Management of midcheek masses and tumors of the accessory parotid gland

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Tumors of the lateral wall of the mouth have different origins and behaviors. These lesions often arise from salivary tissues, such as the accessory parotid gland, but tumors can also originate from the muscles, buccal fat pad, or other structures. Surgical approaches are limited in this region by the presence of the facial nerve and the Stensen’s duct. In this article, we present 9 cases of midcheek masses that were operated on via extra- or intraoral approaches. We discuss the problems related to the diagnosis of such tumors, as well as the indications and rationales for different treatment approaches. (Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2011;111:e5-e11)

Tumors of the lateral wall of the mouth have different origins and behaviors. These lesions often arise from the salivary glands, but tumors can also originate from the muscles, buccal fat pad, or other structures. In this region, the salivary tissue includes the minor salivary glands, salivary cells of the mucosa, ectopic salivary tissue, and, when present, accessory parotid glands (APGs).

Accessory parotid glands are quite common anatomic variants, seen in 21%-69% of the population. These small salivary islands (0.5-3 cm) are usually located in the middle of the cheek, several millimeters medial to the anterior border of the parotid gland and superficial to the masseter muscle and the fat pad. APGs lie parallel and cranial to the Stensen’s duct, and may course along and between the buccal branches of the facial nerve.

The APGs drain into the Stensen’s duct via ≥1 small tributaries and are quite different from an anterior facial process of the parotid gland, which is salivary tissue that extends forwards, but remains in continuity with the gland.

Tumors of the APG constitute a large part of the masses of the lateral wall of the mouth and are located within salivary gland tissue, adjacent to the Stensen’s duct, but separate from the main body of the parotid gland. The differential diagnosis of midcheek soft tissue masses includes inclusion cysts, lymphadenopathy, lipomas, neurofibromas, schwannomas, neurilemmomas, hemangiomas, fibromas, and sialoceles.

In this article, we present 9 cases of midcheek masses (7 were APG tumors) that were operated on via extra- or intraoral approaches. We discuss the problems related to the diagnosis of such tumors, as well as the indications and rationales for different treatment approaches.

PATIENTS AND METHODS

In a 3-year period, 9 patients (5 men, 4 women; aged 42-71 years) were referred to the Maxillofacial Surgery Department for surgical treatment of masses arising in the wall of the mouth. All patients presented with an asymptomatic enlarging cheek mass; none complained of pain, tenderness, or difficulty chewing. A careful neck examination disclosed no enlarged node in any patient. Sensation and facial nerve function were intact, and clear saliva flowed from the parotid duct in all cases. There was no evidence of intraoral disease. All patients underwent computerized tomography (CT) or magnetic resonance imaging (MRI) as well as fine-needle aspiration (FNA) of the masses (Table I).

Seven of these masses arose from an APG (4 pleomorphic adenomas, 2 monomorphic adenomas, 1 low-grade mucoepidermoid carcinoma), 1 lesion was a leiomyoma, and 1 was a solitary fibrous tumor of the cheek.

All of the patients underwent surgical excision under general anesthesia. Four tumors were resected via an
external preauricular approach, 1 was treated through direct skin access, and an intraoral approach was adopted in the other 4 cases. In these cases, the masses were localized to the anterior cheek with respect to the anterior margin of the masseter muscle.

Surgical treatment was successful in all patients, with no major complication or salivary fistula reported during 4-6 years of follow-up. In 6 cases, complete facial nerve recovery was immediate, and 2 patients recovered after 1 month and 1 after 2 months (Table I). Three cases are presented to show the different approaches that can be used to treat the cheek masses anterior or posterior to the anterior border of the masseter muscle (Figs. 1-5).

