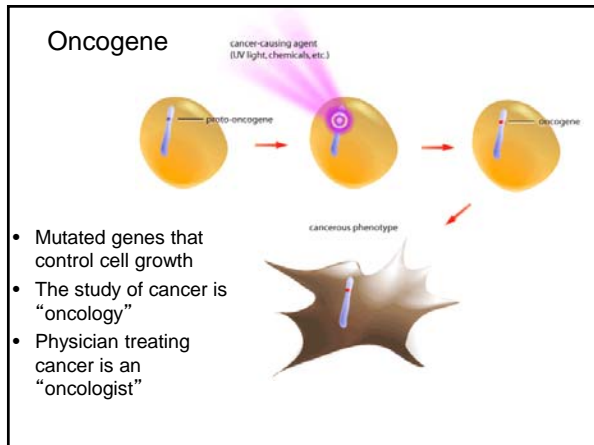
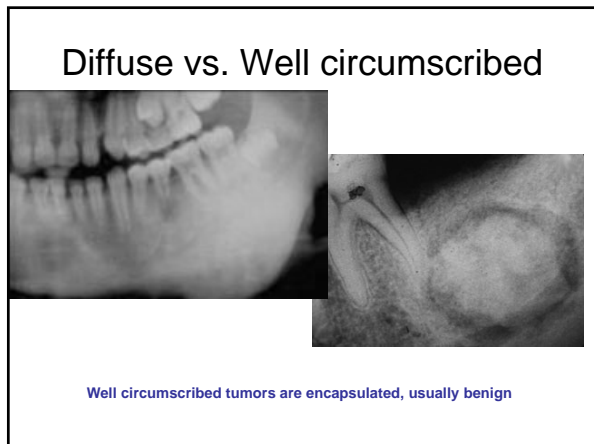


- ### Facts
- **Growths** are usually considered benign
 - **Tumors** are usually considered **malignant**
 - **Malignant** tumors **metastasize** to other parts of the body
 - **hyperplastic** tissue is excessive normal growth
 - **Neoplasms** are excessive abnormal growth
 - **Neoplasia** new growth
 - **Cystic** closed sac



Cancer Cell Description

- Pleomorphic (many sizes)
- Hyperchromatic (dark nuclei)
- Abnormal nuclei to cytoplasm ratio
- Abnormal mitosis



- ### More Facts
- -oma means growth
 - By itself it usually means benign ie.
 - "sarcoma" means malignant connective tissue
 - "Carcinoma" means malignant epithelium

papilloma

- Benign lesion of epithelial origin
- Usually pedunculated
- Treatment is excision



leukoplakia

- Areas of hyperkeratinization
- Caused by trauma, irritation
- Cells are "dysplastic" or abnormal
- Can become "metaplastic" or precancerous but reversible
- Cells can become "anaplastic" or cancerous



Erythroplakia

- A form of epithelial dysplasia
- May be speckled (red and white)
- Rarer than leukoplakia but more serious, more often squamous cell carcinoma



Epithelial Dysplasia

- Disordered and premalignant growth
- Frequently precedes squamous cell carcinoma
- May revert back to normal if stimulus (tobacco smoking) is removed
- May present as Erythematous lesion or leukoplakia
- Differs from squamous cell carcinoma b/c no invasion of abnormal epith cells through basement membrane

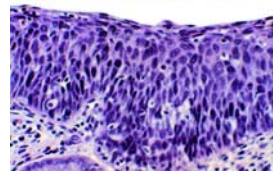
Solar (actinic) Cheilitis

- Dysplastic epithelium caused by excessive sun exposure
- May become carcinoma if exposure continues



Carcinoma in situ

- A carcinoma that has not penetrated the basement membrane
- Verrucous carcinoma is an example



Verrucous Carcinoma

- A form of squamous cell carcinoma
- Locally destructive but usually does not metastasize
- Prognosis good



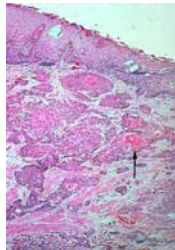
Squamous cell carcinoma

- 90% of all oral cavity cancers
- 5 year survival rate varies by location
- Can be ulcerative, exophytic
- Occurs intraorally on floor of mouth, borders of tongue, soft palate
- Extraorally on lower lip



