* DEMONSTRATE VARYING INDUCTIVE INTERACTIONS BETWEEN ODONTOGENIC EPITHELIUM AND ECTOMESENCHYME

–“Induction”: epithelial component induces the ectomesenchyme to produce dentin

* TUMORS ARE BENIGN; VARYING AGGRESSIVENESS; SOME HAVE MALIGNANT COUNTERPARTS
* Classification
  + **TUMORS OF ODONTOGENIC EP W/OUT ECTOMESENCHYME**
    - **AMELOBLASTOMA**
    - **CALCIFYING EPITHELIAL ODONTOGENIC TUMOR (CEOT)**
    - (SQUAMOUS ODONTOGENIC TUMOR)
    - (CLEAR CELL ODONTOGENIC TUMOR)
  + **TUMORS OF ODONTOGENIC EP & ECTOMESENCHYME W/ OR W/OUT DENTAL HARD TISSUE FORMATION (MIXED)**
    - **AMELOBLASTIC FIBROMA**
    - **AMELOBLASTIC FIBRO-ODONTOMA**
    - **ADENOMATOID ODONTOGENIC TUMOR (AOT)**
    - **ODONTOMA: COMPLEX or COMPOUND**
    - (ODONTOAMELOBLASTOMA)
  + **TUMORS OF ODONTOGENIC ECTOMESENCHYME W/ OR W/OUT INCLUDED ODONTOGENIC EP**
    - **MYXOMA**
    - **CEMENTOBLASTOMA**
    - (ODONTOGENIC FIBROMA)

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|  | **TUMORS OF ODONTOGENIC EP W/OUT ECTOMESENCHYME: benign, aggressive** | | | | | |
|  | **AMELOBLASTOMA** | | | | | |
|  | - **2nd MOST COMMON ODONTOGENIC TUMOR**  - ETIOL: ODONTOGENIC EP  - CELL Remnants (RESTS) OF ENAMEL ORGAN  - DEVELOPING ENAMEL ORGAN  - EP LINING OF AN ODONTOGENIC CYST  - BASAL CELLS OF ORAL MUCOSA  - SLOW GROWING, LOCALLY INVASIVE  - **BENIGN** COURSE, **AGGRESSIVE** | | | - HIST:  - Solid tumor w/ islands of EP  - Resemble enamel organ set w/ fibrous CT  - Islands:  - Peripheral: tall columnar cells (ameloblast-like),  nuclei all aligned & polarized away from basement memb.  - Center: loosely arranged angular cells (stellate reticulum-like)  - Cyst formation: often w/in EP Islands | | |
|  | **Solid/Multicystic Ameloblastoma (86%)** | **Unicystic**  **Ameloblastoma (13%)** | **Peripheral/Extraosseous Ameloblastoma (1%)** | | **Malignant Ameloblastoma (<1%)** | **Ameloblastic Carcinoma (<1%)** |
| **Clinical Feature** | - 85% MAND Molar ASCENDING RAMUS AREA (esp. 3rd M)  - 15% MAXI POSTERIOR  - 30 – 70 y.o.; RARE <10 y.o  - M = F  - OFTEN ASx  - PAINLESS SWELLING  - EXPANSION OF JAWS  (B-L cortical expansion)  - INTRAOSSEOUS  - PARESTHESIA UNCOMMON | - > 90% MAND POSTERIOR  - YOUNGER Pts: 50 % 20’s age  - OFTEN ASX  - PAINLESS SWELLING  - 10-15 % OF ALL INTRAOSSEOUS  - ? DE NOVO NEOPLASM OR NEOPLASTIC TRANSFORM OF