Chapter 10: Salivary Gland Disorders

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Dysfunction of the salivary glands is usually manifested in one of two ways: swelling of the gland, either diffuse or discrete, or by dry mouth (xerostomia). There may be accompanying pain and tenderness or overlying erythema. The history is important in suggesting certain disorders. The workup and treatment are usually straightforward. There is only one strong caveat - never biopsy, by needle or incision, discrete lesions of parotid glands or submaxillary gland. The only correct biopsy is excisional, by superficial parotidectomy or submaxillary gland resection. In this chapter, we will consider only diseases of the parotid and submaxillary glands. Minor salivary gland disorders are usually tumors (60-70%) and present as discrete submucosal intraoral swellings in the buccal mucosa or palate (although they can be anywhere in the oral cavity or pharynx). When suspected, they should be managed by excisional biopsy taking a margin of normal tissue.

History

Gland(s) Involved
- Single
- Multiple (parotids and/or submaxillary)

Nature of Enlargement
- Discrete
- Diffuse

Pattern of Enlargement
- Gradually increasing
- Intermittent swelling and recession
  - Rapid - associated with eating
  - Gradual - days, weeks, months

Lacrimal Gland Involvement

Pain

Erythema over Gland

Foul Discharge in Mouth

Facial Paralysis - usually with malignancy

Other Symptoms
- Xerostomia
- Xerophthalmia
- Joint pain and swelling
- Fever
- Weight loss
- Skin rash
- Malaise

Allergies

Medications (iodides, bromides, tranquilizers, etc)

Alcohol Intake

Family History.
Submaxillary Gland

Owing to the size and location of the submaxillary glands, it is usually not possible to differentiate discrete from diffuse swelling of the gland. Because there are several lymph nodes located in the submaxillary triangle in close proximity to the gland with a consistency similar to that of the normal gland, it is not always possible to differentiate gland from lymph node, although the gland usually has a bosselated surface. The importance here is to rule out disorders which may produce submaxillary lymph node enlargement (infections - periodontal, floor of mouth - and tumors of the head and neck with metastases). This can be done only with a complete head and neck examination.

Intermittent Swelling - Rapid

**Subjective Complaints.** The usual history is that of swelling which occurs with eating. There may be mild tenderness associated. The swelling usually goes down over a period of hours. Occasionally, there may be pain and erythema of the area followed by relief associated with the release of foul-tasting fluid in the mouth.

**Objective Findings.** The gland may be minimally to moderately enlarged and is usually slightly tender to palpation. Bimanual palpation of the floor of the mouth may reveal the presence of a firm palpable mass.

**Assessment.** This history and findings are almost always associated with ductal obstruction. Although strictures do occur, ductal stones are far more common. Plain x-ray films of the floor of the mouth may be taken (occlusive views), and many stones are radiopaque (85% are). Sialograms may demonstrate the blockage, but not to be performed in an acutely inflamed state or will precipitate an acute sialadenitis.

**Plan.** If there is a stone in the Wharton's duct, the floor of the mouth around the duct is anesthetized with topical 10% lidocaine, and 2% lidocaine is injected along the duct. The ductal office is dilated with a lacrimal punctum dilator, and progressive dilation of the duct is carried out with lacrimal duct probes. If a stone is encountered, the probe is left in place and a small scissors used to incise along the probe to the stone, which is removed. Be sure not to push stone into gland proper. The cut duct edges are sutured open to the floor of the mouth. Recurrences are treated by excision of the gland.

Intermittent Enlargement - Gradual

(See Parotid Gland, Diffuse Swelling, Intermittent.) May occur alone or with parotid swelling.

**Constant Enlargement**

**Subjective Complaints.** Usually gradual, painless, unilateral gland enlargement.

**Objective Findings.** The gland feels firm and may be smooth or bosselated. The duct and ductal punctum are normal.
Assessment. The head and neck examination with special attention to the oral cavity fails to reveal any primary tumor. No nodes are palpable in the neck. Skin tests for tuberculosis and atypical mycobacterial infection should be done. A submaxillary gland sialogram may be done to help determine whether the mass is gland or adjacent lymph nodes, although it is not often helpful. The lesion is most likely tumor, 50% of which are malignant.

Plan. Excisional biopsy under general anesthesia is carried out. Frozen sections are obtained. In the absence of tumor, tissue sections are cultured along with any pus for routine and acid-fast bacteria and fungi.

Parotid Gland

Discrete Swelling

Subjective Complaints. The patient may be aware of a slowly growing discrete mass in the area of the parotid gland. There may be pain and facial nerve involvement.

Objective Findings. Palpation reveals a discrete mass in the gland, usually firm. Remember that the gland extends from the level of the zygomatic arch to below the angle of the mandible and extends from just in front of the ear downward to beneath the ear lobe and over the upper sternocleidomastoid muscle anterior to the anterior border of the masseter muscle. Pain may be present and also weakness of part or all of the facial nerve. The external ear canal should be examined for evidence of otitis externa or tumor. The scalp should be examined for lesions, especially melanoma.

Assessment. Discrete lesions of the parotid are almost always tumors. It is usually not possible to rule out enlargement of lymph nodes associated with the gland unless a primary tumor of the scalp or external ear or ear canal can be demonstrated or external otitis is present. Lymphomas may also arise in nodes associated with the gland. Although radioactive isotope scans with gallium and technetium has been advocated, I think they add little to the management. The presence of pain or facial nerve involvement is almost always associated with a malignant tumor.

Plan. The important part of the plan is that no biopsy of the lesion is carried out other than excisional biopsy by superficial parotidectomy. Benign mixed tumors, the most common lesion, may be spread by incisional or needle biopsy. The whole specimen must be available to the pathologist. Needle biopsies of mixed tumors and lymphomas are worthless. Frozen sections are obtained. In uncommon malignant lesions, more extensive surgery requiring radical neck dissection and sacrifice of the facial nerve and surrounding structures may be necessary.

