Chapter 12

The salivary glands

Salivary gland diseases—general considerations

Saliva is produced by:
- **major salivary glands**—parotid, submandibular, and sublingual;
- **minor salivary glands**—these line the mouth, palate, and lips, and they can occasionally be found in the nose.

Common problems relating to these glands include:
- infections (mumps and other viruses, bacterial);
- swellings/lumps (obstruction/tumours);
- injuries (notably lacerations);
- dry mouth.

Tumours

Any of these glands can undergo malignant change. In the UK, the incidence of tumours of the salivary glands is approximately 3–4 per 100 000. Both benign and malignant tumours can occur at any age, although they are more commonly seen in the middle aged and elderly.

Patients may present with the following clinical features:
- swelling;
- pain;
- facial weakness (parotid gland);
- skin changes;
- poor hearing or earache;
- incidental finding.

Most parotid tumours present as a painless, localized swelling, which has been present for several months, although occasionally, it may have been present for many years. **Pain suggests infection or a rapidly growing malignant tumour**. **Other features suggestive of malignancy include facial nerve weakness, tethering of the lump, and rapid growth**. Investigations include CT scan or MRI scan. Fine needle aspirate cytology is often undertaken but its value is a source of hot debate.

Tumours of the submandibular gland constitute approximately 10% of salivary gland tumours. Around two-thirds of these are benign, the remainder being malignant.

Tumours of the minor salivary glands constitute about 10% of salivary tumours and usually occur in the palate and upper lip; 45% of these tumours are malignant. **A lump in the upper lip and hard palate should, therefore, always raise suspicions of a salivary gland neoplasm**, and will nearly always require a biopsy.

Not all swellings of the major salivary glands are due to salivary tumours. Tumours can also arise from associated blood vessels, nerves, fat, and lymphatic tissue. 'Tumour-like' conditions presenting as swellings include sarcoid, toxoplasmosis, and sialosis. The latter is a painless swelling, which may be associated with alcoholic cirrhosis, diabetes, acromegaly, or bulimia.

Calculi (stones) and strictures

Most calculi occur in the submandibular gland and duct, although they also commonly occur in the parotid gland. Calculi in the other salivary glands are rare. Strictures may arise from trauma, e.g. from cheek biting, dentures, following surgery, or a previous calculus. Both stones and strictures result in obstruction. Patients therefore usually complain of:

- recurrent or persistent swelling especially at meal times;
- pain on eating;
- symptoms relieved by discharge of saliva or pus from duct.

If saliva is allowed to stagnate in the gland, infection may develop. Long-term obstruction leads to permanent glandular destruction and a positive cycle of recurrent obstruction, infections, and further destruction.

Treatment

Depending on the type of obstruction, site, and presence of glandular destruction, this may include:

- dilation of stricture;
- removal of calculus;
- reconstruction of duct;
- repositioning of duct;
- excision of gland.

Fig. 12.1 Parotid tumour.

Infections

Both the major and minor salivary glands can become infected. 'Ascending' infection, i.e. bacteria in saliva passing back along the ducts to the glands, commonly involves the parotid and submandibular glands. In such cases, predisposing conditions may be associated, e.g. dehydration, diabetes, or immunosupression. Fibrosis following radiotherapy or pre-existing obstruction from a calculus or stricture may also predispose to infection.

Common clinical features

These include:

- fever;
- pain;
- erythema;
- tender swelling;
- discharge of pus from the duct;
- dry mouth;
- dehydration.

If infection is not treated early, this may develop into chronic or recurrent infection. Progressive destruction occurs that aggravates the situation resulting in a non-functional gland.

Treatment

In the absence of an obvious abscess, which requires incision and drainage, this initially consists of antibiotics, rehydration, analgesia, and correction of any systemic conditions, e.g. diabetes. If an obstruction is found, e.g. stone, this needs to be removed to enable drainage. Gland massage, especially after meals, and 'lemon drops' to stimulate salivary flow, help to maintain a flushing effect and prevent stagnation of saliva. Abscesses need to be incised and drained on an urgent basis. If infection persists or continues to recur, excision of the gland may be necessary. This is best done when there is no active infection.

