Parotid Masses: Best Practices

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Learner Objectives

• After this presentation you should:
  – 1) Recognize appropriate considerations for preoperative biopsy and/or imaging of parotid lesions
  – 2) Understand various intraoperative adjuncts and techniques for benign parotid lesions
  – 3) Describe surgical and adjuvant treatment considerations for malignant parotid lesions
  – 4) Be an amazing parotid surgeon!

Risk Factors for Parotid Neoplasms

• Smoking – only associated with Warthin’s tumor
• Alcohol/Diet – no known association
• Viruses – little to no association
• Workplace Exposures – rubber, nickel/plumbing metals, woodworking in auto industry, hairdressing
• Radiation
  • Long-term flu studies of Hiroshima and Nagasaki survivors:
    – Increased relative risk of 3.5 for benign tumors and 11 for malignant tumors
    – Mucoepidermoid carcinoma and Warthin tumors
  • Previous H+H ionizing radiation
  • RAI
Differential Diagnosis

- **Inflammatory:** Sjögren Syndrome, Sialadenitis
- **Infectious:** Parotitis (viral, bacterial)
- **Benign cysts/lesion:** benign lymphoepithelial cysts, retention cysts/mucoceles
- **Vascular:** hemangioma, lymphangioma
- **Tumor-like:** fatty infiltration, masseter hypertrophy, 1st Branchial cleft cyst
- **Granulomatous:** actinomycosis, cat-scratch, sarcoidosis (Uveoparotid fever), TB

WHO Histological Classification

Distribution of Parotid Gland Neoplasms

**Benign (75-80%)**
- Pleomorphic Adenoma (65-85%)
- Warthin’s Tumor (20-30%)
- Other (5-10%)
  - Oncocytoma
  - Monomorphic Adenomas

**Malignant (20-25%)**
- Mucoepidermoid Ca (30-40%)
- Adenoid Cystic Ca (15-20%)
- Ca ex-pleomorphic (10-15%)
- Acinic Cell Ca (10%)
- Adenocarcinoma NOS (4-5%)
- Basal Cell AdenoCa (3-4%)
- Clear Cell AdenoCa (3-4%)
- Myoepithelial Ca (2-3%)
- Salivary Duct Ca (2-3%)
- Other (10%)
Workup of Parotid Mass

History
- Onset, duration, behavior, associated symptoms, pain, facial function
- ROS: dry eyes/mouth, weight loss, fevers
- PMHx: Skin/other cancers, autoimmune dz, Sarcoidosis, Sjogren syndrome
- Vast majority are asymptomatic

Physical Examination
- Inspection/Palpation
  - Size, location, consistency, mobility
  - Skin changes, sinus tracts
  - Facial motion
- Oral Exam
  - Trismus
  - Stensen’s duct
  - Fullness in OP - Parapharyngeal extension?
- Neck Exam
- Cranial Nerve Exam

Audience Response Question
44yo otherwise healthy female presents with slowly enlarging, discrete, well-circumscribed right parotid mass. Otherwise, has no other concerning features on history or exam.
FNA Biopsy

**Goals:**
- Is surgery a recommended option?
- Benign vs. Malignant
- Definitive Diagnosis

**Advantages:**
- Simple, minimally invasive, well-tolerated, accurate
- May be useful in patients unable/unwilling to have surgery
- Aids in preoperative planning and patient counseling

**Disadvantages:**
- Unnecessary? Will it change ultimate management?
- Poor Sensitivity?
- Variability in reported results
- Cost
- Tumor Seeding – extremely rare

**Sensitivity, Specificity, and Posttest Probability of Parotid Fine-Needle Aspiration: A Systematic Review and Meta-analysis**

- Sensitivity = 88%
- Specificity = 99%
- Non-diagnostic = 5%
- Indeterminate = 14%
Tissue Diagnosis – Other options

Core Needle Biopsy
• Meta-Analysis (Witt BL et al, 2014):
  – Sensitivity 96%
  – Specificity 100%
  – Non-diagnostic 1.6%

Intraoperative Frozen Section Analysis
• Meta-Analysis (Schmidt RL et al, 2011):
  – Sensitivity 90%
  – Specificity 99%
  – Highly dependent on pathologist comfort/experience

Tissue Diagnosis Techniques: Best Practices

• FNA bx
  – Reasonable to perform, but may not be necessary in all situations
  – Results are likely dependent on both sampling and cytopathologist experience
  – Consider US-guidance, especially for cystic lesions

• Core needle bx
  – Consider if FNA is nondiagnostic or indeterminate AND it will assist in management of the patient
  – Consider if lymphoma is high on differential

• Intraoperative Frozen Section Analysis
  – May be useful in certain situations - assist in intraoperative decision making regarding extent of necessary/appropriate surgery
  – Recommend discussing with pathologist prior to performing

Imaging

• Potentially unnecessary in many cases
  – Particularly useful with larger lesions and malignant suspicion

• Assists in treatment planning and patient counseling
  – Differentiate between neoplastic and non-neoplastic processes
  – Assess local extent/evasion
  – Detect regional and/or distant metastatic lesions

• Common Options:
  – MRI – best initial test for salivary gland lesions
  – CT – most commonly utilized imaging test
  – US – utilized as first line imaging in much of Europe
Imaging

Original article
Focal fluorine-18 fluorodeoxyglucose-avid parotid findings in patients with lung cancer: prevalence and characteristics
Tina Davidson, Oma Komissar, Einor Goozen, Bruna Shalmon, Bur Chikman, Alon Ben-Nun, and Simona Ben-Haim

- Pleomorphic adenoma
- Warthin tumor
- Infectious causes
- Granulomatous disorders (sarcoidosis)
- Intraparotid LNs

Most often, these focal lesions require further workup with biopsy to confirm diagnosis.