CYST EPITHELIUM | - MAND > MAXI  - MIDDLE AGED  - PAINLESS  - NON-ULCERATED SESSILE/PEDUNCULATED POST GINGIVAL/ALVEOLAR MUCOSA LESION  - USUALLY < 1.5 CM  - SUPERFICIAL EROSION BONE | | - WIDE AGE RANGE: ave 30 y.o  - METASTASES NOTED FROM 1 -30 yrs AFTER INITIAL TX FOR AMELOBLASTOMA  - IN 1/3 METASTASES NOT EVIDENT UNTIL 10 yrs AFTER Tx OF 1O LESION  - LUNGS, CERVICAL LYMPH NODES | - RARE  - MORE AGGRESSIVE  - ILL DEFINED MARGINS  - CORTICAL DESTRUCTION |
| **Radio** | - MULTILOCULAR RADOLUCENCY  - LARGE: “SOAP BUBBLE”  - SMALL: “HONEYCOMB”  - ROOT RESORPTION COMMON  - RARE UNILOCULAR  🡪 IRREGULAR SCALLOPED MARGIN | - CIRCUMSCRIBED RADIOLUCENCY  (“CYST–LIKE”, OFTEN IN SETTING OF A DENTIGEROUS CYST) |  | | - SAME AS TYPICAL AMELOBLASTOMA  1. SOLID/MULTICYST(86%)  2. UNICYSTIC (13%)  3. PERIPHERAL (1%) |  |
| **Histology** | - OFTEN CYSTIC + SOLID FEATURES  - MULTIPLE HISTO PATTERNS  (FOLLICUALR, PLEXIFORM, ACANTHOMATOUS, GRANULAR CELL, DESMOPLASTIC, BASAL CELL, COMBINATIONS IN LARGER TUMORS) | - LUMINAL: CONFINED TO LUMINAL SURFACE OF CYST; AMELOBLASTIC EP. LINING  - INTRALUMINAL: NODULES OF AMELOBLASTOMA PROJECT INTO LUMEN FROM LINING  - MURAL: FIBROUS WALL INFILTRATED BY SOLID AMELOBLASTOMA | - SAME AS SOLID AMELOBLASTOMA (PLEXIFORM OR FOLLICUALR)  - 50% CONTIGUOUS W/ SURFACE EP  **SAME HISTOLOGY AS SOLID (PLEXIFORM OR FOLLICUALR) AMELOBLASTOMA**  –**50% CONTIGUOUS WITH SURFACE EPITHELIUM** | | - SAME AS TYPICAL AMELOBLASTOMA IN 1O TUMOR AND METASTATIC DEPOSITS | - CYTOLOGIC Feats OF MALIGNANCY IN 1O TUMOR  - INVADING BONE  - MITOTIC CELLS |
| **Tx/Prognosis** | - OPTIMAL TX CONTROVERSIAL: ENUCLEATION/CURETTAGE TO EN BLOC RESECTION  - AMELOBLASTOMA INFILTRATES btwn INTACT CANCELLOUS BONE at PERIPHERY 🡪PROGRESSIVE SPREAD TO VITAL STRUCTURES  - DIFFICULT TO OBTAIN MARGINS  - 55 - 90% RECURRENCE  - MARGINAL RESECTION MOST COMMON TX 🡪 15 % RECURRENCE  - 1 cm MARGIN PAST X-RAY LIMITS  - RECURRENCE MANY YRS POST TX | - LUMINAL: ENUCLEATION  - INTRALUMINAL: ENUCLEATION PROBABLY ADEQUATE, LONG TERM FOLLOW-UP  - MURAL: EXTENSION +/-RESECTION  - 10 -20 % RECURRENCE W/ ENUCLEATION/CURETTAGE | -LOCAL SURGICAL EXCISION  - 25% LOCAL RECURRENCE | | - POOR PROGNOSIS  - FEW CASES | - POOR PROGNOSIS  - EXTENSION INTO ADJ SOFT TISSUE |

