Update on Salivary Gland Tumors: Morphology & Molecular Profiling

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Objectives

• Review molecular profile of translocation-associated salivary gland tumors
• Identify potential pitfalls in salivary gland cytology
• Discuss recently described entities
• Discuss optimal specimen collection for ancillary studies
Translocation-associated Salivary Gland Tumors

- Adenoid Cystic Carcinoma: MYB-NFIB
- Mucoepidermoid Carcinoma: CRTC1-MAML2
- Pleomorphic adenoma: PLAG1 & HMGA2
- Hyalinizing Clear Cell Carcinoma: EWSR1-ATF1
- Mammary Analog Secretory Carcinoma: ETV6-NTRK3

Stenman et al. Oral Oncol 2014; 50:683-690
Adenoid Cystic Carcinoma: MYB FISH

Positive

Negative

Adenoid Cystic Carcinoma
differential diagnosis

- Pleomorphic adenoma
- Basal cell adenoma
- Polymorphous low grade adenocarcinoma
- Cribriform adenocarcinoma of tongue (CAT)
Mucoepidermoid Carcinoma: MAML2 FISH

Mucoepidermoid Carcinoma differential diagnosis

- Mucocele
- Chronic sialadenitis
- Pleomorphic adenoma
- Warthin tumor
- Squamous cell carcinoma
Pleomorphic Adenoma

differential diagnosis

- Mucoepidermoid carcinoma
- Adenoid cystic carcinoma
- Carcinoma ex pleomorphic adenoma
- Pilomatrixoma
- Chordoma

Mammary Analog Secretory Carcinoma (MASC): \(dDx\)

- Acinic cell carcinoma
- Mucoepidermoid carcinoma
Clear Cell Tumors
differential diagnosis

• Hyalinizing clear cell carcinoma
• Clear cell variants:
  – Mucoepidermoid carcinoma
  – Acinic cell carcinoma
  – Myoepithelial carcinoma
  – Epithelial-myoepithelial carcinoma
  – Polymorphous low grade adenocarcinoma

Immunostains on Cytologic Material

• Formalin-fixed, paraffin-embedded cell blocks
  – Best for performing immunostains
  – Mirrors standard histology material
  – Can be used for cytogenetics & molecular

• Direct smears, cytospin, ThinPrep®:
  – High background and non-specific staining due to protein-rich fluid
  – Cell clusters may lead to false positive due to trapping of stain

Fetsch Diagn Cytopathol 2002
Preparation of Cell Blocks

• **Histogel™ (Thermo Scientific)**
  – Similar to agarose gel
  – Specimen can be formalin fixed or viscous

• **Fibrin clot**
  – Uses thromboplastin and plasma
  – Specimen cannot be formalin fixed or contain bile

• **Collodion bags**
  (https://www.youtube.com/watch?v=nfR17d5-bol)