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CASE REPORT

WARTHIN TUMOR OF THE PAROTID GLAND: A CASE REPORT

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Abstract

Background:Warthin tumor (WT), also known as papillary cystadenoma lymphomatosum, is the second most common benign salivary gland neoplasm after pleomorphic adenoma. It accounts for approximately 5–15% of all salivary gland tumors and occurs predominantly in the parotid gland. The tumor mainly affects older adults and is strongly associated with tobacco smoking. Although modern imaging modalities and cytological techniques contribute significantly to preoperative assessment, histopathological examination remains the definitive diagnostic standard.

Case Presentation:A 70-year-old man presented with a slowly enlarging mass in the right parotid region associated with intermittent pain and local discomfort. His medical history was notable for chronic recurrent parotid sialadenitis and long-term tobacco use. Fine-needle aspiration biopsy revealed cystic-inflammatory material with a limited number of epithelial cells and no evidence of malignancy. Ultrasonography demonstrated multiple well-defined hypoechoic lesions with cystic components within the right parotid gland. The patient declined computed tomography and magnetic resonance imaging. Surgical excision was performed through a modified Blair incision using an extracapsular dissection technique with preservation of facial nerve function. Histopathological examination confirmed the diagnosis of Warthin tumor (ICD-O 8561/0). At 6-month follow-up, no evidence of recurrence was observed, and facial nerve function remained intact.

Conclusion:This case highlights the importance of integrating clinical, radiological, cytological, and histopathological findings in the evaluation of parotid gland masses. Despite advances in diagnostic imaging and cytology, histopathological examination remains essential for definitive diagnosis. Surgical excision provides both effective treatment and diagnostic confirmation, particularly in symptomatic patients or when diagnostic uncertainty persists.

Keywords: Warthin tumor; papillary cystadenoma lymphomatosum; parotid gland; extracapsular dissection; histopathology; case report

INTRODUCTION

Salivary gland tumors constitute a relatively uncommon group of head and neck neoplasms, accounting for approximately 3–6% of all tumors in this anatomical region[1]. Approximately 65–80% of salivary gland tumors are benign, with pleomorphic adenoma and Warthin tumor representing the most frequently encountered benign entities [1-4]. Warthin tumor, first comprehensively described by Aldred Scott Warthin in 1929, is a benign epithelial salivary gland neoplasm characterized by oncocytic epithelial proliferation within a prominent lymphoid stroma [1,5].

According to the fifth edition of the World Health Organization (WHO) Classification of Head and Neck Tumours, Warthin tumor is categorized among benign epithelial tumors of oncocytic origin [6].

Epidemiological studies indicate that Warthin tumor accounts for approximately 11% of all salivary gland neoplasms and nearly 17% of benign salivary gland tumors, making it the second most common benign salivary gland tumor after pleomorphic adenoma[4]. The lesion develops almost exclusively in the parotid gland, particularly within its tail region. Multifocal or bilateral involvement has been reported in approximately 5–15% of cases [1,2,13].

The pathogenesis of Warthin tumor remains incompletely understood. The most widely accepted theory suggests that salivary ductal epithelial inclusions become entrapped within intraparotid lymphoid tissue during embryogenesis[7].

Subsequent oncocytic metaplasia, mitochondrial accumulation, cystic degeneration, and local immunological mechanisms may contribute to tumor formation [7,8].

Tobacco smoking is regarded as the strongest recognized risk factor associated with Warthin tumor. Multiple studies have demonstrated a substantially increased incidence among smokers compared with non-smokers [9-13]. Additional factors associated with disease development include advanced age, male sex, and chronic inflammatory disorders of the salivary glands [2,13].

Clinically, Warthin tumor typically presents as a slowly enlarging, mobile, well-circumscribed, and generally painless mass in the parotid region [1,2]. Some patients may experience pain, pressure sensation, tenderness, or inflammatory symptoms, particularly in the presence of cystic degeneration or secondary inflammation [2,13].

The diagnosis relies on the integration of clinical, radiological, cytological, and histopathological findings. Ultrasonography is considered the first-line imaging modality, while CT and MRI provide valuable information regarding tumor extent and adjacent anatomical structures [10,11].

