

Superficial Parotidectomy in Chronic Sialadenitis Post Covid Case Report

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ABSTRACT

SARS-CoV-2 exhibits a high tropism for salivary glands, which can lead to chronic sialadenitis. This inflammatory entity can clinically and ultrasonographically mimic benign neoplasms, complicating the preoperative diagnostic approach.

This case report is about a 38-year-old female, non-smoker, presented with a progressively enlarging left parotid mass that developed 8 weeks after a COVID-19 infection. Ultrasound revealed a vascularized hypoechoic nodule, and fine-needle aspiration cytology (FNAC) diagnosed a Warthin tumor. She underwent a superficial parotidectomy with facial nerve preservation. Postoperatively, she developed transient paresis of the marginal mandibular branch and a surgical site seroma, both of which resolved favorably with conservative management. The definitive histopathological report confirmed chronic sialadenitis, ruling out any neoplastic process.

Oncocytic metaplasia and lymphoid hyperplasia, typical of chronic post-viral inflammation, closely mimic the cellular architecture of a Warthin tumor, leading to false-positive cytological diagnoses. It is imperative to maintain a high index of suspicion for parotid masses in patients lacking the classic epidemiological profile but with a recent history of COVID-19. Furthermore, surgeons must anticipate significant intraoperative technical difficulties due to inflammatory fibrosis, which increases the risk of postoperative morbidity.

KEYWORDS: Parotid gland, parotidectomy, Warthin tumor, sialadenitis, COVID-19, fine-needle.

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INTRODUCTION

Salivary gland tumors represent a complex pathological spectrum due to their great histological diversity. Epidemiologically, these lesions constitute between 3% and 4% of all head and neck neoplasms [1].

The parotid gland is the site of 70% to 80% of all primary salivary gland tumors, of which approximately 80% are benign [2].

Within this group, pleomorphic adenoma is the most frequent lesion, constituting 45% to 75% of all salivary gland tumors, followed by Warthin's tumor (papillary lymphomatous cystadenoma), which represents between 10% and 36% of benign parotid neoplasms [1, 3].

The preoperative diagnostic approach to a parotid mass is fundamental for surgical decision-making. The initial evaluation relies on imaging studies. Ultrasound (USG) reports a sensitivity of 70% to 80% for characterizing the solid or cystic nature of the lesion, while magnetic resonance

imaging (MRI) offers a sensitivity greater than 85% and a specificity of 90% for delineating invasion of adjacent tissues and the topographic relationship with the facial nerve [4].

Subsequently, the diagnostic gold standard is fine-needle aspiration biopsy (FNAB). Under the Milan System for Reporting Salivary Gland Cytopathology, FNAB has proven to be highly reliable, with an overall sensitivity of 86% to 100% and a specificity of 90% to 100% [5, 6]. Although FNAB has a diagnostic specificity approaching 100% for frank neoplastic lesions, inflammatory processes represent its greatest challenge [6].

In cytopathology, Warthin's tumor is characterized by oncocytic epithelial cells and abundant lymphocytes [10].

However, severe chronic sialadenitis induces oncocytic metaplasia and reactive lymphoid hyperplasia. This cellular overlap is responsible for up to 15% of indeterminate cytological diagnoses or "false positives" in salivary glands,

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where chronic inflammation is mistaken for Warthin's tumor [5, 11].

In recent years, the SARS-CoV-2 virus (COVID-19) has reshaped the spectrum of glandular pathology. The virus has a high tropism for salivary glands; it is estimated that between 40% and 60% of patients with COVID-19 develop glandular dysfunction manifested as xerostomia [7]. Although sialadenitis or frank parotitis due to COVID-19 is a less common complication, occurring in 1% to 3% of hospitalized patients or those with severe sequelae, its local impact can lead to hypertrophy and fibrosis that mimic neoplastic masses [8, 9]. At the molecular level, acinar cells and the ductal epithelium of the salivary glands express high concentrations of Angiotensin-Converting Enzyme 2 (ACE2). This high affinity makes the parotid parenchyma a viral reservoir [12]. Direct cytopathic damage and the intense immune response can persist beyond the acute infection, leading to chronic sialadenitis, which, in a subgroup of patients, causes an asymmetric glandular enlargement clinically indistinguishable from a newly formed neoplasm [9, 13]. Superficial parotidectomy with facial nerve dissection is the treatment of choice for benign tumors of the superficial lobe. However, it is not without risks. In recent series, the overall rate of postoperative complications ranges from 21% to 30% [14]. Nerve dissection is the most significant morbidity factor: temporary facial paresis: Occurs in 15% to 42% of cases, usually resolving within 6 months; permanent facial paralysis: Occurs in 0% to 7% of procedures (typically less than 3% in benign pathology); Frey's syndrome (gustatory sweating): Clinically reported in 5% to 15% of patients; salivary fistula or sialocele: An early complication affecting 5% to 10% of those operated on [14, 15].

CASE DESCRIPTION

A 38-year-old female with no chronic degenerative history, denies alcohol or smoking, previous surgeries included appendectomy and bilateral tubal ligation, no family history of cancer, and no other relevant medical history. Twelve months prior to her first consultation, she presented with a general surgery case of SARS-CoV-2 infection, apparently without serious complications. Eight weeks later, she developed otalgia, hearing loss, and swelling in the left parotid region. She reported resolution of symptoms; however, a left preauricular mass persisted and gradually increased in size over the following six months.