Diffuse Swelling, Intermittent, Rapid

(See Submaxillary Gland.) Stones in the parotid duct are reported to be one-tenth as common as submaxillary duct stones. The author has never seen one despite seeing many in the submaxillary duct.
Diffuse Swelling in Childhood

**Subjective Complaints.** The history may be either that of recent onset of mildly tender swelling of one or both parotid glands accompanied by upper respiratory infection (URI) or flu-like symptoms or of recurrent unilateral or bilateral, usually painless, swelling of the glands.

**Objective Findings.** There is visible and palpable enlargement of the gland or glands. There may be tenderness.

**Assessment.** When the enlargement is accompanied by systemic symptoms, the most common cause is *mumps* (viral parotitis). This can be confirmed by acute and convalescent serum viral antibody titers. Other considerations include cytomegalic inclusion virus disease (confirmed by urinary and salivary viral cultures) and diffuse infection with tuberculosis or atypical mycobacteria, confirmed by culture and skin tests.

The recurrent form is almost always *recurrent parotitis* of childhood, a disease of unknown etiology thought to be related to Sjögren's and Mikulicz' disease. The diagnosis may be made by sialogram in which sialectasis is seen.

**Plan.** The treatment of these disorders is symptomatic, as no specific therapy exists except in the case of the mycobacterial infections. There, the appropriate antimicrobial therapy is based upon the culture results.

Diffuse Swelling in Adults

**Subjective Complaints.** The swelling may involve one or both glands. It may be rapid in onset or gradual. There may be pain or it may be painless. There may be erythema of the skin overlying the gland. There may be clear saliva or pus expressed from the ducts. Systemic symptoms may include fever, extreme malaise, xerostomia, xerophthalmia, joint pains, weight loss, night sweats, or nothing. The swelling may be described as intermittent over days to weeks.

**Objective Findings.** The affected glands may be nontender or very tender to the touch. Erythema of the skin may be present. The punctum of the duct may be inflamed and pus or clear saliva expressed. Cervical lymph nodes may be enlarged. Other salivary glands (submaxillary and sublingual) may be enlarged, as may the lacrimal glands.

Studies include CBC, chest x-ray, erythrocyte sedimentation rate, lupus prep, antinuclear antibodies, rheumatoid factor, serum calcium determination, culture of the saliva, and parotid sialograms.

**Assessment.** Painless swelling of the glands, sometimes intermittent, usually accompanied by xerostomia and xerophthalmia, is most likely *Mikulicz' disease or Sjögren's syndrome*. The difference between the two is that Mikulicz' disease is limited to the salivary and lacrimal glands, whereas Sjögren's syndrome has an associated collagen vascular disease (rheumatoid arthritis, lupus erythematosus, scleroderma) or other systemic disease such as lymphoma, sarcoidosis, etc. The sialogram in both disorders shows sialectasis. A helpful
screening test is the Westergren sedimentation rate. If that is elevated, the other blood studies should be obtained. The serum calcium may be elevated in sarcoidosis. The chest x-ray may reveal mediastinal node involvement in sarcoid and lymphoma. Any enlarged cervical lymph nodes should be biopsied. Biopsy of the parotid gland or the oral minor salivary glands will reveal lymphocytic infiltration and ductal hyperplasia along with a decrease in the acinar cells.

Two other disorders of painless swelling unaccompanied by other symptoms include fatty infiltration of the gland and acinar hypertrophy. These may both be seen in alcoholics. The fatty infiltration may be associated with fatty infiltration of the liver. Fatty infiltration of the gland may also be seen in the recovery phase of acute starvation or protein-calorie malnutrition (kwashiorkor) as in fatty liver infiltration. The sialogram is normal in these cases. Biopsy of the gland establishes the diagnosis.

One condition which can mimic these disorders is hypertrophy of the masseter muscles. In this case, when the patient clenches his teeth the gland protrudes markedly. A sialogram (unusually unnecessary) shows the bilateral lateral displacement of the gland. Likewise, tumor of the masseter or underlying mandible may present with unilateral protrusion of the parotid. Mandible x-rays are helpful, as in palpation of the mandible and muscle.

Painful swelling of the gland which is unassociated with other symptoms may represent ductal obstruction (see Submaxillary Gland).

Painful swelling of the one parotid, with erythema over the gland and a red ductal orifice with pus expressed from the duct, is usually seen in very ill and frequently elderly patients. This is acute suppurative or surgical parotitis. Culture of the pus should be carried out. The most common organism is Staphylococcus aureus.

Plan. With the exception of acute suppurative parotitis, there is no specific treatment. In the other disorders, treatment of the underlying disease is indicated symptomatic treatment of the salivary gland disorder. In acute suppurative parotitis, after cultures are obtained, treatment including rehydration and intravenous treatment with antibiotic is begun. I prefer to use methicillin, 1 g every 4 hours, plus penicillin, 1 million units every 4 hours, for 24 hours. When the culture is reported, if Staphylococcus is the cause, the penicillin is stopped and the methicillin is continued at 1 g every 6 hours. Oral hygiene is prescribed using hydrogen peroxide, and sialogogues are used. If the gland continues to swell and the overlying skin becomes shiny and thinned, the gland is decompressed surgically. This must be done by a surgeon familiar with facial nerve surgery.

In the remaining disorders, occasionally the cosmetic effect of the enlarged gland is undesirable. In that case, a superficial parotidectomy is carried out. However, no elective cosmetic surgery should be performed on patients with collagen vascular diseases or other serious underlying medical problems (diabetes, etc) for any reason.