Fine-needle aspiration biopsy (FNAB) is frequently used preoperatively; however, its diagnostic accuracy may be reduced in lesions exhibiting extensive cystic changes [3,9,14,15].

Current management strategies depend on tumor size, symptoms, patient age, and diagnostic certainty. Although active surveillance has been proposed for selected asymptomatic patients, surgical excision remains the most widely accepted treatment approach [3,5,14].

Common surgical techniques include extracapsular dissection, partial parotidectomy, and superficial parotidectomy, all aiming to achieve complete tumor removal while preserving facial nerve function [5,14].

The aim of the present case report is to describe the clinical presentation, diagnostic evaluation, histopathological findings, and surgical management of a Warthin tumor occurring in a 70-year-old male patient.

2. Case Presentation

A 70-year-old male was referred to the Department of Oral and Maxillofacial Surgery with complaints of a slowly enlarging mass in the right parotid region associated with intermittent pain and local discomfort.

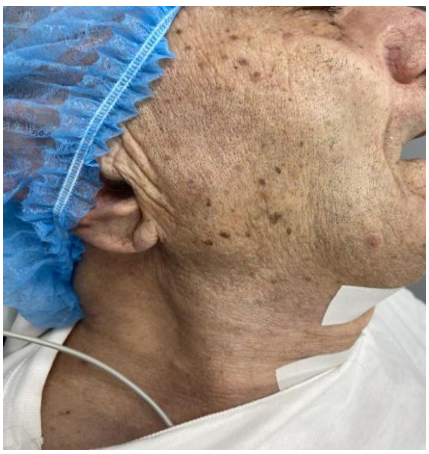

Figure 1. Clinical appearance of the right parotid swelling before surgery.

According to the patient, the lesion had first been noticed several years earlier. Because of its slow growth and the absence of significant symptoms, he did not initially seek medical attention. During the months preceding presentation, however, the patient observed gradual enlargement of the swelling accompanied by intermittent pain, a sensation of pressure, and increasing discomfort in the right parotid area. He also reported mild xerostomia and subjective alterations in salivary taste.

The patient's medical history was notable for chronic recurrent right-sided parotid sialadenitis, for which he had previously received multiple courses of conservative treatment. The inflammatory episodes had been characterized by recurrent swelling and discomfort in the affected gland.

In addition, the patient reported a long-term smoking history. Chronic inflammatory stimulation and tobacco exposure have both been implicated as potential contributing factors in the pathogenesis of Warthin tumor and may promote oncocytic alterations within salivary gland tissue [1,5,13].

General physical examination revealed no significant systemic abnormalities. The patient's overall condition was satisfactory, and vital signs were within normal limits. External examination of the head and neck demonstrated mild asymmetry of the right parotid region caused by localized soft tissue enlargement. The overlying skin appeared normal, without erythema, ulceration, discoloration, or signs of acute inflammation.

Palpation revealed several well-circumscribed, mobile, moderately firm nodular lesions located within the inferior aspect of the right parotid gland. The lesions were mildly tender on palpation but were not fixed to surrounding tissues. No fluctuation or signs of abscess formation were detected.

Particular attention was paid to facial nerve assessment. Clinical examination demonstrated intact facial nerve function, with symmetrical facial movements and no evidence of motor weakness or paralysis involving any facial muscle group.

Palpation of the cervical lymph node chains revealed no pathological enlargement or tenderness. Intraoral examination showed healthy oral mucosa without visible pathological changes. Mild xerostomia was observed, but no purulent discharge from Stensen's duct or other signs of active salivary gland infection were identified.

Based on the clinical findings, a benign salivary gland neoplasm was suspected. The initial differential diagnosis included Warthin tumor, pleomorphic adenoma, oncocytoma, lymphoepithelial cyst, chronic sialadenitis, and low-grade salivary gland malignancies. Fine-needle aspiration biopsy (FNAB) was subsequently performed. Cytological examination revealed predominantly cystic-inflammatory material containing inflammatory cells and a limited number of epithelial elements.

No cytological evidence of malignancy was identified. However, the specimen was considered non-diagnostic because the number of characteristic oncocytic epithelial cells was insufficient for definitive cytological classification. Such findings have been frequently reported in Warthin tumors with extensive cystic degeneration, where aspiration samples may contain predominantly fluid and inflammatory components rather than representative epithelial elements [3,9,12].

