A rare case of double whartin parotid tumor. Parapharyngeal intraoral surgical approach.

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Abstract

Parapharyngeal space tumors account for about 0.5% of all head and neck cancers; the majority of these rare tumors (about 80%) are benign (1).
The most frequent parapharyngeal space tumor originates in salivary glands and the pleomorphic adenoma represents the most common histological type. Generally, most tumors originating from the retro-styloid space are neurogenic, while tumors coming from salivary glands usually fill the pre-styloid space.
We present a case report of combined cervical trans-parotid and intraoral access in patient with double neoplasms, starting from superficial and deep parotid spreading in the parapharyngeal space. After superficial parotid neoformation removal through a pre-tragal preauricular approach, we performed an intraoral incision laterally to the left tonsil pillar. We detached the neoformation with its capsule, showing no neurovascular structure placed anteriorly to the neoplasm.
Through intraoral approach, thus, it is possible to access to MPS in safety, avoiding excessively invasive incisions and approaches, in selected cases of well-defined neoformations, regardless of dimensions.

Keywords: multidisciplinary team care, oral medicineand maxillofacial surgery, oral potentially malignant disorders, oro-pharyngeal cancer.

Introduction

Parapharyngeal space tumors account for about 0.5% of all head and neck cancers; the majority of these rare tumors are benign (about 80%) (1).
The most frequent parapharyngeal space tumor originates in the salivary glands and pleomorphic adenoma represents the most common histological type. Generally, most tumors originating from the retro-styloid space are neurogenic, while tumors coming from salivary glands usually fill the pre-styloid space (2).
The parapharyngeal space, also called maxillary or lateral pharyngeal space, is a challenging area for cancer treatment. It is an inverted cone-shaped space extending from the hyoid bone to the basicranium, bounded medially by the pre-tracheal fascia and laterally by pterygoid muscles and the mandible. It is frontally bounded by the sub-mandibular space and posteriorly by the pre-mandibular space (3).
In most cases patients are asymptomatic, at least the mass reaches 3 cm size, and tumors are discovered as an incidental finding examining patients for an unrelated problem.
The most frequent symptoms reported were pain, dysphagia, odynophagia, a sense of hearing loss and middle ear effusion due to Eustachian tubes obstruction and, in case of an enlarged tumor, clinical examination may also reveal intraoral asymmetry and protrusion of the anterior tonsillar pillar and/or palate (4-5).
Surgery is the main approach for the management of parapharyngeal masses except for lymphoproliferative diseases (6).
Several surgical strategies have been described for the management of parapharyngeal space masses, and an accurate surgical planning is mandatory, considering patients' nature, and neoplasm position (7).
We present a case report of combined cervical trans-parotid and intraoral access in patient with double neoplasms, starting from superficial and deep parotid spreading in the parapharyngeal space.

Clinical case and surgical approach

A 72-year-old male showed to our hospital with a 10-months history of a left-sided parotid mass associated with an intraoral foreign body sensation.
He also reported temporomandibular joint pain, spreading in the cervical area, recurrent headaches and difficulties in swallowing.
During clinical examination we appreciated a palpable swelling in the left latero-cervical region, not sore nor painful during palpation; the same clinical finding was present in the oral cavity.
MRI showed two neoformations, the first one arising in