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|  | | **Calcifying Epithelial Odontogenic Tumor (CEOT) = “Pindborg Tumor”** | | | |
| **Def.** | | - UNCOMMON; <1% OF ALL ODONTOGENIC TUMORS | | | |
| **Clinic** | | - 75% POSTERIOR MANDIBLE (esp IMPACTED 3RD MOLAR)  - 30 -50 y.o.  - PAINLESS, SLOW GROWING SWELLING  - FEW PERIPHERAL CASES REPORTED -ANTERIOR GINGIVAL MASS | | | |
| **Radio** | | - MULTILOCULAR RADIOLUCENCY  - **SCALLOPED MARGINS**  - OFTEN CONTAINS CALCIFIED STRUCTURES  - CALCIFICATIONS PROMINENT AROUND CROWN | | | |
| **Hist** | | - TUMOR CELLS BEAR MORPHOLOGIC RESEMBLANCE TO STRATUM INTERMEDIUM | | | |
| **Tx/Pr** | | - LESS AGGRESSIVE THAN AMELOBLASTOMA  - CONSERVATIVE LOCAL RESECTION  - 15% RECURRENCE  - GOOD PROGNOSIS | | | |
|  | **TUMORS OF ODONTOGENIC EP & ECTOMESENCHYME**  **W/ OR W/OUT DENTAL HARD TISSUE FORMATION (MIXED) : benign, indolent, young pts** | | | | | |
|  | **Ameloblastic Fibroma** | | **Odontoma** | **Ameloblastic**  **Fibro-Odontoma** | **Adenomatoid Odontogenic Tumor (AOT)** | |
| **Definition** | - Common | | - MOST COMMON ODONTOGENIC TUMOR (PREVALENCE EXCEEDS THAT OF ALL OTHER ODONTOGENIC TUMORS COMBINED!)  - TUMORS? HAMARTOMAS?  - CHIEFLY COMPOSED OF ENAMEL & DENTIN  - MAY SEE ODONTOGENIC EP & MESENCHYME  - **COMPOUND**-MULTIPLE TOOTH-LIKE STRUCTURES  - **COMPLEX** -CONGLOMERATE MASS OF ENAMEL AND DENTIN | - GENERAL FEATURES OF AMELOBLASTIC FIBROMA W/ ENAMEL AND DENTIN | - 3 -7 % OF ALL ODONTOGENIC TUMORS  - TUMOR CELLS DERIVED FROM ENAMEL ORGAN EP  - MAY PRODUCE DENTINOID MATERIAL 🡪INDUCTIVE EFFECT ON ODONTOGENIC ECTOMESENCHYME | |
| **Clinical Feat.** | - 70% POSTERIOR MANDIBLE  - KIDS (<20 y.o.)  - SMALL LESIONS ASx  🡪 OFTEN AN INCIDENTAL FINDING ON X-RAY FOR UNERUPTED TOOTH  - CAN BE LARGE & CAUSE A PAINLESS SWELLING | | - MAXILLA > MANDIBLE  - <20 y.o.; MEAN AGE 14 y.o.  - OFTEN ASx 🡪 INCIDENTAL FINDING ON RADIOGRAPH FOR UNERUPTED TOOTH  - USUALLY SMALL W/ NO EXPANSION  - **COMPOUND** - ANTERIOR MAXILLA  - **COMPLEX** - POSTERIOR JAWS | -MAXILLA = MANDIBLE  - CHILDREN: AVE 10 y.o.  - OFTEN ASx 🡪 INCIDENTAL FINDING ON RADIOGRAPH FOR UNERUPTED TOOTH  - CAN BE LARGE AND CAUSE SIGNIFICANT DEFORMITY | - MAXILLA:MANDIBLE= 2:1  - ANTERIOR(K9)  - 2/3 OCCUR btwn 10-19 y.o  - UNCOMMON OVER 30 y.o  - FEMALES:MALES= 2:1  - SMALL (<3 cm), ASx 🡪 INCIDENTAL FINDING ON RADIOGRAPH FOR UNERUPTED TOOTH  - RARE PERIPHERAL, EXTRAOSSEOUS FORMS PRESENT AS GINGIVAL SWELLING, USU MAXILLA | |
