PERIAPICAL RADIOLUCENCY

DR. MAHSA ESFEHANI

ASSOTIATE PROFESSOR OF ORAL AND MAXILLOFACIAL MEDICINE

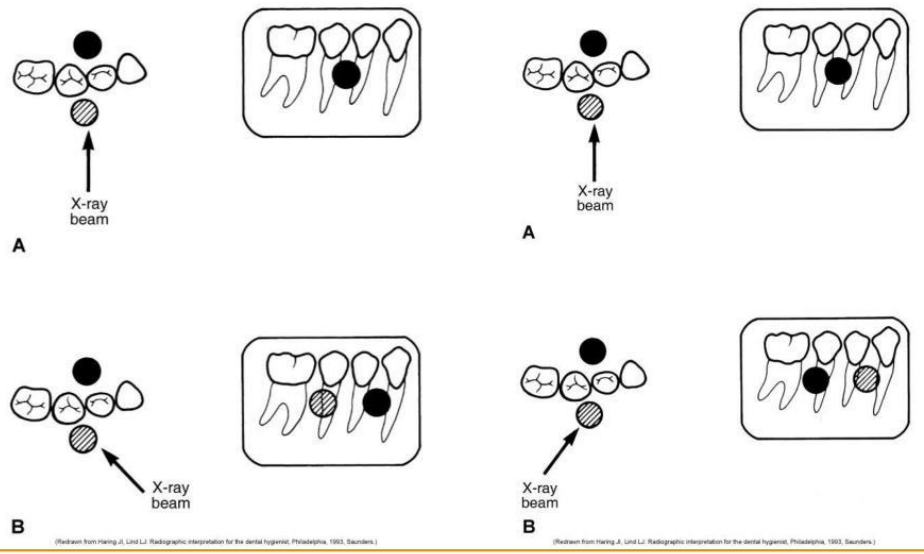
Periapical radiolucencies include the following:

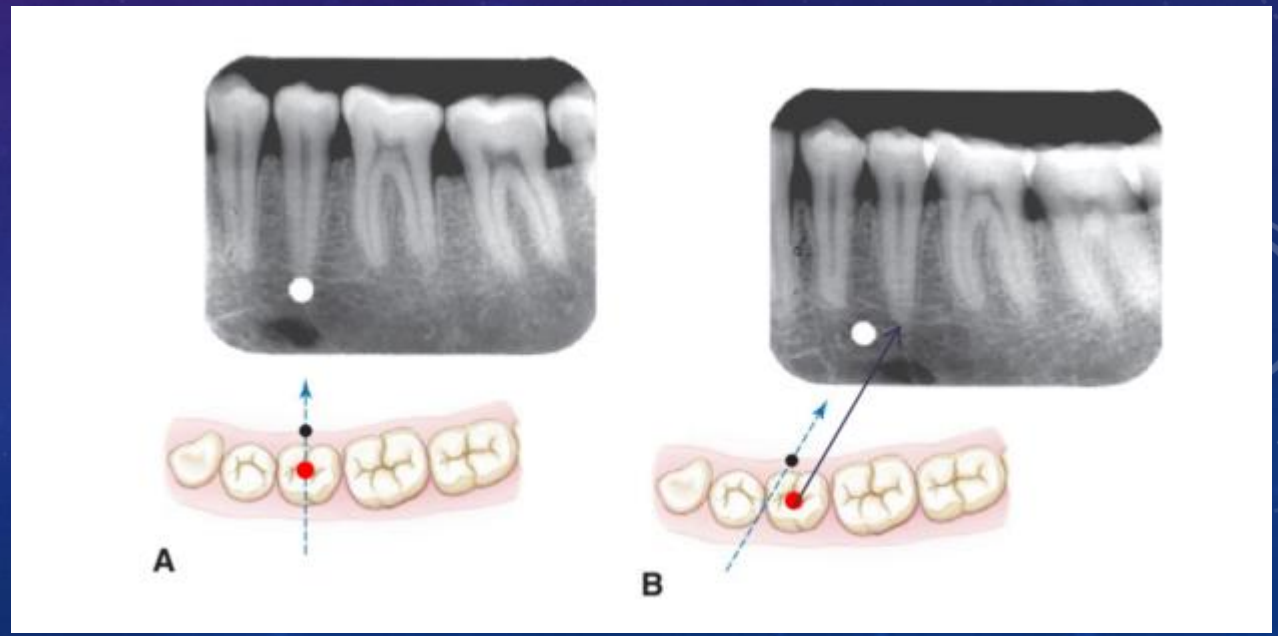
ANATOMIC PSEUDOPERIAPICAL RADIOLUCENCIES
TRUE PERIAPICAL RADIOLUCENT LESIONS
PULPOPERIAPICAL RADIOLUCENCIES
- Periapical granuloma
- Radicular cyst
- Scar
- Chronic and acute dentoalveolar abscesses
- Surgical defect
- Osteomyelitis
- Pulpoperiapical disease and hyperplasia of maxillary sinus lining

