Benign Salivary Gland Tumours

EPIDEMIOLOGY AND DISTRIBUTION

- Salivary gland tumours are relatively uncommon. Fewer than 3 percent of all neoplasms arise in the salivary glands. At least 75 percent of these tumours are benign.
- F>M usually 4th decade of life
- Pleomorphic adenoma is the commonest tumour found at any site
- Within the parotid gland the majority of tumours develop in the superficial lobe

AETIOLOGY

- Radiation exposure
- IN PLEOMORPHIC ADENOMA ➔ Pleomorphic Adenoma Gene 1 ie PLAG1 is activated by chromosomal translocations at 8q12

PRESENTATION

- Insidious, slow growing
- Pain uncommon
- A very small number cause discomfort by obstructing salivary flow.
- Likewise, facial weakness or palsy is virtually never seen unless malignant change has supervened.
- The patient with a parotid tumour eventually becomes aware of a firm mass that is steadily getting bigger behind the angle of their jaw in the retromandibular region, in front of the tragus or in the cheek
- Deep lobe parotid tumours and those arising from minor oropharyngeal glands displace the tonsil and palate medially
- Very large Parapharyngeal salivary tumours affect the quality of the patient's voice and may interfere with Eustachian tube function, for example during air flights
- Sometimes difficult to differentiate a tumour arising in the posterior aspect of the submandibular gland from one that is in the tail of the parotid gland.
- An ultrasound scan is a simple and quick method of making this distinction.
- Benign tumours in the minor salivary glands of the oral and pharyngeal mucosa present as firm submucosal swellings
- Ulceration rare
- Recurrent tumours are often multiple

ASSESSMENT

- USG (areas of bone may obscure view)
- MRI(Best) = T2 and STIR sequence. Gadolinium enhancement even better.
- Nevertheless, in those situations where MRI is not available, CT is still a very good substitute.
There is no longer the need for CT sialography
Occasionally, CT scanning will show calcifications in a salivary gland tumour and this strongly suggests that it is a pleomorphic adenoma.
MRI will indicate whether a Parapharyngeal tumour has originated in the parotid gland or from one of the minor pharyngeal glands
FNAC may miss tumourous tissue and may even lead to microscopic seeding along needle tract, Accuracy in diagnosis is increased by immunohistochemistry.

PLEOMORPHIC ADENOMA

Parotid gland 46yrs mean age. F>M = 1.4 : 1
Submandibular gland 60 yrs F:M = 1.7 : 1
Eighty percent of parotid pleomorphic adenomas are within the superficial lobe
Rarely, a pleomorphic adenoma forms in accessory parotid tissue along the line of the duct and then may only be visible when the mouth is opened and the tumour is pushed outward by the forward movement of the coronoid process of the mandible.
In minor glands Palate >> Lips >> Cheeks
Exceedingly rare in sublingual glands, but occasionally found at sites in the airways that extend from the nasal cavity to the bronchi, the middle ear and external auditory meatus and in the lacrimal glands.
Firmness of tumour varies with amount of fibrous content.
Sometimes pleomorphic adenoma associated with Warthin’s tumour.

THE CAPSULE
The capsule of pleomorphic adenomas may be thick and fibrous or absent in some part.
Focal infiltration of capsule is common

THE STROMA
The myxoid stroma of pleomorphic adenomas is one of its most characteristic features
The almost mucoid nature of many pleomorphic adenomas makes them extremely fragile so that they can burst very easily at operation unless protected by an envelope of normal glandular tissue.
The cartilage of pleomorphic adenomas, though often termed ‘pseudo-cartilage’, does not appear distinguishable in any way from true cartilage.
The cartilage may rarely even contain true bone with fatty marrow spaces.
Calcifications or bone formation are unlikely to develop in any other salivary gland tumour and may be seen clearly in scans.
Their presence in a salivary gland or a Parapharyngeal mass strongly suggests that the tumour is a pleomorphic adenoma.
Elastic tissue can be found in greater or lesser amounts in most pleomorphic adenomas.
Progressive Elastosis and fibrosis can, after many years, cause the tumour to become sclerotic.

THE CELLS
PA is derived from Intercalated ducts and myoepithelial cells which differentiates into epithelial and connective tissue structures
The epithelial cells may be columnar, cuboidal, squamous or flattened and in sheets of greater or lesser extent but interspersed by stromal elements.

High cellularity with mitotic activity, particularly if associated with increased vascularity and areas of necrosis, are suggestive of carcinomatous change.