Subsequently, ultrasonographic examination of the right parotid gland was performed. Sonographic assessment demonstrated structural alterations within the gland and multiple well-defined hypoechoic lesions, some of which exhibited cystic components. The lesions showed regular margins and a heterogeneous internal architecture consistent with mixed cystic and solid composition. No evidence of infiltration into adjacent soft tissues was observed. These findings were highly suggestive of Warthin tumor and corresponded closely to the characteristic ultrasonographic appearance described in the literature [10].

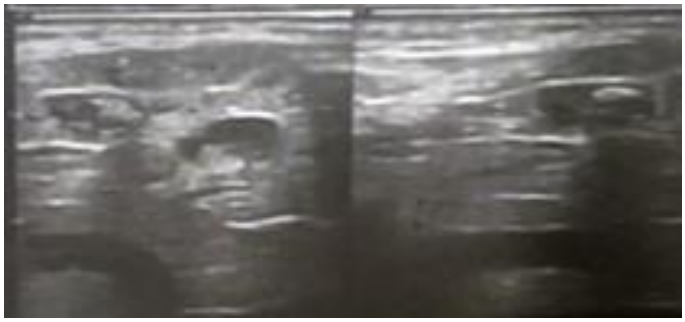

Figure 2. Ultrasonographic image demonstrating multiple hypoechoic lesions with cystic components within the

For further evaluation and preoperative planning, computed tomography (CT) and magnetic resonance imaging (MRI) were recommended. However, the patient declined both investigations because of claustrophobia and difficulty remaining motionless for prolonged periods. Although cross-sectional imaging is widely used in the assessment of salivary gland tumors, several studies have demonstrated that high-resolution ultrasonography may provide sufficient diagnostic information in cases involving superficially located lesions with a high probability of benignity [10,11].

Following multidisciplinary evaluation and detailed discussion with the patient, surgical treatment was recommended. The decision was based on the presence of pain, progressive enlargement of the lesion, the inconclusive FNAB findings, and the need for definitive histopathological diagnosis. After obtaining informed consent, surgical excision was scheduled. The procedure was performed under general anesthesia. Access to the lesion was achieved through a modified Blair incision, a standard surgical approach widely used in parotid gland surgery because it provides excellent exposure while facilitating preservation of the facial nerve and satisfactory cosmetic outcomes [14].

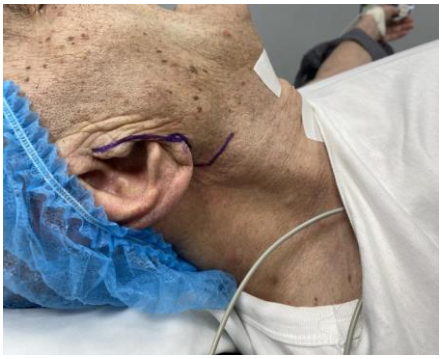

Figure 3. Preoperative marking of the modified Blair incision on the skin surface prior to parotid surgery.

After elevation of the skin flap and careful dissection of the superficial parotid tissues, the lesion was identified within the inferior portion of the gland. Particular attention was directed toward identification and preservation of the facial nerve branches throughout the procedure. The tumor was well circumscribed and separated from surrounding tissues without evidence of infiltration.

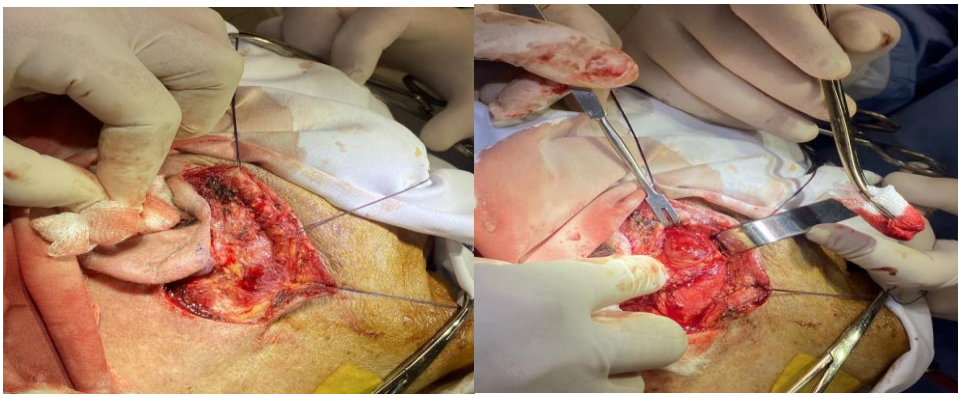

Figure 4. a,b Intraoperative formation of the skin–subcutaneous flap following the modified Blair incision using combined blunt and sharp dissection techniques.