DENTIGEROUS CYST
PERIAPICAL CEMENTOOSSEOUS DYSPLASIA (PERIAPICAL CEMENTOMA)
PERIODONTAL DISEASE
TRAUMATIC BONE CYST
NONRADICULAR CYSTS
MALIGNANT TUMORS
RARITIES
- Ameloblastic variants
- Ameloblastoma
- Aneurysmal bone cyst
- Benign nonodontogenic tumors
- Buccal cyst
- Cementifying and ossifying fibromas
- Cementoblastoma—early stage
- Central odontogenic fibroma—WHO type[1,2]
- Cholesterol granuloma[3]
- Cytomegaloviral lesions in human immunodeficiency virus disease
- Gaucher's disease
- Giant cell granuloma
- Giant cell lesion of hyperparathyroidism
- Hyaline ring granuloma[4]
- Juvenile ossifying fibroma[5]
- Langerhans' cell disease (idiopathic histiocytosis)
- Leukemia
- Lingual salivary gland depression (anterior)
- Mandibular infected buccal cyst
- Myofibroma
- Odontoma—early stage
- Osteoblastoma—early stage
- Paradental cyst
- Pseudotumor of hemophilia
- Solitary and multiple myeloma

Same * Lingual

Opposite * Buccal





RADIOLUCENT // ANATOMICS// PERIAPCAL:

Fig. 16-2. **A,** Dental papillae (radiolucencies) at the apices of the second molar. **B,** Mental foramen in the periapex of the second molar.