As a result of poor encapsulation and a tendency to rupture during resection, enucleation has frequently resulted in subsequent recurrence.

Malignant change greater if recurrent tumour

**WARTHIN'S TUMOUR**

This tumour is also known and referred to as either Adenolymphoma or papillary cystadenoma lymphomatosum.

Warthin's tumour is the most common monomorphic adenoma.

2nd most common tumour after pleomorphic adenoma

7th decade

Nearly equal distribution in men and women with slightly mens more affected

**PATHOPHYSIOLOGY**

It is suggested that Warthin's tumours develop as a result of Neoplastic proliferation of ectopic salivary gland ducts within intra or paraparotid lymph nodes.

The absence of lymphoid tissue from other salivary glands explains the development of these tumours only in the parotids.

**HISTOLOGY**

Warthin's tumour consists of a characteristic, eosinophilic, glandular epithelial component and a stroma of lymphocytes

There is only a thin capsule which is incomplete in most cases or even absent in a minority.

**PRESENTATION**

These tumours typically grow slowly to form soft, painless swellings, usually at the lower pole of the parotid gland.

A few may undergo rapid expansion possibly caused by cystic change.

Pain, sometimes severe and radiating to the ear, may be experienced by a few, particularly in those where the tumour becomes infarcted.

The diagnosis of Warthin's tumour is unlikely to be made clinically, unless it is suggested by rapid changes in size or consistency.

If the mass appears to be cystic and aspiration is carried out, a yield of brownish fluid is strongly suggestive of a Warthin's tumour.

**MYOEPITHELIOMA**

**ONCOCYTOMA (OXYPHILIC ADENOMA)**
TREATMENT

PAROTID GLAND

- Superficial parotidectomy
- Total Conservative Parotidectomy  ➔  Facial nerve left intact.
- Total parotidectomy involves removal of facial nerve also.

INFORMED CONSENT

RISK OF FACIAL WEAKNESS

- Neuropraxia usually recovers within 4 – 6 weeks.

FACIAL ANAESTHESIA

- Anaesthesia in the distribution of the greater auricular nerve, over the angle of the mandible and inferior two thirds of the pinna, is unavoidable.

COSMETIC DEFECTS

- The cosmetic appearance of the incision rarely causes concern. Loss of bulk behind the ramus of the mandible may result in a mildly unsightly dent.

FREY'S SYNDROME

- Gustatory sweating or flushing (Frey's syndrome, Baillarger’s syndrome, Dupuy’s syndrome, Auriculotemporal syndrome)
- Usually amenable to simple preventive measures such as the application of an anti-perspirant or local, subdermal injections of botulinum toxin.

SALIVARY FISTULA

- In some patients saliva continues to be produced by the parotid remnant and either collects in the parotid bed or leaks out through the wound.
- For the most part, salivary fistulas close spontaneously and settle down over a period of days to weeks.

OPERATIVE PROCEDURE

Superficial parotidectomy

- Most tumours can be removed through a ‘lazy S’ incision (Modified Baileys Incision) but, in some, extension of the incision into the hairline aids exposure.
- Flaps are raised which contain the subcutaneous tissue lateral to the parotid fascia. The parotid is then mobilized from the cartilage of the external auditory canal and adjacent muscles, the sternocleidomastoid and digastric muscles.
- It is at this point of the dissection that section of the greater auricular nerve becomes necessary.
**FACIAL NERVE LANDMARKS:**

- The inferior portion of the cartilaginous external auditory canal. The facial nerve lies 1 cm deep and inferior to its tip.
- The groove between the cartilaginous and bony external auditory meatus. The facial nerve lies immediately deep and inferior to this at its point of exit from the skull. This groove is very easy to feel.
- The anterior border of the posterior belly of the digastric muscle. The facial nerve leaves the skull immediately anterior to the attachment of this muscle.
- I.E. Most consistent is **Tympanomastoid suture line** (6-8mm beneath the tympanomastoid suture, points to stylomastoid foramen), **Tragal Pointer** (1cm inferior and deep to it), **Posterior belly of Diagastric** attachment anterior border.

