Non-Neoplastic Parotid Gland Disorders

David W. Eisele, M.D., F.A.C.S.

Head and Neck Surgery and Oncology
UCSF Helen Diller Family Comprehensive Cancer Center
University of California, San Francisco

Diffuse Parotid Gland Enlargement

• Variety of clinical disorders
  - Primary gland disorder
  - Systemic disorder with gland involvement
• Local symptoms +/- systemic or asymptomatic
• Diagnosis generally dependent on clinical evaluation and diagnostic studies
• Treatment largely guided by diagnosis and patient complaints
History

• Determine if solitary parotid or more generalized salivary gland involvement
• Progression of enlargement
• Inciting factors for enlargement
• Nature and duration of symptoms
• Pain: character, severity, frequency

History

• Associated Symptoms
  - Head and Neck
  - Systemic
• Review of Systems
• Medications
• Past Medical History
• Social History (eg. alcohol use)
• Family History
Physical Examination

- Complete Head and Neck Exam
- Inspection / Palpation of Salivary Glands
  - enlargement (unilateral/bilateral)
  - consistency
  - tenderness
  - mobility
- Differentiate diffuse gland enlargement from discrete mass or anatomic anomaly

Physical Examination

- Oral Cavity
  - Moisture level
  - Dentition status
  - Salivary duct output
    - amount
    - character
  - Palpate for sialoliths, masses
- Salivary duct probing
Team Approach

- Radiology
- Pathology / Cytopathology
- Internal Medicine
- Rheumatology, Endocrinology
- Infectious Diseases
- Pediatrics
- Psychiatry
- Nutrition

CT Scan / MRI

- Useful to rule-out neoplasm or extrinsic mass
- Extent of glandular enlargement
  - localized or diffuse
  - unilateral, bilateral, or generalized
- Nature of enlargement
  - parenchyma density
  - fat, fibrosis
  - presence of cysts
Laboratory Studies

- Order selectively based on information gleaned from history, physical examination, and imaging studies
- Useful for diagnosis or exclusion of systemic disorders:
  - Infectious
  - Granulomatous
  - Metabolic
  - Autoimmune
  - Hormonal

Laboratory Studies

- HIV test
- Angiotensin converting enzyme (Sarcoid)
- Autoantibodies (Sjogren’s)
  - Rheumatoid factor
  - Antinuclear antibodies
  - Anti-SSA, Anti-SSB
- Antineutrophil cytoplasmic antibody; ANCA (Wegener’s)
- Hormone levels (eg. TSH)
Fine Needle Aspiration Biopsy

• Valuable to exclude neoplasm or lymphoma
• Accurate for diagnosis of non-neoplastic enlargement
• Acinar size measurement may be helpful (sialadenosis)
• Clinicopathological correlation important

Diagnostic Salivary Gland Biopsy

• Lower lip minor salivary glands - obtain multiple glands
• Sjogren’s - greater than one focus (>50 lymphocytes in area) in 4 mm²
• Sarcoid - noncaseating granulomas
Sialendoscopy for Evaluation of Glandular Swelling of Unclear Etiology
Koch M et al; OHNS, 2005

- 103 patients with chronic gland swelling
- Imaging studies (esp. U/S)
- No clear etiology of swelling
- 97% success
- Findings:
  - stones 20%
  - stenosis/ foreign body 56%
  - sialodochitis 10%
  - normal 10%

Diffuse Parotid Gland Enlargement Classification

- Inflammatory
- Non-Inflammatory
Inflammatory Enlargement

Acute Sialadenitis
- Viral
- Bacterial
- Radiation
- Medication

Chronic Sialadenitis
- Obstructive
- Granulomatous
- Autoimmune
- HIV-associated

Acute Viral Sialadenitis (Mumps)
- Acute viral infection
  - Paramyxovirus predominates
- Unusual due to two-dose MMR vaccine
- Spread by cough, sneeze; 2-3 wk incubation
- 2006 Midwest outbreak (1st in 20 years)
- Iowa and surrounding states
- Over 2500 cases (usually 265/year)
Acute Viral Sialadenitis (Mumps)
• Bilateral or unilateral painful parotid swelling
• Fever, headache, cough, malaise
• Clinical diagnosis; serologic test
• Symptomatic and supportive treatment
• Usually resolves in several weeks
• Deafness, meningitis, orchitis

Acute Bacterial Sialadenitis
• Acute bacterial infection of ducts and parenchyma, usually unilateral
• Debilitated and dehydrated patients
• Polymicrobial:
  Staph aureus, H. flu, gram neg. anaerobes
• Painful diffuse gland enlargement, tenderness
• Antibiotics, hydration, gland massage, oral care
• Surgical drainage for medical therapy failure
Sialolithiasis

- Common parotid gland obstructive disorder
- Exact etiology unknown
- Theory: deposition of calcium salts around a nidus of:
  - desquamated cells
  - microorganism
  - foreign body
  - mucous plug
- Reduced fluid intake; smoking

Sialolithiasis

- Recurrent painful parotid gland swelling
- Episodes of acute bacterial sialadenitis
- Abscess formation
- Chronic sialadenitis
- Gland atrophy
Radiation Sialadenitis