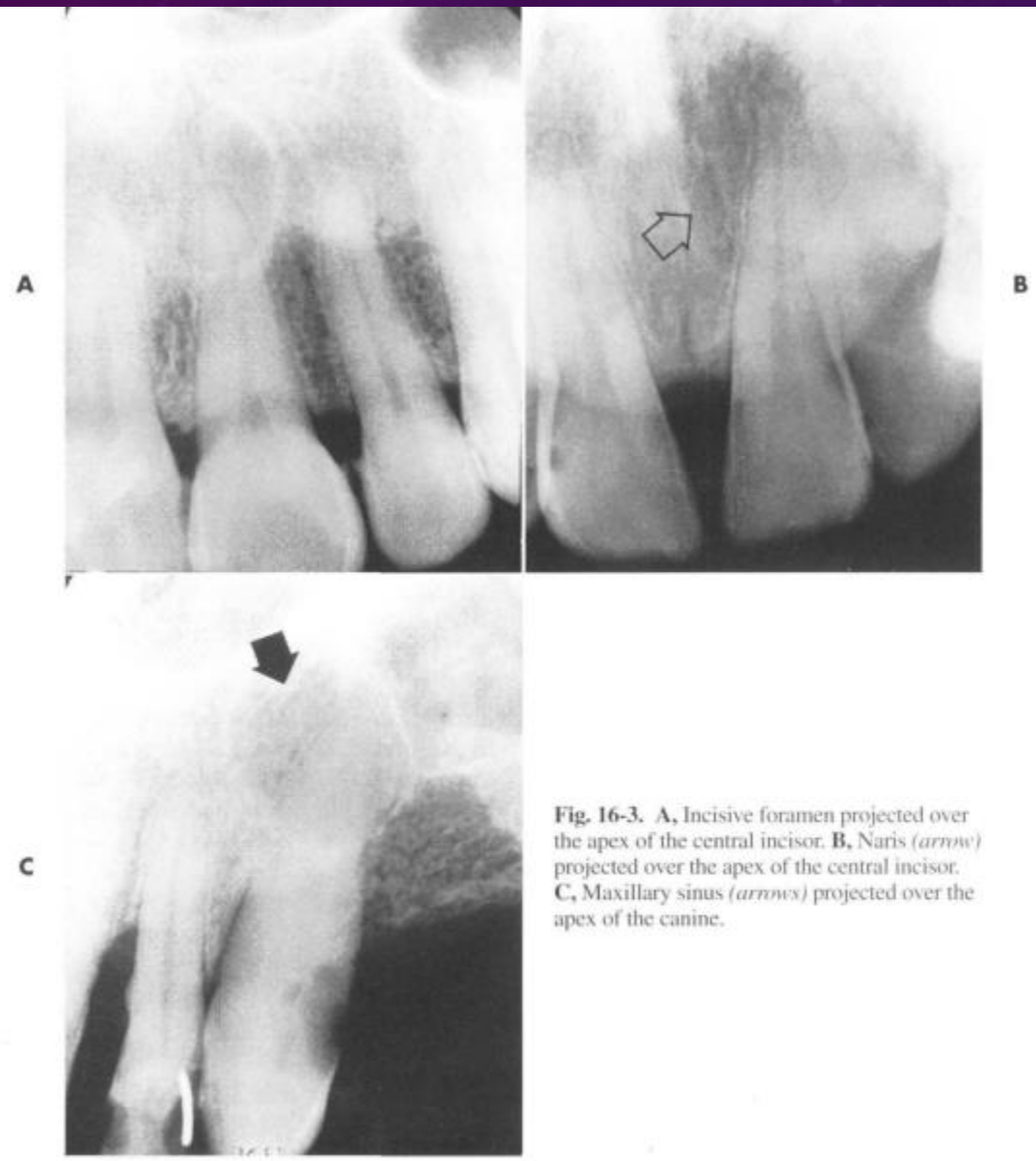


Fig. 16-3. **A,** Incisive foramen projected over the apex of the central incisor. **B,** Naris *(arrow)* projected over the apex of the central incisor. **C,** Maxillary sinus *(arrows)* projected over the apex of the canine.

PERIAPICAL RADIOLUCENT LESIONS

Pulpoperiapical Radiolucencies

The seven distinct periapical radiolucent lesions that are sequelae of pulpitis follow:

1. Periapical granuloma
2. Radicular cyst
3. Scar
4. Abscess
5. Surgical defect
6. Osteomyelitis
7. Hyperplasia of sinus mucosa

PERIAPICAL GRANULOMA

FEATURES:

DIFFERENTIAL DIAGNOSIS:

MANAGEMENT:

FEATURES SUGGESTIVE OF NONVITAL PULPS

- History of trauma
- History of painful pulpitis
- Dark hue of crown
- Reddish hue of crown
- Crown that is more opaque than its mate
- Large cavity
- Large restoration
- Fracture of crown
- Draining sinus tract
- Dens in dente (see Fig. 16-5)
- Fracture of root
- Absence of root canal shadow
- Open apex when mates are closed