- The mandibular branch can be found at the angle of the mandible, as it lies superficial to the facial vessels.
- The zygomatic and temporal branches of the upper trunk cross the zygomatic arch anterior to, and within 1-2 cm off, the superficial temporal artery.
- The routine use of facial nerve monitoring for parotid surgery also helps in this process. Not only does it predict the impending proximity of the facial nerve trunk, but also helps minimize trauma to its finer branches that can be irrevocably damaged all too easily.
- The superficial lobe of the parotid gland and tumour are then dissected off the divisions and branches of the facial nerve.
- Haemostasis is then achieved and the wound closed in two layers.
- **SPILLAGE** of tumour may necessitate **TOTAL CONSERVATIVE PAROTIDECTOMY**.
- Access to the tumour can be improved by sectioning the digastric muscle and by counter-pressure applied to the tumour by an assistant with their index finger in the patient's oropharynx.

**TRANSPHARYNGEAL APPROACH**

- Tracheostomy, as there may be significant soft tissue swelling in the immediate postoperative period, the tracheostomy has the additional advantage of removing the endotracheal tube from the operative field and therefore increases the available exposure.
- A skin crease incision is made at the level of the hyoid bone and extended forwards across the chin to split the centre of the lower lip.
- Dissection continues deep to the Submandibular gland until it is free from the surface of the hyoglossus muscle.
- A midline mandibulotomy is then made with a fine oscillating saw.
- Lingual and hypoglossal nerves should be identified and displaced medially.
- At this stage the exposure is complete and the tumour may be mobilized and removed by blunt dissection.
- This technique provides excellent exposure of the medial and superior aspects of the tumour which by any other method have to be approached blindly.
SUBMANDIBULAR GLAND

- Always total resection
- Damage to the marginal branch of the facial nerve. This may result in either a temporary or permanent weakness of the angle of the mouth that will be most noticeable on smiling and puckering the lips.
- **Lingual and hypoglossal nerve damage.**
- Neuropraxia of the lingual and hypoglossal nerves is unusual but possible.
- It is more likely to be sustained when the gland is removed for chronic sialadenitis rather than tumour as in these cases the gland is likely to be densely tethered to adjacent structures.
- Motor dysfunction of the tongue initially impairs articulation and mastication but the patient rapidly compensates. Ultimately, the tongue muscles waste on that side but without further symptomatic deterioration.

OPERATIVE PROCEDURE

- The incision is made in or parallel to a Natural skin crease approximately 2.5 cm below the lower border of the mandible and extending for approximately 10 cm anterior to SCM.
- Care must be taken in development of the superior flap as the marginal mandibular nerve runs in the same tissue plane.
- This nerve enters the neck 1 cm in front of the angle of the mandible, loops over the facial artery and vein 2 cm below the lower border of the body of the mandible before sweeping superiorly to the angle of the mouth.
- The mandibular branch of the facial nerve can be protected from inadvertent damage by one of two maneuvers.
  - The facial vessels can be transected at a low level on the surface of the submandibular gland and reflected superiorly. The nerve, which lies lateral to the facial vessels, can then be lifted out of the operative field by traction on the transected end of the vessels.
  - Alternatively, the capsule of the gland can be opened at the level of the hyoid bone and dissection continued beneath it. The elevated capsule protects the nerve in a similar fashion to the first technique.
- The superficial part of the gland is mobilized by either blunt or sharp dissection and retracted posteriorly in order to expose the **deep portion that lies on the hyoglossus muscle** and is partly covered by the mylohyoid muscle.
- Retraction of the mylohyoid anteriorly, together with posterolateral traction on the gland, brings the lingual nerve, duct and more proximal part of the facial artery into the operative field.
- Once Lingual nerve freed from Gland, hypoglossal nerve may be seen inferior and parallel to the lingual nerve.
- The proximal part of the facial artery is usually ligated at this point.
- The gland is then further mobilized from the hyoglossus muscle and about its duct so that this may be ligated and transected as far anterior as possible.

MANAGEMENT OF RECURRENT PLEOMORPHIC ADENOMA

- Completely avoidable had the primary surgery been undertaken correctly.
Unifocal recurrences suggest previously inadequate surgery while multifocal recurrences usually develop after tumour spillage following rupture.

MRI will differentiate between the two in most.

A history of temporary global facial weakness following the previous surgery is a clear indication that the facial nerve is likely to be surrounded or encased by scar tissue.

Patients with multifocal recurrences require a thorough revision parotidectomy with removal of every scrap of the remaining parotid gland.

In some, sacrifice of the facial nerve may seem inevitable and in these situations it should be repaired immediately by a suitable cable graft.

Postoperative radiotherapy is believed by many to delay or prevent the development of further recurrence and it is sensible to offer this to those most at risk of further troublesome recurrence.

FOLLOW UP

- Recurrent pleomorphic adenoma can develop up to 20 years later.
- Scans at five-yearly intervals would seem to be sensible.