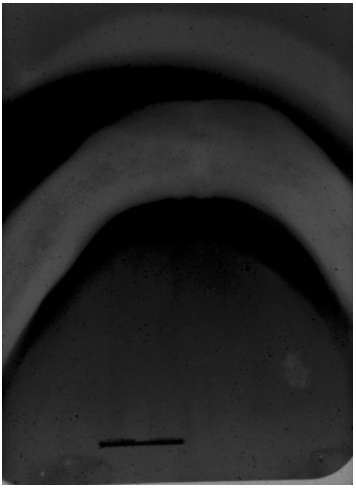

Fig. 12.2 Lower occlusal X-ray showing small stone in submandibular duct.

Infections of the parotid glands

Acute parotid sialadenitis

Mumps is the commonest cause of parotid swelling, even unilaterally. It has a peak incidence in childhood but can occur in adults. In teenagers, coxackie and echoviruses can also cause acute sialadenitis. Clinically there is pyrexia and malaise. Pain is the most striking symptom. There is diffuse swelling of the gland and often trismus. Treatment is supportive.

Acute suppurative parotid sialadenitis

This is the result of salivary stasis either from obstruction (calculus or stricture), glandular disease (Sjögren's, chronic sialadenitis), or a decrease in saliva production. Major predisposing factors are dehydration, the infirmed or elderly, and poor oral hygiene. It was more prevalent in the past, in old, debilitated, and dehydrated, hospitalized patients. The chief agent is *Staphylococcus aureus*. Treatment is rehydration of the patient, encouraging salivary flow (lemon drops), gland massage, and antibiotics. If an abscess occurs, it will need surgical draining.

Chronic recurrent sialadenitis

This is an incompletely understood entity. It is characterized by recurrent unilateral or bilateral diffuse swelling of the parotids in children and adults. Some go on to develop Sjögren's syndrome. The sialogram is useful, showing sialectasis. Treatment is conservative monitoring; troublesome glands may be removed.

HIV salivary gland disease

This clinically resembles Sjögren's syndrome in that it is bilateral diffuse enlargement of both glands. It has characteristic multicentric cystic appearance. Positive HIV serology will make the diagnosis.

Infections of the submandibular glands

Acute submandibular gland sialadenitis

The majority of infections are secondary to a calculus in the duct. Other causes include surgical scarring or strictures secondary to radiation. The whole of the gland swells up and there is malaise, pyrexia, and pain. Submandibular gland calculi are radio-opaque in 80% of cases, so a radiograph may aid in the diagnosis. Antibiotics are required. If the stone is easily felt in the mouth, it can be removed intra-orally. Alternatively, the whole gland can be excised electively. If the infection leads to a collection, then incision and drainage of the submandibular fascial space must be carried out as an emergency, and the gland removed electively later.

Chronic submandibular gland sialadenitis (Kuttner's tumour)

This results from repeated episodes of acute sialadenitis. The structure, parenchyma, and function of the gland are gradually destroyed. The gland ends up feeling very hard to palpation and may be mistaken for a tumour. Treatment is by surgical excision.

Salivary gland diseases—miscellaneous considerations

A variety of autoimmune and degenerative conditions can involve the salivary and lacrimal glands. Many of these do not require surgery, but occasionally surgery is carried out to establish a diagnosis, or remove painful/unsightly glands. Recurrent infection in a non-functioning gland is also an indication for removal. **Sjögren's disease carries a risk of lymphoma** and removal may be required to establish this. Biopsy of minor salivary glands can usually be done under local anaesthesia. More extensive excision of major salivary or lacrimal glands requires a general anaesthetic.

Patients may present with:

- xerostomia;
- swelling of the salivary gland or lacrimal gland;
- 'burning mouth';
- keratoconjunctivitis sicca;
- cosmetic deformity.

Cysts of the salivary glands

'Retention' or 'extravasation' cysts are commonly seen in the cheek and lower lip. They occur following trauma, usually a bite to the minor salivary glands resulting in scarring and obstruction. Every now and then they burst, discharging the saliva, only to re-occur at a later date. A ranula is a similar cyst arising from the sublingual gland. A sialocoele may arise in a major salivary gland following obstruction or previous surgery. Treatment usually involves excision of the cyst and associated gland.