A practical approach to parotid tumours

The correct management of these relatively uncommon tumours is important.

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Although tumours of the parotid glands are not frequently encountered in general practice, it is important that they are correctly managed. This article presents an overview of the assessment and management of such tumours, based on South African data.[1]

Relevant anatomy of the parotid gland

As the term 'parotid' implies, the parotid glands are situated anteriorly and inferiorly to the external ear. Saliva drains via a parotid duct that pierces the buccal mucosa in the region of the 2nd upper molar tooth. The facial nerve and its multiple branches pass through the parotid gland (Fig. 1). About 70% of the gland is superficial to the facial nerve and its branches. It contains lymph nodes that may become involved by metastatic disease, lymphoma or infection. Parotid tumours occur most commonly in the superficial lobe. The deep lobe extends into the retromandibular sulcus, and is related on its deep aspect, to the styloid process and deep to this, the internal carotid artery.

Parotid tumours occur most commonly in the superficial lobe.

Differential diagnosis

Parotid tumours may either be primary salivary gland tumours, or tumours may arise in lymphatic tissue (lymphoma), or be metastases, or, rarely, tumours may originate from other local tissues, e.g. blood vessels, nerves (e.g. neurofibromas, schwannomas), fat (lipomas), etc. Lymphoma is increasing in frequency due to its association with HIV. It is therefore important to take a thorough history and do a complete head and neck examination when confronted with a patient with a parotid mass.

Fig. 2 summarises the incidence of parotid neoplasms in Cape Town.[1] Although 69% were benign, 45% of parotid neoplasms in males were malignant. The majority of benign tumours were pleomorphic adenomas. Parotid tumours are more likely to be malignant in children than in adults. Therefore one cannot simply reassure a patient with a parotid mass that it can be observed.

Metastases to parotid nodes occur most commonly from skin cancers, e.g. squamous cell carcinoma and melanoma of the facial, temporal and auricular skin (Table I).

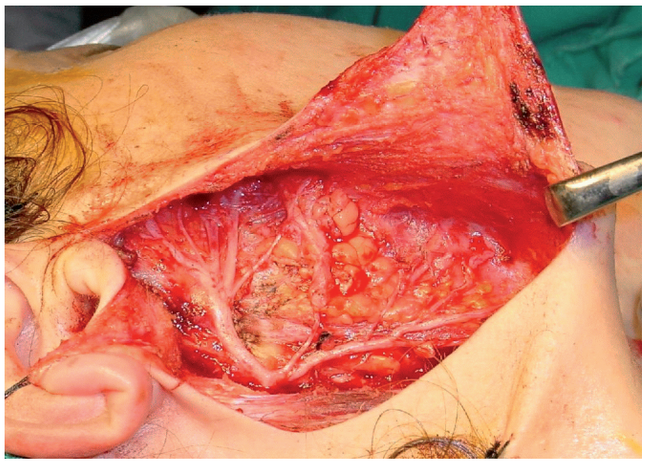

Fig. 1. The superficial parotid lobe has been removed to expose the facial nerve and its branches. The deep lobe is visible beneath the facial nerve.

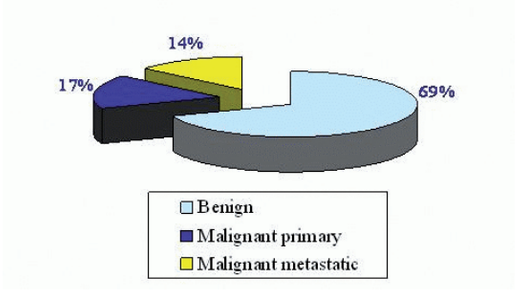

Fig. 2. Incidence of parotid tumours.[1]

One should therefore ask specifically about previous skin lesions that might have been excised or frozen in the past, and examine the scalp in detail. Rarely metastases may occur from cancers of the eye, and even distant sites such as breast cancer.

Clinical approach

The principal goals of history and clinical examination are to determine whether the tumour is neoplastic, benign or malignant. If it is malignant, one has to determine if it is primary (salivary) or metastatic or a lymphoma, localised or metastasised to the neck nodes or distantly.

Table I. Most common 3 types of parotid malignancy[1]

Cases	196
Malignant	31%
Top 3 cancers	
Squamous cell carcinoma of skin	23%
Mucoepidermoid carcinoma	17%
Malignant melanoma of skin	15%

Lymphoma is increasing in frequency due to its association with HIV. It is therefore important to take a thorough history and do a complete head and neck examination when confronted with a patient with a parotid mass.

Clinical pointers of malignancy include:

- previous skin cancers of the head and neck
- irradiation to the parotid region many years previously
- rapid growth
- pain
- local invasion
  - trismus: invasion of muscles or the temporomandibular joint
  - skin infiltration
  - fixity of the mass to deeper tissues
  - facial nerve weakness or paralysis
- metastases to cervical lymph nodes or lungs.

Is imaging required?

Imaging of parotid tumours, such as ultrasound, sialography, CT scans, MRI scans and PET scans, is seldom required. Imaging generally cannot distinguish between benign and malignant tumours. Therefore, whether to request imaging and what imaging to request should be left to the surgeon. The surgeon may request CT scanning or, rarely, MRI to better determine the relationship of the tumour mass to the facial nerve and to exclude deep extension to the parapharyngeal space. Even though the facial nerve itself cannot be seen on CT or MRI scan, it lies on the retromandibular vein, which is visible on contrasted CT and MRI (Fig. 3). A chest X-ray is required for patients with malignant tumours to rule out metastases.