Squamous cell carcinoma

- Abnormal keratin forms within lesion called “keratin pearls”
- TNM staging determines severity
 - 4 stages, each with TNM
 - T=tumor size, N = node involvement, M = metastasis degree



Toluidine blue diagnostic aid

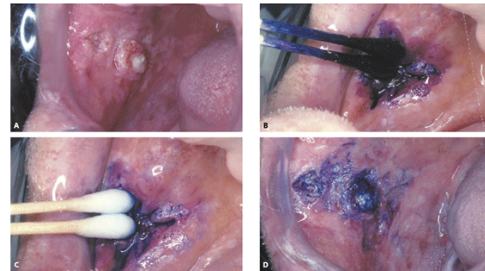
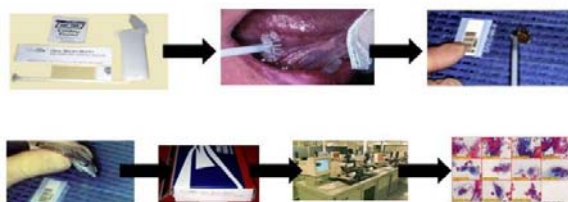


Figure 20-20 Toluidine blue staining technique: A, squamous cell carcinoma and leukoplakia, buccal mucosa; B, applying 1% aqueous toluidine blue stain; C, after water rinse, decolorize with 1% acetic acid; and D, dye retention in area of carcinoma and surrounding dysplasia.

Fig 1
Essentials of Oral Medicine, 2001-BC Decker by Silverman, Eversole and Truelove.
Permission was kindly granted by the three authors for its use in this publication.

Brush Biopsy



Copyright, 2006, CDx Laboratories, Inc. *Restricted Use.

(c) 2006, Michael A. Kahn, D.D.S.

Cytologic Smear/Brush Biopsy

- Required data includes:
 - Diagnosis
 - Appearance
 - Color
 - Ulcerated
 - Symptoms
 - Location
 - Duration of lesion
 - Size of lesion
 - Risk Factors (alcohol &/or tobacco)



Instructions for Brush Biopsy

- Tear open 1 fixative package
- Remove bar coded slide from holder
- Moisten brush with patient's saliva
- Press brush firmly against surface of lesion until pink tissue or pinpoint bleeding is observed. (Should see bend in shaft of brush before beginning rotational movement)
 - Usually 5-15 rotations
 - For white, thick lesions, 15-20 rotations
 - For ulcerated lesions, few rotations

Brush biopsy instructions continued

- Immediately following acquisition of sample, spread brush onto bar-code side of glass slide. Use rotating motion to spread lengthwise. Attempt to transfer all of acquired sample.
- Fold fixative packet and squeeze rest of contents on slide. May use other packet if insufficient amount.
- Complete test requisition form
- Allow slide to dry 15 minutes and place in slide holder
- Package biopsy in prepaid mailer and ship

OralCDx®- The Power to Prevent™

Finding dysplasia while still harmless is the key to preventing oral cancer

Dysplasia → **Cancer**

Pre-cancerous cells are contained above the basement membrane and are still harmless. Cancer cells have penetrated below the basement membrane and can now spread.

Dysplasia: Always visible, but often looks identical to common tissue variation

All of these examples were identified as dysplasia.

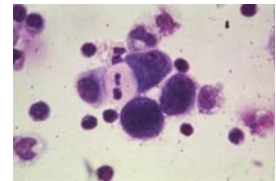
Only a lab test, like OralCDx, can tell them apart

A patented biopsy brush painlessly obtains a complete tissue sample. (Specific CDT code is widely reimbursed)

Specially trained pathologists aided by advanced computers issue a definitive lab report.