### Table I. Different approaches adopted in this series of patients

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Cheek location*</th>
<th>Histology</th>
<th>Surgical access</th>
<th>Complete facial nerve recovery</th>
<th>Salivary fistula</th>
</tr>
</thead>
<tbody>
<tr>
<td>63</td>
<td>M</td>
<td>Right, posterior</td>
<td>Pleomorphic adenoma of APG</td>
<td>Preauricular access</td>
<td>1 mo</td>
<td>No</td>
</tr>
<tr>
<td>71</td>
<td>F</td>
<td>Left, posterior</td>
<td>Monomorphic adenoma of APG</td>
<td>Preauricular access</td>
<td>2 mo</td>
<td>No</td>
</tr>
<tr>
<td>70</td>
<td>M</td>
<td>Right, posterior</td>
<td>Pleomorphic adenoma of APG</td>
<td>Preauricular access</td>
<td>Immediate</td>
<td>No</td>
</tr>
<tr>
<td>65</td>
<td>F</td>
<td>Left, posterior</td>
<td>Pleomorphic adenoma of APG</td>
<td>Preauricular access</td>
<td>Immediate</td>
<td>No</td>
</tr>
<tr>
<td>62</td>
<td>M</td>
<td>Left, anterior</td>
<td>Fibroma</td>
<td>Direct trans cutaneous</td>
<td>Immediate</td>
<td>No</td>
</tr>
<tr>
<td>70</td>
<td>F</td>
<td>Left, anterior</td>
<td>Mucocutaneous carcinoma, low grade, of APG</td>
<td>Buccal access</td>
<td>Immediate</td>
<td>No</td>
</tr>
<tr>
<td>42</td>
<td>M</td>
<td>Left, anterior</td>
<td>Pleomorphic adenoma of APG</td>
<td>Buccal access</td>
<td>1 mo</td>
<td>No</td>
</tr>
<tr>
<td>70</td>
<td>F</td>
<td>Right, anterior</td>
<td>Monomorphic adenoma of APG</td>
<td>Buccal access</td>
<td>Immediate</td>
<td>No</td>
</tr>
<tr>
<td>46</td>
<td>M</td>
<td>Left, anterior</td>
<td>Leiomyoma</td>
<td>Buccal access</td>
<td>Immediate</td>
<td>No</td>
</tr>
</tbody>
</table>

*With respect to the anterior margin of the masseter muscle.

Fig. 1. Case 1: A 63-year-old man presented with a firm 4 × 3 cm mass in the right cheek, posterior to the anterior border of the masseter muscle.
DISCUSSION AND CONCLUSIONS

A cheek mass is usually first diagnosed on physical examination. An APG tumor or Stensen’s duct tumor is often suspected when the mass is localized along the Stensen’s duct, even if the salivary origin can be confirmed only by pathologic examination.

A careful examination is required when evaluating midcheek lesions. Rare tumors of the accessory parotid lobe can easily mimic more common diagnoses, and failure to consider a salivary origin may result in a disastrous outcome if a direct approach is chosen. Facial paralysis, salivary fistula, and local recurrence are complications that can be avoided with proper evaluation and a safe surgical approach.

The most common presentation of a salivary gland mass is that of a painless slow-growing asymptomatic tumor. These tumors are found in the midanterior cheek and lie in the central third of a line between the tragus and inferior border of the nasal ala.

There are no reported histologic differences between accessory tissue and normal salivary glands. Likewise, accessory glands may develop neoplastic characteristics similar to those of the main parotid gland.

The reported incidence of APG tumors ranges from 1%³ to 7.7%⁴. The most common salivary mass of the cheek is pleomorphic adenoma (45%), followed by monomorphic adenoma, mucoepidermoid carcinoma (1%-5%), and low-grade carcinoma. This frequency differs markedly from that of mucoepidermoid carcinoma in the main parotid glands.

An estimated 26%-50% of APG tumors are malignant,³,⁴ which exceeds the 25% malignancy rate reported for the parotid gland proper. The most common malignancy of the APG is low-grade mucoepidermoid carcinoma, followed by intermediate- and high-grade carcinomas. Squamous cell carcinoma, acinic cell carcinoma, malignant pleomorphic adenoma, and adenoid cystic carcinoma are also represented.