Parotid Neoplasms: Management Options

- Complete surgical excision
  - Cornerstone of treatment
  - Extent of surgery is debated

- Adjuvant Treatment – XRT and CRT
  - Reserved for high-grade malignant tumors
  - Positive margins, other high-risk features

- Observation/Active Surveillance
  - Typically reserved for small benign lesions
  - Elderly and/or medically infirm
### Preoperative Counseling and Informed Consent

**Potential Surgical Complications/Risks:**

- **Facial nerve paresis/paralysis**
  - Wide range of rates reported in literature
  - Temporary – as high as 27-43%
  - Permanent – as high as 4-22%

- **Frey’s Syndrome**
  - aka gustatory sweating or auriculotemporal syndrome
  - 10% rate

- **Salivary fistula/sialocele**
  - 5% rate

- **Other:** bleeding/hematoma, infection, numbness, first bite syndrome

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### Facial Nerve Monitoring

- 7 publications, 546 patients, benign and malignant, superficial and total
- Immediate post-op weakness - lower when FNM was utilized
  - 22.5% vs 34.9% (p = 0.001)
- Permanent weakness - lower, but not statistically significant
  - 3.9% vs 7.1% (p = 0.18)
- NNT: 9 patients/cases to prevent 1 immediate postop facial nerve weakness

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### Extent of Surgery

**Classification of Surgical Techniques:**

- Extracapsular Dissection
- Limited/Partial superficial parotidectomy
- Superficial parotidectomy
- Total parotidectomy
- Radical/Extended parotidectomy
Audience Response Question

64yo healthy male with the following parotid mass with FNA consistent with pleomorphic adenoma. Exam supports this diagnosis. He is interested in removal.

Surgery for Benign Parotid Tumors

Extracapsular Dissection for Benign Parotid Tumors: A Meta-Analysis

W. Costello Abbergeri, BA, Shawn A. Nguyen, MD, MA, John D. Zook, MD, PhD
M. Brian Gilmore, MD, PhD

Extracapsular Dissection Versus Superficial Parotidectomy for Benign Parotid Tumors

Wael Mekha, MD; Christo-Anne Nishkin, MD, FACS
Surgery for Benign Parotid Tumors

Current Management of Benign Parotid Tumors—The Role of Limited Superficial Parotidectomy
Christopher J. O’Brien MS, FRACS
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- 363 cases of superficial parotid lesions
- 70% were pleomorphic adenomas
- 0.8% recurrence rate (median follow-up of 6yrs)
- 2.5% permanent facial paralysis rate

Surgery for Malignant Tumors

• Extent of resection depends on:
  - Histologic degree of differentiation
  - Location
  - Size of tumor
• Superficial, Total, or Extended Parotidectomy
• Approach to the Facial Nerve
  - Preserve intraoperatively unless:
    • Preoperative dysfunction
    • Direct invasion appreciated intraoperatively

Management of the Neck

- Clinically positive:
  • 20% at clinical presentation
  • Treated with therapeutic ND (at least levels II and III)
  • Usually followed by adjuvant RT
- Clinically negative:
  • Occult mets detected in 12-45% cases
  • Some recommend elective ND in all cases of parotid malignancy
  • Many reserve elective treatment for only high risk features:
    - High grade tumors
    - Large tumors (T3 or T4)
    - Facial nerve involvement
  • Available data suggests surgery and RT are equivalent in the treatment of the clinically negative neck

Zbaren P et al, Oto Head Neck Surg, 2005
Sennert E et al, Arch Oto Head Neck Surg, 2003
### Histologic Differentiation of Salivary Gland Malignancies

**HIGH GRADE**
- High grade Mucoep
- Adenoid Cystic
- Squamous Cell
- Mucinous AdenoCa
- Salivary Duct Ca*
- Carcinoma ex-Pleo*
- AdenoCa NOS*
- Lymphoepithelial Ca

**LOW GRADE**
- Low grade Mucoep
- Acinic Cell
- Epithelial-myoepithelial Ca
- Polymorphous Low Grade AdenoCa
- Oncocytic Ca

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### Adjuvant Treatment

**Radiation Therapy**
- No randomized clinical trials
- Observational data – improves local control and survival in select patients
- Typically recommended after surgical rxn for patients at high risk for locoregional recurrence
  - Advanced stage – T3/T4 and/or nodal involvement
  - High-grade histology
  - Positive surgical margins
  - Skin/nerve invasion
  - Adenoid cystic carcinomas

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### Cutaneous Malignancy and the Parotid Gland

- Cutaneous SCC of the H+N is the most common tumor to metastasize to the parotid gland
- 2-5% of all cutaneous SCCs metastasize to parotid
- Significant implications for management and prognosis
Cutaneous Malignancy and the Parotid Gland

Isolated parotid nodal metastases:
• Risk of additional occult dz in neck is 15 - 50%
  – Recommendation: Perform neck dissection along with parotidectomy when patient has isolated nodal mets to the parotid bed.
    • Include node(s) within the external jugular chain (not typically addressed with standard neck dissections)
  – Levels of the neck to include with parotidectomy:
    • Facial primary: levels I-III
    • Anterior scalp primary: II-III
    • Ear primary: II-III
    • Posterior scalp/neck primary: II-V

Summary

• Do
  – Consider FNA biopsy as part of your diagnostic workup of parotid lesions
  – Utilize imaging when appropriate
  – Consider extent of surgery to potentially limit post-operative morbidity in benign lesions
  – Consider intraoperative FN monitoring

Summary

• Do not:
  – Rely on FNA alone in guiding your treatment decisions – false negatives
  – Rely on imaging alone in differentiating benign from malignant lesions
  – Omit neck dissection with isolated parotid metastases for cutaneous SCC in most patients