Complete excision was achieved using an extracapsular dissection technique, allowing removal of the lesion while preserving the surrounding healthy parotid tissue and maintaining facial nerve integrity [5,14]. Several adjacent nodular lesions identified within the same region were also excised. Intraoperative inspection demonstrated no evidence of local invasion or suspicious malignant features.

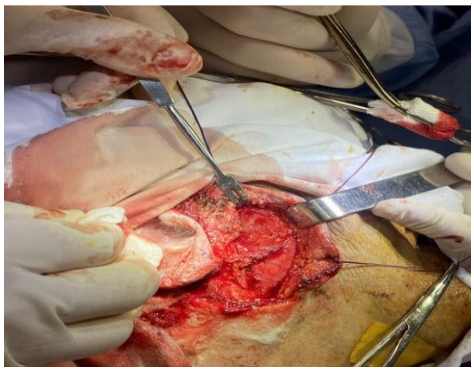

Figure 5. Surgical exposure of the parotid gland after skin flap elevation and superficial parotid dissection, revealing a well-circumscribed lesion in the inferior pole of the gland

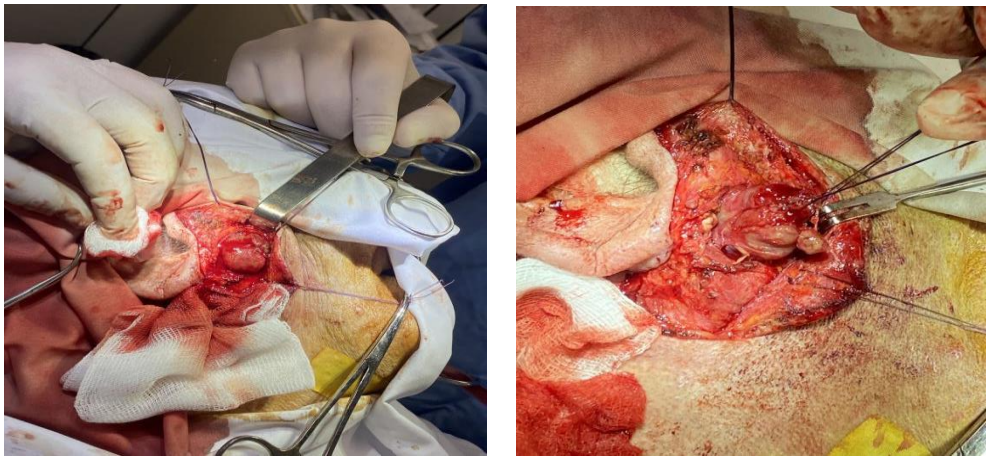

Figure 6. a, b Intraoperative identification of multiple tumor nodules within the parotid gland. The lesions were meticulously dissected from the surrounding tissues using combined blunt and sharp techniques with preservation of adjacent anatomical structures, followed by complete enucleation within their capsular boundaries.