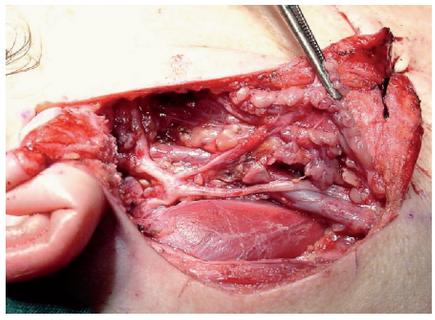

Fig. 3. The position of the facial nerve relative to the tumour can be predicted by identifying the retromandibular vein on CT or MRI.

Fine-needle aspiration cytology (FNAC)

FNAC also is not always required. It is not 100% accurate, even in the very best hands. In a clinically benign tumour that is mobile and readily resectable, one would therefore proceed directly to parotidectomy. It may however be useful in the following circumstances:

- to exclude inflammatory disease, e.g. TB or sarcoidosis
- to exclude lymphoma
- to exclude metastasis from skin cancers, as such patients might require neck dissection in addition to parotidectomy
- in patients who do not wish for, or are unfit for surgery
- in the case of inoperable tumours.

Trucut and open biopsy

Trucut and open biopsy is generally not done in parotid tumours, as it may lead to seeding of tumour along the biopsy tract. It is therefore reserved for inoperable cases before committing a patient to radiation therapy, or when FNAC is suggestive of lymphoma.

Parotidectomy

All surgically resectable parotid tumours, other than lymphoma, are removed by partial or total parotidectomy with preservation of the facial nerve under general anaesthesia. This is done both to remove the tumour and to obtain definite histological diagnosis.

Parotid tumours are more likely to be malignant in children than in adults.

Consequences of surgery

- **Scar.** The incision extends in a skin crease in front of the ear, and into a horizontal skin crease in the upper neck. It usually heals with very little visible scarring.
- **Greater auricular nerve.** Patients have permanent loss of skin sensation of the lower half of the external ear, and over the parotid area. Some years later they may develop a neuroma in the upper neck where the nerve has been transected, which is tender to touch.
- **Facial nerve.** The nerve is very sensitive to surgical manipulation, and it is not unusual to have temporary weakness of the face, that recovers within a few weeks or months. Permanent weakness is very uncommon with benign tumours. However, the nerve or nerve branches may have to be resected and grafted if invaded by malignant tumours.
- **Frey's syndrome (gustatory sweating).** Many patients will note sweating over the parotidectomy site when eating or drinking for some years after surgery. It is due to short-circuiting between the secretomotor nerves that supply the parotid gland, and sweat glands. Sweating may rarely be quite marked, and can in such cases be treated by injecting Botox intradermally. Injections may have to be repeated a few times.

Rarely metastases may occur from cancers of the eye, and even distant sites such as breast cancer.

Radiation therapy

Table II presents broad guidelines for postoperative radiation therapy for the most commonly encountered parotid tumours. Cape Town has one of a few neutron facilities internationally. Radiation therapy alone is also employed for advanced, inoperable tumours, and neutrons have proved to be particularly effective in this setting.

Table II. Postoperative radiation therapy

Benign

- Monomorphic adenomas
- Pleomorphic adenomas

Malignant low-grade carcinoma

- Acinic cell
- Low-grade mucoepidermoid
- Polymorphous low grade

- Complete resection: no radiation
- Microscopic residual: photons
- Macroscopic residual: neutrons/photons

Malignant high-grade carcinoma

- High-grade mucoepidermoid
- Adenoid cystic
- Adenocarcinoma
- Squamous cell
- Undifferentiated
- Carcinoma ex pleomorphic

- Complete resection: photons
- Microscopic residual: photons
- Macroscopic residual: neutrons/photons

Follow-up

Unlike most other malignancies, salivary malignancies may recur locally or present with distant metastases >15 years after initial treatment. Therefore patients with malignant parotid tumours need to be followed up lifelong, and require an annual chest X-ray examination.

Reference

1. Van Lierop A, Fagan JJ. Parotidectomy in Cape Town – A review of pathology and management. *S Afr J Surg* 2007; 45(3): 96-8, 100, 102-103.

In a nutshell

- The general practitioner plays a key role in terms of making an initial clinical diagnosis of a neoplasm, referring the patient to a specialist with parotid surgery expertise, and lifelong follow-up.
- Incorrect management of parotid tumours can have a significant impact in terms of morbidity, related mainly to the facial nerve, and mortality, if malignancy is not timeously diagnosed.
- Almost half of parotid neoplasms in South African males are malignant.
- Skin cancers of the face and scalp may metastasise to the parotid gland.
- Imaging should be requested by the surgeon.
- Open biopsy is generally undesirable.
- Patients with malignant salivary tumours require lifelong follow-up.

Single Suture

Pets may help to spread superbugs

The antiobitic-resistant bacteria such as MRSA are usually associated with hospitals, but Richard Oehler of the University of South Florida in Tampa has found that household pets are also helping superbugs to spread.

He reviewed studies of people who caught infections from their pets, either through bites or other contact. The studies were all conducted in the last 10 years. He found that a significant proportion of the infections were antibiotic resistant, including some caused by methicillin-resistant Staphylococcus aureus. One analysis found that 35% of S. aureus samples taken from cats and dogs were MRSA.

Oehler suggests that the rise in antibiotic-resistant infections in people means that pets are also more likely to be infected and then act as reservoirs that reinfect humans. However, this doesn't mean that the pet was the original source.

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