She consulted her family physician, who ordered imaging studies. The ultrasound revealed a hypoechoic glandular lesion in the left parotid gland, measuring 2x3 cm, with well-defined, smooth borders, an ovoid shape, and peripheral and internal vascularization on Doppler. A fine-needle aspiration biopsy report confirmed a Warthin's tumor. On physical examination, there was increased volume in the left parotid gland region. No well-defined nodule was palpable, but contralateral asymmetry was noticeable. There was no pain,

no alterations in facial nerve function, and the patient was otherwise asymptomatic.

The surgical protocol for performing a left superficial parotidectomy was completed. The surgery was performed via a modified Blair incision, following the surgical techniques of a conventional superficial parotidectomy, preserving the branches of the facial nerve (Figure 1).



FIGURE 1. Dissection of the superficial lobe of the left parotid gland. Facial nerve and its maxillary and mandibular branches.

A 5x6 cm left parotid gland was observed with a nodule near the tail measuring approximately 2x2 cm. The nodule was firm, with smooth borders, minimal fibrosis, and periparotid lymphadenopathy of approximately 15 mm. The surgical specimen, including the lymph nodes, was sent for histopathological study (Figure 2).



FIGURE 2. Left parotid superficial lobe and 3 lymph nodes in surgical bed

The patient subsequently developed mild paresis of the maxillary branch of the facial nerve, which was treated with anti-inflammatory medication and physical therapy. This resolved completely within six weeks. She also presented with a surgical site seroma, which was managed on an outpatient basis with drainage and wound care, resulting in partial closure by secondary intention and adequate final healing. Pathology revealed chronic sialadenitis, but the

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lymph nodes were normal. The patient required no further follow-up after eight weeks and was discharged from the General Surgery service.

DISCUSSION

This case vividly illustrates the diagnostic and therapeutic challenges faced by general and head and neck surgeons in the post-pandemic era. The finding of a parotid mass with a cytological diagnosis of Warthin's tumor, which ultimately turned out to be post-COVID-19 chronic sialadenitis, highlights the complex clinicopathological overlap between chronic inflammatory processes and glandular neoplasms [16].

From the retrospective analysis of the case, epidemiological data suggested an atypical presentation for a Warthin's tumor. This neoplasm predominates in men over 50 years of age and has a very strong association with active smoking [17].

Our patient was a young woman (38 years old) and a non-smoker. The onset of glandular symptoms (otalgia, hearing loss, and swelling) exactly 8 weeks after SARS-CoV-2 infection is consistent with recent reports in the literature, which describe how inflammatory sequelae mediated by the virus's affinity for ACE2 receptors in ductal tissue can manifest subacutely or chronically, forming palpable masses or "pseudotumors" [18, 19].

The preoperative diagnostic evaluation followed the current gold standard: ultrasound and fine-needle aspiration biopsy (FNAB). On ultrasound, the hypoechoic, well-defined lesion with peripheral and internal vascularity resembled the classic pattern of a benign neoplasm [20]. Furthermore, the FNAB report indicated a Warthin's tumor. As extensively documented in recent cytopathological studies using the Milan System, the severe chronic inflammation typical of persistent sialadenitis induces reactive lymphoid hyperplasia and oncocytic metaplasia of the intralobular ducts [21].

When the lesion is aspirated, the syringe captures lymphocytes and oncocytic cells, perfectly mimicking the cellular architecture of Warthin's tumor, which explains the preoperative misdiagnosis that determined the surgical approach [21, 22].

Given the suspicion of a neoplasm, the surgical indication for performing a superficial parotidectomy was correct and adhered to current clinical management guidelines. However, the history of infection and the true nature of the lesion (chronic sialadenitis) became relevant during the intraoperative and postoperative periods. Although macroscopically "scant fibrosis" was described in the nodule, the presence of reactive lymphadenopathy (up to 15 mm) and intrinsic inflammation of the underlying parenchyma altered the glandular microanatomy and natural cleavage planes [23]. This inflammatory alteration explains the observed postoperative morbidity. The patient presented with facial paresis of the maxillary (marginal) branch and seroma formation, two of the most frequent complications in parotid surgery [24].

Inflammation and post-viral reactive hypervascularity required greater traction and instrumental manipulation during nerve branch dissection, increasing the risk of temporal lobe neuropraxia [25].

Fortunately, and consistent with global statistics reporting complete recovery in most cases of temporal lobe paresis within 6 months, the patient experienced 100% reversal of the neurological deficit within 6 weeks with conservative management [24].

Similarly, the seroma was resolved on an outpatient basis without compromising the cosmetic or functional outcome.

CONCLUSION

Post-COVID-19 chronic sialadenitis is an emerging entity that can clinically, sonographically, and cytologically mimic benign parotid gland neoplasms, particularly Warthin's tumor. This case report emphasizes the need for general surgeons to maintain a high index of clinical suspicion for parotid masses in patients with a recent history of SARS-CoV-2 infection, especially if they do not meet the classic epidemiological profile of glandular neoplasms. Although superficial parotidectomy remains the standard of care when a tumor is suspected, being aware of the "false positives" of fine-needle aspiration biopsy (FNAB) in the post-pandemic context is crucial to anticipate intraoperative technical difficulties and provide adequate preoperative counseling to patients regarding morbidity risks, such as transient facial paresis and seromas.

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