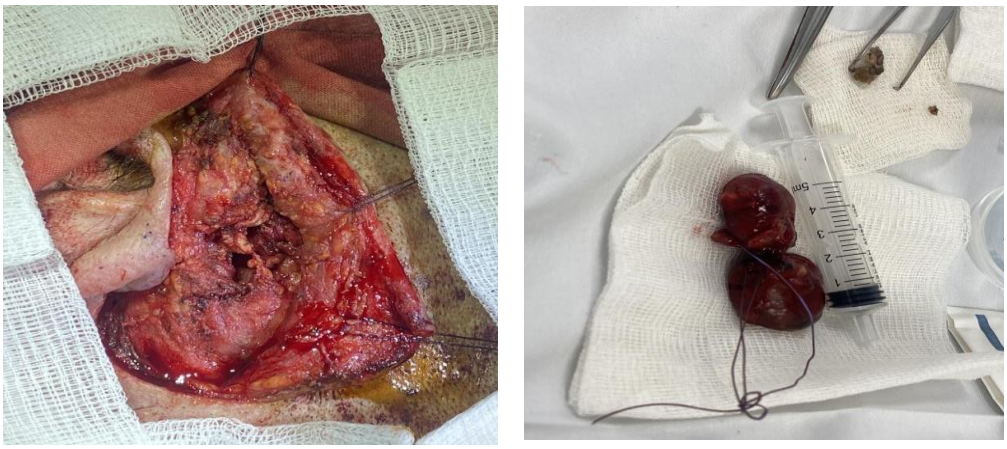

Figure 7. Intraoperative photograph showing complete enucleation of the tumor nodules together with their intact capsules.
Figure 8. Gross surgical specimen showing the excised parotid tumor nodules.

Following complete removal of the lesion, meticulous hemostasis was achieved. A passive drain was inserted, and layered closure of the surgical wound was performed. A compressive dressing was subsequently applied. The postoperative course was uneventful. No hemorrhage, hematoma, salivary fistula, wound infection, or other early postoperative complications were observed. The patient's general condition remained stable throughout hospitalization.

Particular attention was directed toward postoperative facial nerve evaluation. Clinical examination confirmed complete preservation of facial nerve function, with normal symmetrical facial movements and no evidence of temporary or permanent motor dysfunction. This outcome is consistent with previously reported results following surgical treatment of benign parotid gland tumors [14].

At 6-month follow-up, no evidence of tumor recurrence was observed, and facial nerve function remained fully intact without any signs of functional impairment.

The excised specimen was submitted for histopathological examination to establish the definitive diagnosis.

3. Histopathological Findings

The excised specimen was submitted for histopathological examination. Gross examination revealed a well-circumscribed cystic-solid lesion surrounded by a thin fibrous capsule. The cut surface demonstrated multiple cystic spaces containing brownish fluid and papillary projections.

Microscopic examination demonstrated cystic cavities lined by a characteristic bilayered oncocytic epithelium. The luminal layer consisted of tall columnar oncocytic cells with abundant eosinophilic granular cytoplasm, whereas the basal layer was composed of cuboidal epithelial cells. Numerous papillary projections extended into the cystic lumen. The epithelial structures were supported by a dense lymphoid stroma containing numerous reactive lymphoid follicles and prominent germinal centers. No significant cytological atypia, increased mitotic activity, necrosis, or invasive growth pattern was observed.

These findings were entirely consistent with Warthin tumor (papillary cystadenoma lymphomatosum; ICD-O 8561/0) according to current WHO diagnostic criteria [6,8].

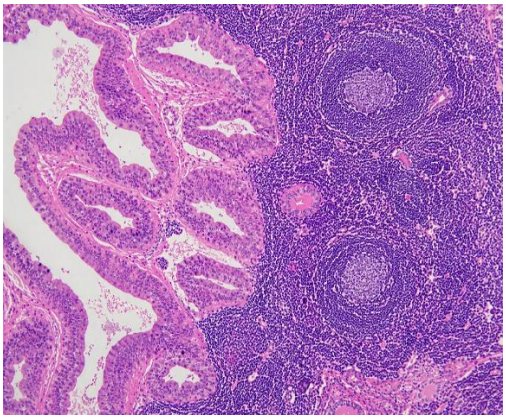

Figure 9. Histopathological photomicrograph of Warthin tumor demonstrating characteristic bilayered oncocytic epithelium forming papillary projections and a dense lymphoid stroma containing reactive lymphoid follicles and germinal centers (H&E stain, original magnification ×100).

Microscopic evaluation of the surgical margins confirmed complete excision (R0 resection). No evidence of malignant transformation was identified [6,8].

The combined clinical, radiological, surgical, and histopathological findings established the definitive diagnosis of Warthin tumor of the right parotid gland

4. DISCUSSION

Warthin tumor (papillary cystadenoma lymphomatosum) is the second most common benign salivary gland neoplasm after pleomorphic adenoma and occurs almost exclusively within the parotid gland [1,4,6]. Despite its benign biological behavior, this tumor continues to attract considerable clinical interest because of its distinctive histopathological characteristics, strong association with tobacco smoking, tendency toward multifocal and bilateral occurrence, and the evolving concepts regarding its diagnosis and management [2,5,13,16].