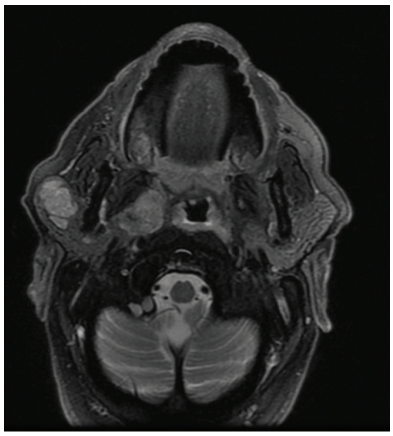

Figure 1. Axial CT

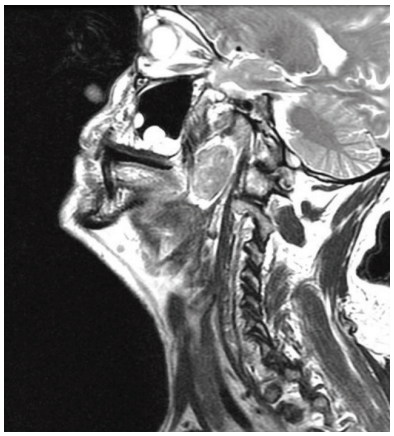

Figure 2. Sagittal CT

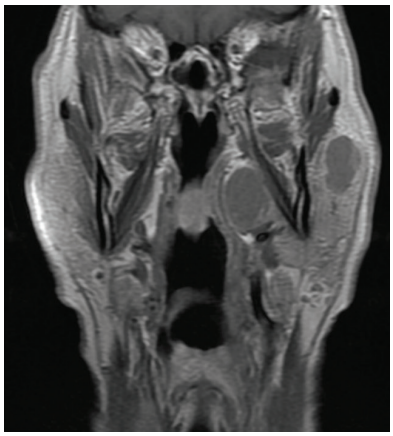

Figure 3. Coronal CT

the left parotid area and the remaining spreading from the deep lobe of the homolateral parotid gland, facing the oral cavity and causing a compression of the homolateral airways. (Figg.1-3)

In particular, this last lesion occupied the middle parapharyngeal space (MPS) and the pre-styloid space, causing a neurovascular structure (internal jugular vein and internal carotid artery) posterior displacement; the features made the intraoral access the most appropriate approach, able to minimize the risk of aesthetic and functional damage.

After superficial parotid neoformation removal, through a pre-tragal preauricular approach, we performed an intraoral incision laterally to the left tonsil pillar. We detached the neoformation with its capsule, showing no neurovascular structure placed anteriorly to the neoplasm, as expected by MRI images (Fig. 4).

Thus, we cleaved the whole neoformation, safely, from the surrounding planes, exposing the neurovascular structures placed posteriorly.

The two neoformations, one deriving from the superficial lobe of the parotid gland and the other spreading from the deep pole, measure respectively 2.3 and 3 cm in diameter (Fig. 5).

The patient was released in good conditions and the convalescence was carried out regularly. Neither complications nor sensitive defects were reported in the post-operative period.

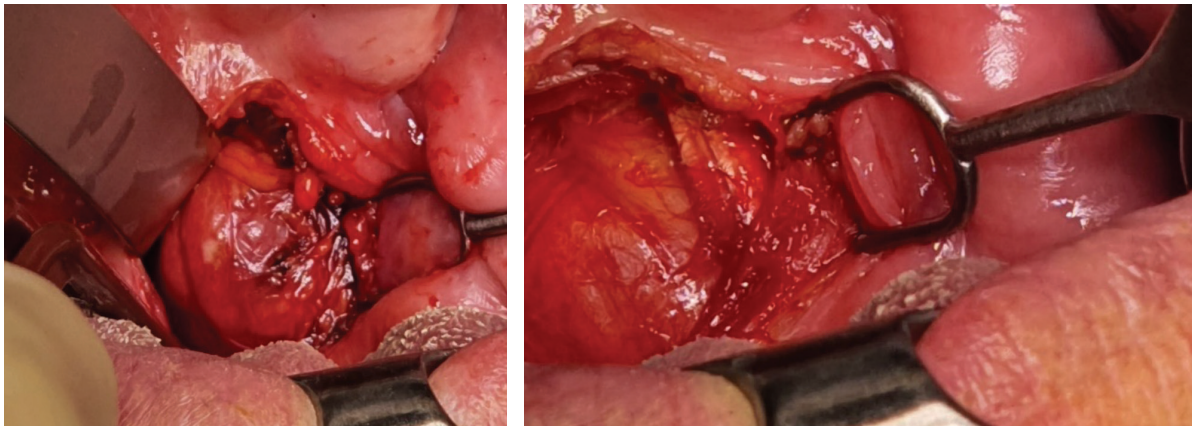

Figure 4. Intraoperative view of the lesion

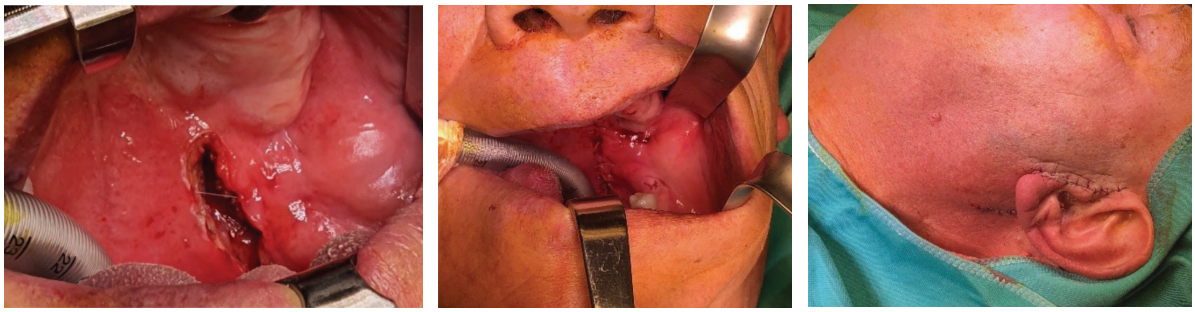

Figure 5. Intraoperative view after lesion removal

Figure 6. Patient two weeks after surgery

Headaches and TMJ disorders disappeared after surgery, with a total recovery within 1 month (Fig. 6).

