* 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 AMELOBLASTOMA1. 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 |