| **Radiographic** | - WELL-DEFINED  - UNILOCULAR OR MULTILOCULAR RADIOLUCENCY  - 50% ASSOC. W/ UNERUPTED TOOTH (IN DENTIGEROUS CYST SETTING) | | - **COMPOUND**: TOOTH-LIKE STRUCTURES OR MASS W/ RADIOLUCENT RIM  - **COMPLEX**: CALCIFIED MASS W/ RADIODENSITY OF TOOTH STRUCTURE W/ A RADIOLUCENT RIM  - ASSOC. W/ UNERUPTED TOOTH  **- RADIOLOGY USUALLY DIAGNOSTIC ESP. COMPOUND** | - WELL CIRCUMSCRIBED  - UNILOCULAR (OR RARELY MULTILOCULAR)  - RADIOLUCENCY W/ VARIABLE AMOUNT OF CALCIFIED MATERIAL SIMILAR TO TOOTH STRUCTURE  - MULTIPLE OR SINGLE RADIOOPACITIES  - UNERUPTED TOOTH USUALY AT MARIGN OF LESION OR INCLUDED WITHIN | - 75% CIRCUMSCRIBED OCCUR AS RADIOLUCENCY INVOLVING CROWN OF UNERUPTED TOOTH (DENTIGEROUS CYST SETTING) OR EXTEND APICALLY BEYOND THE CROWN, UNLIKE A DENTIGEROUS CYST  - MUCH LESS COMMONLY CAN PRESENT AS A LESION NOT RELATED TO A TOOTH (OFTEN INTERRADICULAR)  - MAY CONTAIN “**SNOWFLAKE**” CALCIFICATIONS | |
| **Tx/Prog** | - 20% RECURRENCE W/ LOCAL EXCISON  - 50% AMELOBLASTIC FIBROSARCOMAS ARISE AS A RECURRENCE OF AMELOBLASTIC FIBROMA | | – LOCAL EXCISION  – EXCELLENT PROGNOSIS | - CONSERVATIVE CURETTAGE  - MINIMAL RECURRENCE  - **VERY RARE** RECURRENCE AS “AMELOBLASTIC FIBROSARCOMA” | - ENUCLEATION USUALLY CURATIVE  - VERY SELDOM AGGRESSIVE BEHAVIOR OR RECURRENCE | |

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|  | **TUMORS OF ODONTOGENIC ECTOMESENCHYME W/ OR W/OUT INCLUDED ODONTOGENIC EP** | |
|  | **Myxoma** | **Cementoblastoma** |
| **Def** | - CLOSE HISTOLOGIC RESEMBLANCE TO PULP OF DEVELOPING TOOTH | - CLOSELY RELATED TO OSTEOBLASTOMA |
| **Clinic.** | - SLIGHTLY MANDIBLE > MAXILLA  - AVE 25-30 y.o.  - PAINLESS EXPANSION | - MAND Permanent 1st MOLAR (50%), rarely deciduous tooth  - < 25 y.o.  - SLOWLY GROWING  - +/-PAIN and swelling (2/3 pts) |
| **Radio.** | - UNI OR MULTILOCULAR RADIOLUCENCY  - MAY CONTAIN THIN TRABECULAE OF RESIDUAL BONE  -“**SOAP BUBBLE**” PATTERN (LIKE AMELOBLASTOMAS) | - DISTINCTIVE RADIOLOGY  - CALCIFIED MASS INTIMATELY ASSOC. W/ TOOTH APEX  - OUTLINE OF ROOT OBSCURED BY FUSION OF TUMOR  - THIN UNIFORM RADIOLUCENT RIM |
| **Tx** | - 25% RECURRENCE WITH CURETTAGE  -RESECTION | - SURGICAL EXT OF TOOTH AND ATTACHED MASS  - ROOT AMPUTATION AND REMOVAL  - EXCELLENT PROGNOSIS |