To make a preoperative diagnosis, examinations such as ultrasonography, CT, MRI, and sialography are useful for detecting the size, shape, and location of the tumors. Kronenberg et al.⁵ recommended the use of CT for establishing anatomic relationships. Currently, the best imaging technique available for defining soft tissue
lesions is MRI with paramagnetic contrast. With combined coronal and axial views, the nature of the lesion and its location can be readily differentiated from parotid gland and Stensen’s duct lesions. Sialography was once used routinely, though with marginal success in establishing diagnoses.

Fine-needle aspiration obviously gives a more clear-cut result with cystic lesions and remains controversial for soft tissue masses; it can provide definitive data but can also seed malignant cells. The determination of parotid tissue pathology can be difficult diagnostically, particularly in cases of borderline malignancy. FNA and intraoperative frozen sections are useful, but permanent sections are required if either fails to yield a definitive diagnosis. Microscopically, there is a proliferation of both ductal epithelium and the myoepithelial component. In general, tumors of the minor salivary gland are more cellular than those of the major salivary glands.

The differential diagnosis for midcheek soft-tissue masses includes inclusion cysts, lymphadenopathy, hemangiomas or arteriovenous malformations of the anterior parotid gland, lipomas, neurofibromas, schwannomas, neurilemmomas, fibromas, metastasis of malignancies, and sialoceles. Intramaseteric hemangioma, tumors of the anterior extension of the main parotid gland, sialolithiasis, and heterotopic salivary tumors should also be considered in the differential diagnosis. Lesions of the APG must be differentiated from those of the facial process of the main parotid gland. The latter are contiguous with the gland and do not meet the definition of an APG; thus, their management is different.

Most authors agree that inflammatory lesions, cysts, or benign tumors of the APG can be managed solely by resection of the APG without superficial or total parotidectomy. Preoperative knowledge that the mass is an APG and not an anterior extension of the main gland may prevent an unnecessary superficial or total parotidectomy.

Although Polayes and Rankow advocate total parotidectomy for malignant tumors of the APG, this aggressive resection has not, in fact, been shown to provide better results than wide excision of the accessory gland. Johnson and Spiro reviewed 2,000 patients with parotid lesions seen over a 40-year period: 1% of the tumors involved an APG and ~50% of those were malignant. They concluded that wide excision of the

Fig. 3. Case 2: A direct cutaneous approach to remove a superficial solitary fibrous tumor of the midportion of the left cheek, close to the anterior margin of the masseter muscle.
mass was curative and that formal parotidectomy was not indicated. No recurrence of malignancy was noted. Perzik and White reviewed a series of 11 APG lesions: 5 were pleomorphic adenomas, 4 were mucoepidermoid carcinomas, 1 was a retention cyst, and 1 was a papillary cystadenoma. All cases were treated by wide excision of the APG. They found only 1 recurrence after wide excision of a mucoepidermoid carcinoma; that recurrence was found in the main parotid gland 8 years after the initial procedure. The authors thought that this likely represented a second primary lesion.

Surgical removal of the APG neoplasm and of masses of the midcheek is generally performed via an external preauricular approach to avoid damage to the facial nerve and to give an acceptable esthetic result. Nevertheless, intraoral and direct skin accesses seem to be easier, quicker, and quite safe when the masses are sufficiently medial.

The intraoral approach has some advantages: There are no esthetic problems, and the surgery is less traumatic, usually performed on an outpatient basis or with a minimal hospital stay. Nevertheless, the intraoral approach is fraught with difficulty regarding orientation and gaining adequate exposure. Bleeding is sometimes difficult to control. This approach places the facial nerve and Stensen’s duct at greater risk. Polayes and Rankow concluded that the intraoral approach was “ill-advised.” This approach is manageable only by a surgeon skilled in intraoral techniques.

Another popular, albeit dangerous, choice is a direct skin incision over the mass. Although this approach is easy and has minimal impact on the patient, it involves a facial scar and confers some risk to the buccal branches of cranial nerve VII.