The present case demonstrated several clinical and pathological features characteristic of Warthin tumor. The patient was a 70-year-old male, corresponding to the typical demographic profile reported in the literature. Epidemiological studies consistently indicate that Warthin tumor occurs predominantly during the sixth to eighth decades of life and remains particularly common among older men [2,13].

Although the historical male predominance has diminished in recent decades due to changing smoking habits, elderly men continue to constitute the most frequently affected patient population [13,18].

An important feature of the present case was the patient's smoking history. Tobacco smoking is considered the most significant environmental risk factor associated with Warthin tumor development. Smokers have been reported to exhibit a several-fold increased risk of developing this neoplasm compared with non-smokers[13]. Current pathogenetic theories suggest that chronic exposure to tobacco-derived carcinogens induces oncocytic metaplasia, mitochondrial DNA alterations, oxidative stress, and epithelial injury within salivary gland tissue, thereby facilitating tumorigenesis. Recent molecular investigations have further demonstrated genetic alterations, including KRAS codon 12 mutations, in subsets of proliferating and metaplastic Warthin tumors, suggesting that at least some lesions may represent true neoplastic proliferations rather than purely reactive processes [19].

The coexistence of chronic recurrent parotid sialadenitis in the present patient deserves particular attention. Although the exact etiology of Warthin tumor remains controversial, chronic inflammatory stimulation has been proposed as a potential contributing factor in tumor development [7,8]. Recurrent inflammatory episodes may induce epithelial metaplasia and modify the local lymphoid microenvironment, creating conditions favorable for oncocytic transformation[8]. While a direct causal relationship between chronic sialadenitis and Warthin tumor has not been definitively established, the clinical findings observed in the present case are compatible with contemporary pathogenetic hypotheses.

Clinically, the lesion presented as a slowly enlarging parotid mass associated with intermittent pain and local discomfort. This presentation corresponds well with previous reports describing Warthin tumor as a slowly growing, mobile, and well-circumscribed lesion[1,2]. Pain is considered a relatively uncommon symptom and is usually associated with secondary inflammation, infarction, hemorrhage, or cystic degeneration[2,13]. Therefore, the painful presentation observed in the present patient may be considered an atypical but well-recognized manifestation.

Fine-needle aspiration biopsy (FNAB) remains an important component of preoperative evaluation; however, its limitations must be recognized. In the present case, FNAB yielded predominantly cystic-inflammatory material and only a limited number of epithelial cells. Similar findings have been frequently reported in Warthin tumors exhibiting prominent cystic architecture [3,9,12]. A recent systematic review and meta-analysis by Fisher and Ronen confirmed that although FNAB demonstrates generally high diagnostic accuracy for Warthin tumor, false-negative and indeterminate results remain possible, particularly in cystic lesions or when insufficient oncocytic material is obtained [15]. Consequently, FNAB findings should always be interpreted in conjunction with clinical and radiological information.

Imaging studies also contributed substantially to diagnostic evaluation. Ultrasonography revealed multiple well-circumscribed hypoechoic lesions containing cystic components, findings that are highly characteristic of Warthin tumor[10]. Similar sonographic appearances have been consistently reported in previous radiological studies[10]. The patient declined CT and MRI examinations, which limited further radiological characterization. Nevertheless, several authors have demonstrated that ultrasonography may provide sufficient information for treatment planning in selected patients with superficial lesions and a high likelihood of benign disease [10,11].

Recent advances in radiomics and artificial intelligence have further improved imaging-based differentiation of parotid tumors. Feng et al. developed a multicenter CT-radiomics model capable of distinguishing Warthin tumor from pleomorphic adenoma with high diagnostic accuracy, suggesting that advanced imaging analysis may contribute to more precise preoperative diagnosis in the future [20]. Although such technologies were not available in the present case, they represent promising developments for salivary gland tumor diagnostics.

The differential diagnosis of Warthin tumor remains broad and includes pleomorphic adenoma, oncocytoma, basal cell adenoma, lymphoepithelial cyst, low-grade mucoepidermoid carcinoma, and acinic cell carcinoma [3,6]. Considerable overlap may exist among these entities regarding both imaging and cytological findings. Consequently, definitive diagnosis frequently depends upon histopathological examination.