Discussion

The para-pharyngeal space represents a challenging area to access, for the maxillofacial surgeons, due to the depth of the location, the complex anatomy and the presence of adjoining vital structures.
The fascia, arising from the styloid process to the tensor veli palatine muscle, splits the parapharyngeal fossa into two compartments: the pre-styloid and the retro-styloid sections (8).
This space is bounded antero-superiorly by the maxillary sinus, continuing supero-laterally with the infratemporal fossa, which is separated from the medial pterygoid fascia (9).
The retro-styloid PPS contains: IX-XII cranial nerves, internal carotid artery (ICA), internal jugular vein (IJV), paraganglia, ectopic salivary glands and lymph nodes.
Due to the deep location, parapharyngeal space tumors are usually asymptomatic until the lesion reaches a dimension greater than 2,5-3 cm.
For this reason, in most cases, these are diagnosed incidentally, with an imaging exam, performed for other reasons (10).
The vast majority of PPS lesions are benign salivary gland tumors of which pleomorphic adenoma is the most common (11).
Warthin tumor extending from the deep lobe to the parapharyngeal space represents a very rare occurrence, accountant for about 1% of all histotypes involving this region (12).
Preoperative CT, MRI and angiography are the most common tools used to diagnose PPS tumors, investigating the relationship with major neurovascular structures, glandular tissue, and craniofacial skeleton.
CT and MRI are both valid options, although the latter gives more information about the lesion's feature (13).
Angiography is recommended if imaging shows a widening of the carotid bifurcation (14), however, PET CT is recommended too when the presence of metastases is suspected (15).
If malignancy is suspected, histological diagnosis should be obtained using fine needle aspiration cytology or biopsy. The surgical removal of these tumors is the best treatment; several surgical approaches, classified as transoral, transcervical, transparotid–transcervical, transcervical–transmandibular or infratemporal, have been described in the literature according to the position and type of neoformation.
As described by Prasad et al., parapharyngeal space can be divided into three portions:

- Upper parapharyngeal space (UPS), from the cranial base to the axial plane passing through the lower edge of the lateral pterygoid muscle
- Middle parapharyngeal space (MPS), from the axial plane bounded above by the UPS and below by the insertion of the medial pterygoid muscle
- Lower parapharyngeal space (LPS), bounded at the top by the MPS and below by the hyoid bone (16).

The goal of surgery is to ensure a complete enucleation minimizing aesthetic and functional damage.
In our patient the intraoral portion of the neoplasm occupies the pre-styloid space and the MPS, displacing posteriorly the neurovascular structures represented by IJV and ICA.
Among the intraoral approaches, we distinguish:

- Transantral sublabial
- Transoral transvestibular
- Transoral transpharyngeal (our approach)
- Transmandibular transoral

As described by Ferrari et al., one of the conservative techniques, able to adequately expose the neoplasms placed on the MPS, is represented by the transoral trans-pharyngeal approach: which consists in an incision placed on the front tonsil pillar (17).
Although it is discredited by some authors (18) for the greater risk of capsule rupture, dissemination in case of malignant tumors and infection due to contamination by the germs present in the oral cavity, intraoral approach is a valid alternative, from a functional and aesthetic point of view.
This was described by Goodwin and Chandler, who first presented a series of transoral parapharyngeal tumors removal (19).
As described by Betka et al., in case of selected tumors, an intraoral approach allows the access to PPS minimizing side effects and ensuring a good ability to eradicate the disease (20).

Conclusion

Through intraoral approach, thus, it is possible to access to MPS in safety, avoiding excessively invasive incisions and approaches, in selected cases of well-defined neoformations, regardless of dimensions.

An accurate imaging is required for a correct surgical approach to show possible displacement of neurovascular structures.

Postoperative course is free of significant complications, with no discomfort reported by the patient; headaches and TMJ pain disappeared after surgery.

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