The facial nerve runs within the parotid gland quite superficially as it leaves the gland to travel toward its final destinations in the facial musculature. APG tumors are typically found with these branches draped over or wrapped closely around the mass. This intimate relationship is especially worrisome with larger APG neoplasms, when more extensive mobilization of the mass from the facial nerve is required for safe removal. Attempting to remove these lesions without due respect for the tumor-nerve anatomy can easily result in injury.

Fig. 4. Case 3: Low-grade mucoepidermoid carcinoma, arising in an accessory parotid gland, completely surrounded by salivary tissue. Due its anterior location, the mass was excised via an intraoral approach.
Given this nerve-tumor relationship, a standard parotidectomy incision with added extensions superiorly into the hair-bearing portion of the scalp and inferiorly into an upper cervical crease is generally advocated. These incisions allow elevation of a subplatysmal flap anterior to the edge of the mass, which affords excellent exposure. This approach eliminates the struggle of working through a small direct skin incision. Johnson and Spiro described a similar incision that “angulated” anteriorly toward the mass, affording better exposure. Perzik and White also advocated the use of a standard parotidectomy-type incision for these tumors, but did not stress the anterior extension mentioned by Johnson and Spiro.

The preauricular incision provides excellent exposure and hides unsightly scars in natural skin creases and hairlines, giving the best cosmetic result. Additionally, this incision can be extended readily for a neck dissection when necessary. This approach helps in preventing injury to the facial nerve and Stensen’s duct, in contrast to a direct cheek incision. The zygomatic and buccal branches can be identified using a nerve stimulator or microscope without dissection of the facial nerve in the main parotid gland.

Rodino and Shaha emphasized the high likelihood of injury to branches of the facial nerve with direct approaches. They stated that “the best surgical approach to tumors in the accessory parotid region is via a standard parotidectomy and concomitant superficial parotidectomy” and that “most importantly, there is less danger of injury to branches of the facial nerve.”

So, should the intraoral approach to midcheek masses and direct skin incision be proscribed to avoid these complications? The parotidectomy approach is not free of disadvantages or risks: The wide dissection can lead to surgical trauma to the facial nerve and to the risk of an iatrogenic lesion, morbidity is higher, complete recovery takes longer than with direct access, and operating and hospitalization times and costs are increased.

Intraoral access and skin incisions have some interesting advantages. These approaches are easier and quicker to perform than parotidectomy accesses, and the intraoral approach does not cause any esthetic problem, similarly to skin incisions when performed in skin creases.

Because the major reported problems are related to the presence of the buccal branch of the facial nerve and Stensen’s duct, these approaches can still be considered only when the anterior location and the small size of the masses reduces or eliminates the risk of Stensen’s duct lesions or facial nerve impairment. The direct intra- or extraoral excision of lesions located in the anterior cheek region is less dangerous for the Stensen’s duct, which ends more posteriorly, and does not give rise to long-term neurologic complications, because of the strict connections existing within the distal peripheral plexus.

As commonly observed in traumatic lesions of the facial nerve, wounds to the cheek located anterior to the end of the Stensen’s duct, at the anterior margin of the masseter muscle, usually recover without neurologic consequences. This is also well known in facial reanimation surgery, and even authors that report excision of anterior lesions of the cheek do not report facial nerve impairment.

In conclusion, APG lesions have to be considered in the differential diagnosis of midcheek masses. Especially lesions located along the course of the Stensen’s duct or posterior to its end should be suspected of being salivary in origin from an APG. Specific examinations (FNA biopsy, CT, MRI) are used to evaluate masses originating from an APG, because of the high frequency of malignancies. The preauricular approach with or without parotidectomy is always indicated for tumors located behind the anterior border of the masseter muscle. Small or midsized lesions anterior to the masseter muscle can be approached via a transbuccal approach or direct skin incision without increasing the risk of complications.

REFERENCES

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