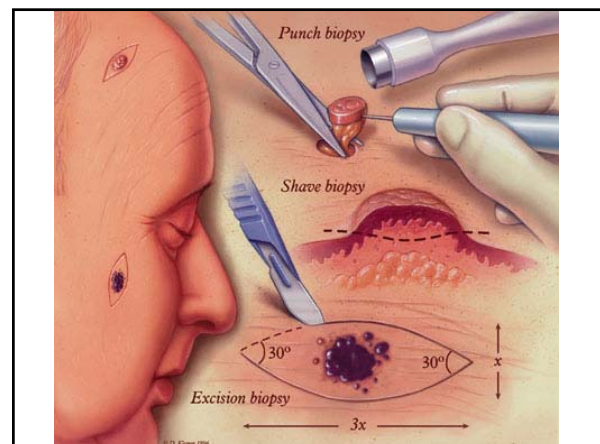
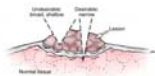
Biopsy

- Excisional biopsy if lesion is small
- Incisional biopsy if lesion is large
- Microscopic diagnostic necessary



Biopsy Options

- Fine needle biopsy (aspiration)
- Cone needle biopsy
- Incisional
- Excisional



Squamous cell carcinoma

- Treatment includes excision, radiation, chemotherapy



Radiation - osteoradionecrosis

- Radiation destroys small blood vessels, necrosing bone, requires excision



Osteoradionecrosis involving the mandible

Radiation - Radiation Caries

- Radiation destroys pulps of teeth causing abscesses
- Salivary gland function decreases
- Often teeth removed before radiation or root canals performed



Radiation - Mucositis

- Necrotic mucosa due to radiation
- Tender, bleeding, plaque buildup, can't touch
- Recommend chlorhexidine, saline rinses but no alcohol mouthwash



Mucositis affecting the buccal tissues and tongue

Radiation – other side effects

- Radiated patients often suffer from hypothyroidism
- Candida infections common – Nystatin drug of choice
- Oral hygiene stressed before radiation treatment
- Dysgeusia due to little saliva
- Trismus is common



After radiation treatment fungal infections such as candida are common, but easily resolved.

Radiation - Hyperbaric Oxygen (HBO) Therapy

- Post radiation therapy
- Oxygen under pressure forces oxygen into tissues injured by radiation
- Promotes healing, aids in antibiotic treatment of necrotic bone



Chemotherapy

- Antineoplastic drugs interfere with mitotic activity of cancer cells
- Effect all cells with rapid mitosis including skin (mucositis), hair (alopecia), bone marrow (myelosuppression, pancytopenia), GI track (nausea, diarrhea, etc)
- Cause hepatotoxicity, cardiotoxicity



Chemotherapy drugs (chemocare.com)

- Alkylating agents (cytoxan, etc) bind with DNA, inhibit growth
- Plant alkaloids (Oncovin) inhibit mitosis
- Antimetabolites (Methotrexate) block metabolites needed for cell division
- Antitumor antibiotics
- Topoisomerase inhibitors
- Miscellaneous Antineoplastics

Chemotherapy – oral side effects

- Transient xerostomia occurs
- Painful oral lesions
- Gingival bleeding
- Petechiae, ecchymosis occurs
- Candidiasis infections
- Dysgeusia, dysphagia



Chemotherapy – treatment considerations

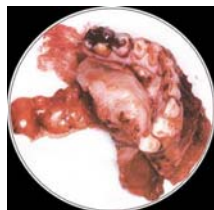
- Schedule treatment when convenient
- Antibiotic premed may be necessary
- Saliva substitutes for xerostomia
- Topical analgesics for oral lesions
- TLC



Surgery - resection

- Tumor removed together with surrounding tissue
- started as “dipper’s pouch”

[What dippers have in their future](#)



Basal Cell Carcinoma

- Origin – basal cells of epithelium
- Usually found on face above the upper lip
- Characterized by rolled borders
- Usually excised, prognosis good



Salivary gland tumors

- Benign tumors called “adenoma”
- Malignant tumors end in carcinoma (adenocarcinoma, mucoepidermoid carcinoma)



Pleomorphic adenoma

- Composed of connective tissue and epithelial cells
- Benign and encapsulated
- More common in middle aged women
- Project into underlying tissue so hard to remove
- May become malignant but rare



Other salivary gland tumors

- Monomorphic adenoma has epithelial cells only
- Warthin's tumor contains epithelium and lymph,
- Adenoid cystic carcinoma, mucoepidermoid carcinoma are malignant forms



Kaposi Sarcoma

- A malignant vascular tumor caused by human herpesvirus
- Seen more frequently in HIV patients
- Requires surgery, radiation, chemotherapy
- Often reoccur



Melanin related tumors

- Arise from melanocytes
- Benign are nevi, malignant are melanoma
- Carefully evaluate dark lesions, check for “satellite bodies”
- Melanoma is aggressive, unpredictable
- Nevi can be black or “white sponge”