Histopathological assessment remains the gold standard for diagnosis. In the present case, microscopic examination demonstrated all classical diagnostic features, including cystic spaces lined by bilayered oncocytic epithelium, papillary epithelial projections, and a dense lymphoid stroma containing reactive follicles and germinal centers. These findings fully satisfy the current WHO diagnostic criteria for Warthin

tumor[4,6]. Recent historical and pathological reviews continue to emphasize that the coexistence of oncocytic epithelium and prominent lymphoid stroma remains the defining microscopic hallmark of this lesion [18].

Management strategies for Warthin tumor have evolved considerably during recent years. Historically, surgical excision has been regarded as the standard treatment modality. However, increasing evidence supports active surveillance in selected patients with asymptomatic tumors and highly reliable preoperative diagnoses [5,16]. Nishimura et al., in a retrospective analysis of 387 cases with more than two decades of clinical experience, concluded that observation may represent a safe alternative in carefully selected patients, particularly elderly individuals with significant comorbidities and stable tumors[16]. Nevertheless, successful conservative management requires high diagnostic certainty and rigorous follow-up protocols.

In the present case, surgical treatment was considered the most appropriate option because the patient experienced pain, the preoperative diagnosis remained uncertain, and multiple lesions were identified. These factors correspond closely with contemporary indications for surgery[3,16]. Complete excision was achieved while preserving facial nerve function. Preservation of the facial nerve remains one of the principal objectives of parotid surgery because postoperative dysfunction can significantly affect quality of life[14].

Recent long-term clinical studies have reported excellent outcomes following surgical management. Bonavolontà et al. analyzed 224 surgically treated Warthin tumors and demonstrated low recurrence rates together with excellent long-term functional outcomes [17]. Similar results were observed in the present case, in which complete excision and preservation of facial nerve integrity were achieved without postoperative complications.

Recurrence after adequate surgical treatment is uncommon and is generally attributed to multifocal disease or the development of metachronous tumors rather than true local recurrence[2,5,13,17]. Likewise, malignant transformation remains exceptionally rare, occurring in fewer than 1% of cases. No histopathological evidence of dysplasia or malignant transformation was identified in the present patient.

Overall, the present case reinforces the importance of a multidisciplinary diagnostic approach integrating clinical examination, imaging findings, cytological assessment, surgical evaluation, and histopathological confirmation. Despite substantial advances in imaging technologies, molecular pathology, and minimally invasive diagnostic techniques, histopathological examination remains the definitive diagnostic standard. Furthermore, surgical excision continues to represent a reliable and effective treatment option, particularly in symptomatic patients or in cases where diagnostic uncertainty persists despite comprehensive preoperative assessment [3,5,6,16,17].

Recent molecular and radiological advances continue to improve the understanding and preoperative characterization of Warthin tumor. Nevertheless, none of the currently available diagnostic modalities can completely replace histopathological examination, which remains essential for definitive diagnosis and exclusion of malignant transformation.

Limitations

The present case report has several limitations:

1. The patient declined CT and MRI examinations, which limited the extent of preoperative radiological assessment.
2. This report describes a single clinical case; therefore, the findings cannot be generalized to larger patient populations.
3. Although a 6-month follow-up period demonstrated no recurrence and preserved facial nerve function, longer-term follow-up is required to fully assess the risk of metachronous lesions and late recurrence.
4. Detailed information regarding the patient's smoking history was unavailable, preventing assessment of the influence of the principal recognized risk factor for Warthin tumor in this particular case.

CONCLUSION

Warthin tumor is a common benign neoplasm of the parotid gland that predominantly affects older adults, particularly men. The present case demonstrates that even in the setting of limited preoperative imaging data, surgical management followed by histopathological examination can establish a definitive diagnosis and provide effective treatment. Early recognition, appropriate surgical planning, and histopathological confirmation remain essential for achieving favorable clinical outcomes. Surgical excision continues to represent a reliable and effective treatment modality, particularly in symptomatic patients or in cases where diagnostic uncertainty persists despite preoperative investigations.

DECLARATIONS

Competing Interests

The authors declare no conflict of interest.

Funding

None.

Ethical Approval

Informed consent was obtained from patients. Clinical case approved in accordance with ethical standards.

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