphangioma, the intervention was made difficult by the extension of the lesion into contact with the nerve branches. Careful dissection allowed for complete excision without neurological complications. In our second patient, a superficial parotidectomy was performed in accordance with standard recommendations for benign lesions of the superficial lobe [12-14].

Facial Nerve Dissection

Facial nerve dissection constitutes the essential step of parotid surgery. Several anatomical landmarks are classically used to identify the nerve trunk, notably the "pointer," the posterior belly of the digastric muscle, and the tympanomastoid suture, as described by Conley J. In our practice, antegrade dissection allowed for the progressive identification of the main trunk and then its terminal branches. This technique remains widely used and yields good results when performed with caution. According to Mahmood K, there is no significant difference between the antegrade and retrograde techniques regarding the risk of postoperative facial paralysis [15-17].

Histopathological Result: Relationship Between Calculus and Pseudotumor

The histopathological examination of the surgical specimen in the second patient concluded an inflammatory pseudotumor associated with intraparotid calculi. The presence of calculi can lead to chronic salivary obstruction, responsible for persistent inflammation, fibrosis, and reactive changes that can simulate a true parotid tumor. Ellis G L reports that these chronic inflammatory lesions can take on a pseudotumoral appearance both clinically and radiologically. This situation probably explains the discrepancy observed between the ultrasound findings and the final histological result [18-20].

Postoperative Follow-up

Postoperative Facial Paralysis

Postoperative facial paralysis remains the most dreaded complication of parotidectomies. In Musani M A's series, the frequency of transient facial paralysis was 26.3%, compared to 1.7% for permanent paralysis. Siddiqui A H reported 7.1% of transient facial paralysis. According to Dulguerov P, transient paralyses are mainly related to the stretching or manipulation of the nerve during dissection. In our series, no postoperative facial paralysis was observed. This result can be attributed to a good knowledge of anatomical landmarks as well as a cautious and atraumatic dissection of the facial nerve.

Conclusion

Facial nerve dissection remains an essential and particularly delicate step in cervico-parotid surgery. The anatomical complexity of this region, combined with modifications in tissue relationships induced by tumor or inflammatory processes, exposes patients to a non-negligible risk of nerve injury. Through our two observations, we have highlighted the importance of a perfect knowledge of anatomical landmarks as well as a meticulous and atraumatic dissection of the facial nerve in order to preserve its function. Despite the proximity of the lesions to the nerve branches, surgical excision was achieved without postoperative facial paralysis. Preoperative imaging also plays an important role in evaluating the extension of lesions and in surgical planning. However, only histopathological examination confirms the diagnosis, as illustrated in our second case, where the inflammatory pseudotumor was associated with intraparotid calculi. Finally, our results align with data from the literature showing that a rigorous surgical technique, combined with a good anatomical mastery, considerably reduces the morbidity related to the facial nerve during parotid surgery.

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