Tumors of Bone

- Tori (palatal, mandibular) is normal compact bony growth, hereditary in nature
- Exostosis is bony growth on buccal aspect of maxilla or mandible



Tumors of Bone

- Osteoma is benign growth of bone
- Well circumscribed
- Seen often with Gardner's syndrome



Tumors of Bone

- Osteosarcoma is malignant growth seen more often in the mandible, may be radiolucent or -opaque
- Diffuse in appearance
- Contains compact and cancellous bone



Lipoma

- A growth of mature fat cells,
- Well defined, benign
- Treated by excision



Vascular Tumors Hemangioma/lymphangioma

- Hemangioma is a collection of blood vessels often present at birth
- Capillary = small vessels, cavernous = large vessels
- Many undergo spontaneous remission, others require surgery
- Lymphangioma is benign collection of lymph vessels
- Lymphoma is malignant tumor of lymph tissue
- Benign tumors are excised but tend to recur



Hemangioma



lymphangioma

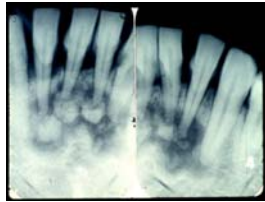
Other Tumors

- Rhabdomyosarcoma is tumor of striated muscle
- Leiomyosarcoma is tumor of smooth muscle
- Chondroma is benign cartilage tumor
- Chondrosarcoma is malignant
- Neuroma is benign tumor of nerve tissue
- Lymphoma is malignant tumor of lymph tissue

Nonneoplastic Diseases of Bone

Periapical cemento-osseous dysplasia

- Predilection in middle aged black women
- Common in anterior mandible
- Bone becomes fibrous then reossifies
- Teeth are vital



Fibrous Dysplasia

- Unknown cause
- Monostotic – single bone, usually maxilla or mandible
- Polyostotic – more than one bone, café au lait spots often present
- Painless enlargement
- Usually in children



Fibrous dysplasia

- Bone is replaced with fibrous connective tissue
- Radiographically, bone has a “ground glass” appearance
- Treatment for monostotic is recontouring, no treatment for polyostotic



Paget’s Disease

- Unknown etiology but may be slow developing virus coupled with heredity
- Usually 40 years or older
- Many times no symptoms – headache, glasses don’t fit, bigger hat size



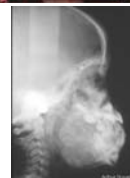
Paget’s Disease

- Increased osteoblastic and osteoclastic activity
- Bone develops a “cotton ball” appearance
- Can lead to osteosarcoma
- Limited treatment



Cherubism

- Autosomal dominant inherited trait
- Bilateral enlargement of facial bones usually mandible
- No treatment



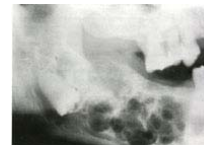
Odontogenic Tumors Ameloblastoma

- A benign tumor arising from ameloblasts
- Invasive but does not metastasize
- May arise from dentigerous or primordial cyst



ameloblastoma

- Most often in posterior mandible
- Usually multilocular (soap bubble) but can be unilocular
- Treated with excision but commonly recurs



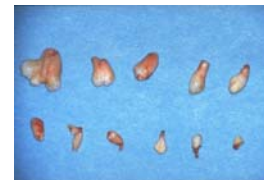
Complex odontoma

- A mixed tumor containing more than one type of tissue
- Other mixed tumor include ameloblastic fibroma
- Odontoma composed of enamel, dentin, cementum, pulp
- Most often in posterior mandible



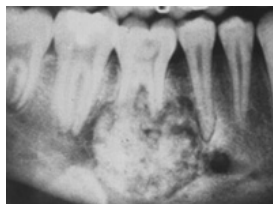
Compound Odontoma

- A tumor composed of enamel, dentin, cementum, pulp
- Most often in anterior maxilla
- Associated with unerupted or impacted tooth, usually cuspid



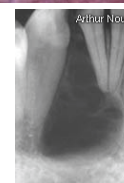
cementoblastoma

- Benign tumor on root of vital tooth
- May expand bone, found in young adults
- Proliferation of cellular cementum
- Usually excised, does not recur



