

WSC 2019-2020 Conference 21

Case 1. Tissue from a cat.

**MICROSCOPIC DESCRIPTION:** Oral mucosa: Expanding the submucosa and extending to the overlying ulcerated mucosal epithelium is an unencapsulated, well-demarcated, expansile, moderately cellular neoplasm **(1 pt)** composed of broad cords **(1 pt)** and islands of neoplastic odontogenic **(1 pt)** epithelium. Odontogenic epithelium ranges from cuboidal to columnar **(1 pt)** (rarely spindled) cells which palisade along a moderate fibrovascular stroma **(1 pt)**. Neoplastic epithelial cells have distinct cell borders, and a moderate amount of basophilic fibrillar cytoplasm **(1 pt)**. Cells have a pale, oval to elongate, basilar nucleus, with finely stippled chromatin, and 1-2 distinct nucleoli **(1 pt)**. Mitotic figures are rare **(1 pt)**. Neoplastic cells often surround variably sized islands of eosinophilic matrix **(1pt)** (dental hard substance or cemento-osseous matrix, **1 pt)** which is often mineralized **(1 pt)** in a concentric fashion (Liesegang rings). Diffusely throughout the neoplasm, neoplastic cells are separated, surrounded and often compressed by a dense homogenous waxy material **(1 pt)** (amyloid) **(2 pt)**, which is often bordered by epithelioid or multinucleated foreign body macrophages. There are multifocal areas of dropout throughout the neoplasm which often contain hemorrhage, and hemorrhage within the stroma which contains numerous siderophages. **(1 pt)**.

**MORPHOLOGIC DIAGNOSIS:** Oral mucosa: Amyloid-producing odontogenic tumor (amyloid producing ameloblastoma and calcifying epithelial odontogenic tumor also OK for full credit). **(5pt)**

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Case 2. Tissue from a rabbit.

**MICROSCOPIC DESCRIPTION:** Gingiva and alveolar bone: Expanding and multifocally effacing the submucosal connective and alveolar bone tissue is a poorly demarcated, unencapsulated, infiltrative, moderately cellular, multilobular neoplasm **(2pt.)** composed of disorganized islands and trabeculae **(1pt.)** of epithelial cells **(1pt.)** surrounded by a dense scirrhous response **(1pt)**. Neoplastic epithelial cells have random keratinization **(1 pt)**, and are generally polygonal with distinct margins and a moderate amount of eosinophilic cytoplasm. Less differentiated areas of the neoplasm are composed of large cysts **(1pt)** ranging up to 6mm which are lined by squamous epithelium showing normal maturation and a central cyst lumen containing desquamated epithelial cells, necrotic debris, and variable amounts of hemorrhage. **(1pt)** Neoplastic cells around the periphery occasionally palisade **(1pt)** and have antibasilar nuclei (odontogenic features; **1 pt**). There is active remodeling of bone adjacent to the neoplasm, with extensive proliferation of woven bone **(1pt)** containing numerous osteoblasts incorporated within the matrix and numerous osteoclasts within Howship's lacunae. In other areas, there are small fragments of resorbed bone **(1pt)** which are devoid of lining osteoblasts and which contain numerous reversal lines. At the edge of the section, developing teeth **(1pt)** are misshapen **(1pt)** characterized by irregular formation of dental germ (enamel organ, dental papilla etc.) **(1 pt)** and a haphazardly organized aggregate of dental hard substance **(1pt)**, including irregularly formed dentin tubules with cementum.

**MORPHOLOGIC DIAGNOSIS:** Gingiva and alveolar bone: Carcinoma **(2pt)** with odontodysplasia **(2pt)**.

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Case 3. Tissue from a red-tailed boa.

**MICROSCOPIC DESCRIPTION:** Presumptive alveolar bone: Expanding and multifocally effacing the submucosal connective and alveolar bone tissue is a poorly demarcated, unencapsulated, infiltrative, moderately cellular, multilobular neoplasm **(2pt.)** composed of disorganized islands and trabeculae **(1pt.)** of odontogenic epithelium **(1pt.)** attempting to recapitulate teeth (prototeeth or denticles)**(1pt.)** on a moderate fibrovascular stroma **(1pt.)**. Focally clustered at one edge of the are well formed denticles, characterized by a prominent layer of columnar **(1pt.)** cells with oval nuclei and a moderate amount homogenous eosinophilic cytoplasm (ameloblasts or odontogenic epithelium) **(2pt)** which palisade along a basement membrane, and abut a layer of brightly eosinophilic tubular dentin. On the other side of the ameloblasts are loosely arranged stellate to spindled cells recapitulating stellate reticulum. On the opposite side of the dentin from the ameloblasts are smaller palisading columnar cells with basilar nuclei which are more tightly packed (odontoblasts.) The dentin and odontoblasts enclose a loose arrangement of spindle cells with numerous congested vessels, which recapitulates the dental pulp **(1pt)** (odontogenic ectomesenchyme, ectomesenchyme, or pulp ectomesenchyme). Elsewhere in the neoplasm, less differentiated areas of the neoplasm contain islands and serpentine arrays of odontogenic epithelium which contain varying quantities of ameloblasts, dentin, and odontoblasts, but which lack induction of surrounding mesenchyme. At the periphery of the neoplasm, subjacent to the mucosa, there are nests of ameloblastic epithelium which lacks production of any matrix. **(1pt)** The stroma throughout the neoplasm is composed of loosely arranged collagen which contains numerous fibroblasts and scattered low numbers of heterophils and histiocytes. There is active remodeling of bone adjacent to the neoplasm, with predominance of bone resorption and small areas of woven bone production.

**MORPHOLOGIC DIAGNOSIS:** Gingiva and alveolar bone: Compound odontoma (complex odontoma OK) **(5pt.)**

O/C - **(1pt.)**

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Case 4. Tissue from a vole.

MICROSCOPIC DESCRIPTION: Sagittal section of skull. Within the maxilla **(1pt.)**, there is marked elongation of the reserve crown **(2pt)**, which has effaced large portions of the maxilla **(1pt.)**. These teeth have minimally erupted (not evident in some sections) **(1pt.)**. The molar reserve crowns and apices have traversed the most dorsal aspect of the maxilla **(1pt.)** and are protruding into the maxillary sinus **(3pt.)**, compressing the turbinates upward **(3pt.)** and compressing if not invading the calvarium **(2 pt.)** the dorsal skull and brain, excepting the olfactory lobes has been removed. There is mild to moderate compression of the intercuspal loops. The edges of the dentin are irregular **(1pt.)**, and mandibular bone between teeth is reduced in thickness with numerous reversal lines. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Head, sagittal section, cheek teeth: Hyperplasia (Dysplasia OK) **(1pt.)**, diffuse, moderate, with molar apical elongation **(1pt.)**, mild intercuspal loop compression, alveolar bone remodeling, and penetration of the maxillary sinus and calvarium **(1pt.)**.

O/C: **(1pt.)**