- Inflammatory process due to radiation effect on gland parenchyma, dose-related injury
- Serous glands and acini most susceptible
- External beam radiation
- Radioactive iodine
- Painful, tender glands; swelling; xerostomia
- Chronic injury can result
- Some benefit with sialendoscopy

Chronic Sialadenitis

- Non-granulomatous chronic inflammatory condition
- Etiology may be unclear by history
  - primary obstruction / secondary infection
  - primary infection / secondary obstruction
- Recurrent painful gland enlargement common
  - exacerbation with eating
- Relief of duct obstruction, sialogogues, glandular massage, warm heat
- Gland resection for medical therapy failure
Chronic Sialadenitis - Parotidectomy

• Failure of medical management
• Effective
• Extent of parotidectomy
  - lack of consensus (superficial vs. total)
• Technically challenging
• Facial nerve sometimes thin
• Temporary facial paresis common (30-60%)

Sarcoidosis

• Systemic granulomatous disease, unclear etiology
• < 1/3 patients - painless salivary gland swelling
• Nontender and multinodular glands; xerostomia
• ACE elevation (50-80%)
• Most patients have pulmonary involvement
• CXR- hilar nodes, adenopathy, parenchymal infiltrates
• Noncaseating granulomas on histopathology
• Treatment supportive; steroids in select patients
**Wegener’s Granulomatosis**

- Necrotizing granulomatous inflammation and vasculitis; etiology unknown
- Affects upper and lower respiratory tracts, kidney
- Parotid and submandibular gland involvement (5%) causes persistent gland swelling
- Dx: Antineutrophil cytoplasmic antibody (ANCA)
- Biopsy - histopathological triad: granulomatous inflammation, necrosis, and vasculitis
- Treatment – corticosteroids, cyclophosphamide

**Sjogren’s Syndrome**

- Autoimmune disease
- Exocrine gland dysfunction with lymphocytic glandular infiltration
- Xerostomia, keratoconjunctivitis sicca
- Bilateral or unilateral nontender parotid swelling
  - most pts. with primary form; 1/3 secondary
  - intermittent or persistent
- Diagnosis- clinical, autoantibodies, gland biopsy
- Treatment supportive
- Salivary secretagogues - pilocarpine; cevimeline
Sjogren’s Syndrome – Lymphoma Risk

Ioannidis et al; Arthritis Rheum, 2002

Probability of lymphoma:
2.6% at 5 years
3.9% at 10 years

HIV-Associated Cystic Sialadenitis

- Bilateral parotid multicystic enlargement
- Lymphocytic (T cell) infiltration of gland
- Persistent, nonprogressive
- May be mildly painful
- Enlarged adenoids, cervical nodes common
- Diagnosis largely clinical
- Positive HIV test
- Must exclude lymphoma or other neoplasm
HIV-Associated Cystic Sialadenitis - Management

- Anti-retroviral medications
- Injection sclerotherapy
doxycline, bleomycin
- Surgery not recommended, despite patient enthusiasm

Non-Inflammatory Enlargement

Acute Enlargement
- Neoplasm
- Miscellaneous:
  - Trauma
  - Pneumoparotitis
  - Anesthesia/
    - Endoscopy

Chronic Enlargement
- Obesity
- Sialadenosis
  - Endocrine
  - Nutritional
  - Medication
  - Idiopathic
- Amyloidosis
Sialadenosis (Sialosis)

- Non-inflammatory, non-neoplastic gland parenchyma enlargement
- Bilateral parotid enlargement most common
- Can be recurrent or persistent
- Wide variety of systemic conditions causative
- Unifying factor - neuropathic alteration of the autonomic innervation of salivary acini (Batsakis)
- Diagnosis primarily clinical, exclusion of others
- Complete metabolic and endocrine evaluation

Sialadenosis - Etiologies

- **Endocrine Disorders**
  - Diabetes Mellitus (1/4)
  - Hypothyroidism
- **Alcoholism** (autonomic neuropathy)
- **Nutritional Disorders**
  - Bulimia (1/3)
  - Deficiency condition
    - eg. protein (alcoholism)
    - vitamin (niacin, thiamine, vit. A)
Sialadenosis - Etiologies

- **Medications**
  - Direct effect on gland
    - eg. iodine compounds
  - Drug side-effect (adrenergic, cholinergic)
    - eg. antihypertensives (guanethidine)
    - antiemetics (phenothiazine)
    - antiepileptics (phenobarbital)
    - bronchodilators (isoproterenol)

- **Idiopathic** - diagnosis of exclusion

Sialadenosis - Treatment

- Correct underlying disorder

- **Pilocarpine** - Bulimia
  Mehler, Wallace; Arch OHNS, 1993

- Consider parotidectomy only for unacceptable cosmetic deformity unresponsive to medical therapy
Summary

- Variety of clinical disorders are responsible for diffuse parotid gland enlargement
- Clinical evaluation and selective use of diagnostic studies are key to diagnosis
- Multidisciplinary team approach helpful
- Diagnosis and patient symptoms guide treatment recommendations