Odontogenic Myxoma

- Arising from mesenchyme rather than epithelium
- Multilocular
- After excision, they reoccur 25% of time



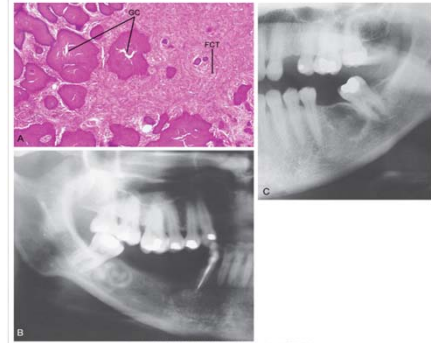
Calcifying, ossifying, cementifying tumors

- Calcifying epithelial odontogenic tumor is an ameloblastoma containing calcifications - is called a Pinborg tumor
- Fibroma can ossify or calcify, as can cyst, ie ossifying fibroma, calcifying odontogenic cyst

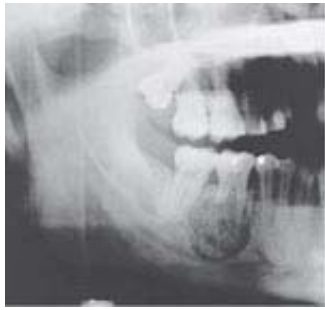


Ossifying fibroma

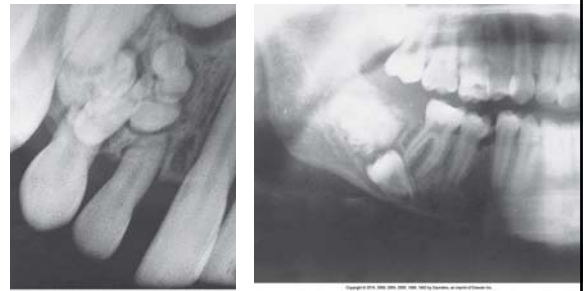
Identify



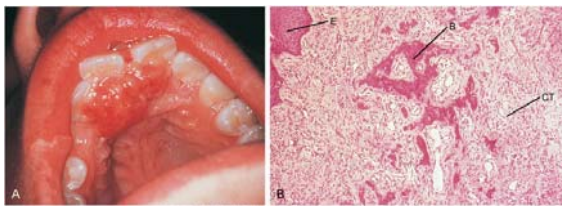
Identify



Identify



Identify



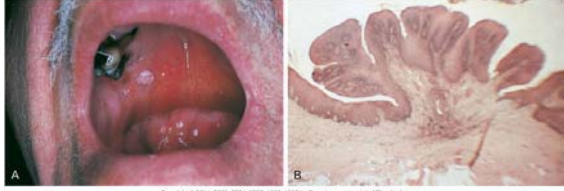
Copyright © 2014, 2008, 2004, 2000, 1999, 1992 by Elsevier, an imprint of Elsevier Inc.

Identify



Copyright © 2014, 2008, 2004, 2000, 1999, 1992 by Elsevier, an imprint of Elsevier Inc.

Identify



Identify



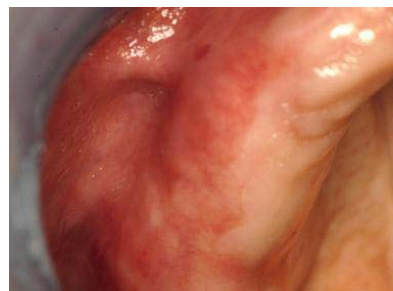
Identify



Identify



Irregular, smooth to thickened leukoplakia involves the dorsal, lateral, and dorsal surfaces of the tongue, which demonstrated no sign of dysplasia in multiple areas of incisional biopsy.



smooth, velvety clinical presentation with a homogeneous surface, without ulceration. The tissue diagnosis was squamous cell carcinoma in situ.



Heterogeneous presentation of combined red and white surface alterations are noted, with an intermingling of these changes characteristic of erythroplakia noted at the lateral aspect of the soft palate and buccal mucosal interface (arrow). The tissue diagnosis was squamous cell carcinoma, minimally invasive.

Resources

- Essentials of Oral Medicine 2001-BC Decker by Silverman, Eversole, Truelove
- CDx Laboratories, Inc
- Oral CDx Office Reference
- Chemocare.com