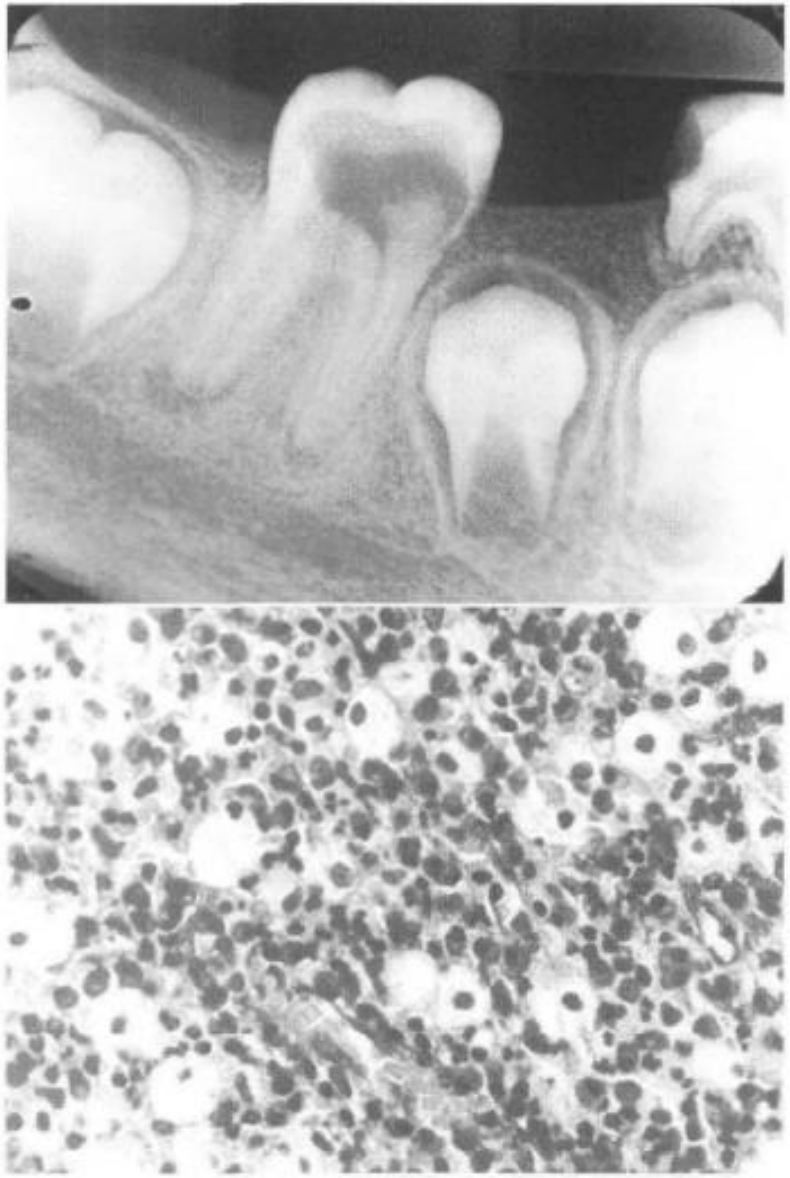
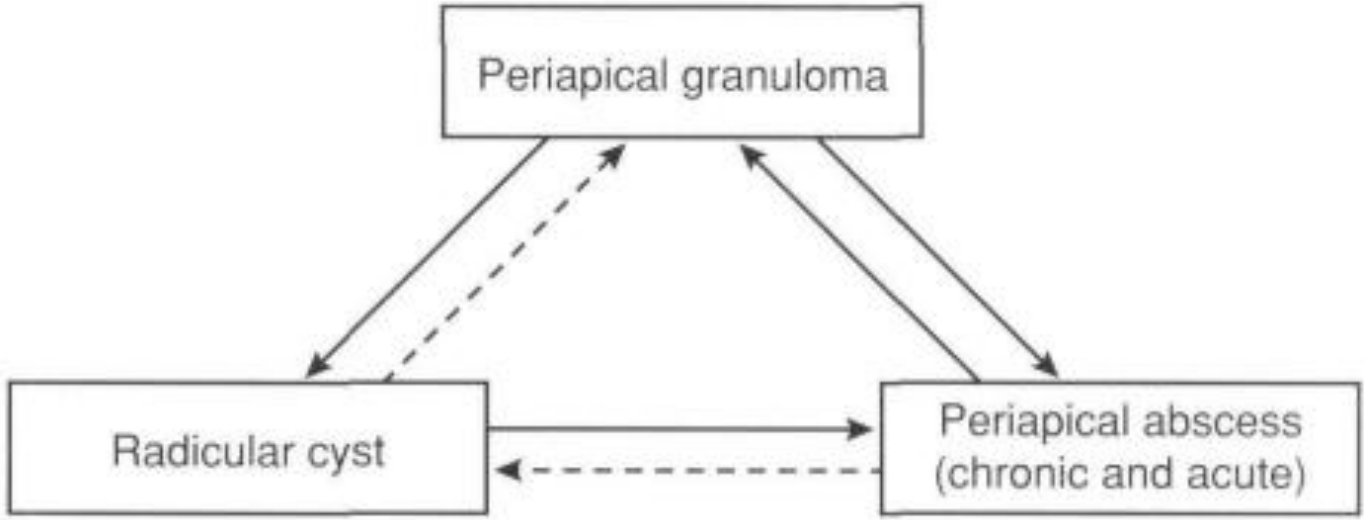
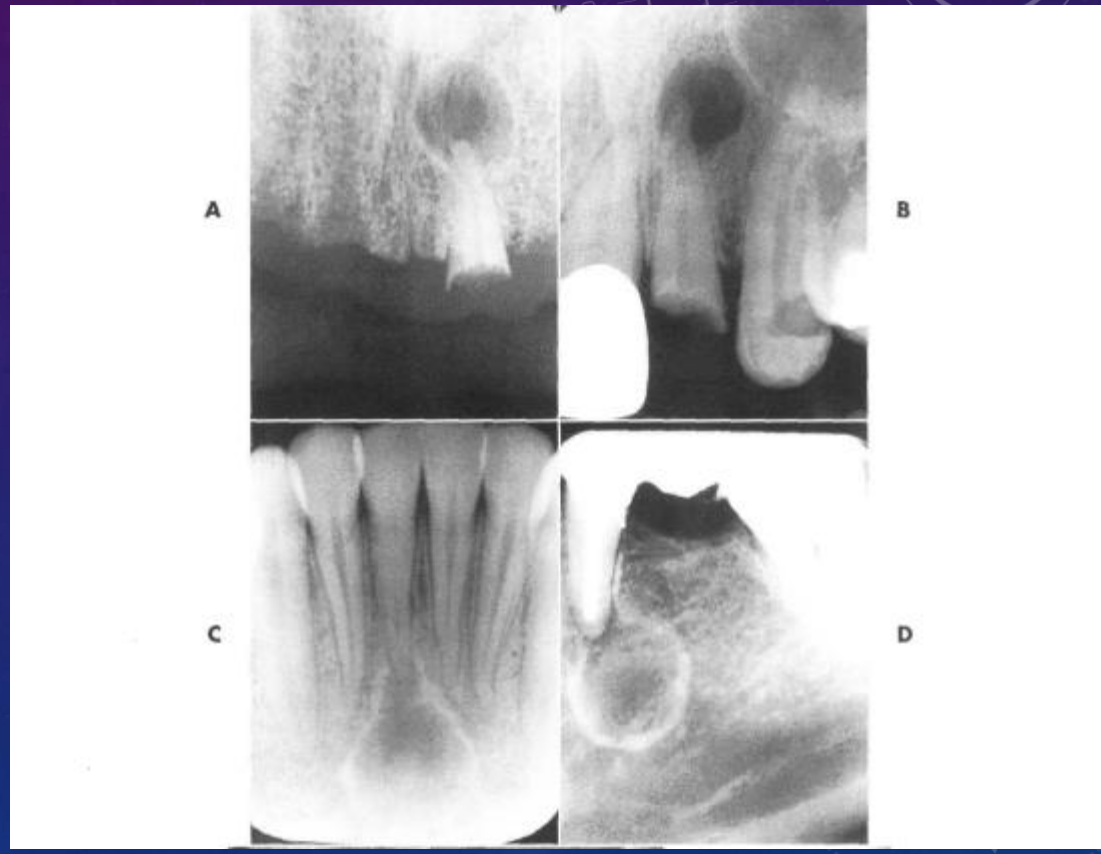


Fig. 16-6. Periapical granuloma. **A,** The pulp of the first molar was nonvital. **B,** Photomicrograph.


Periapical granuloma
Radicular cyst
Periapical abscess
(chronic and acute)

Radicular cyst

- **Features:**
- **Differential diagnosis:**
- **Management:**



Periapcal scar

- **Features:**
- **Differential diagnosis:**
- **Management:**

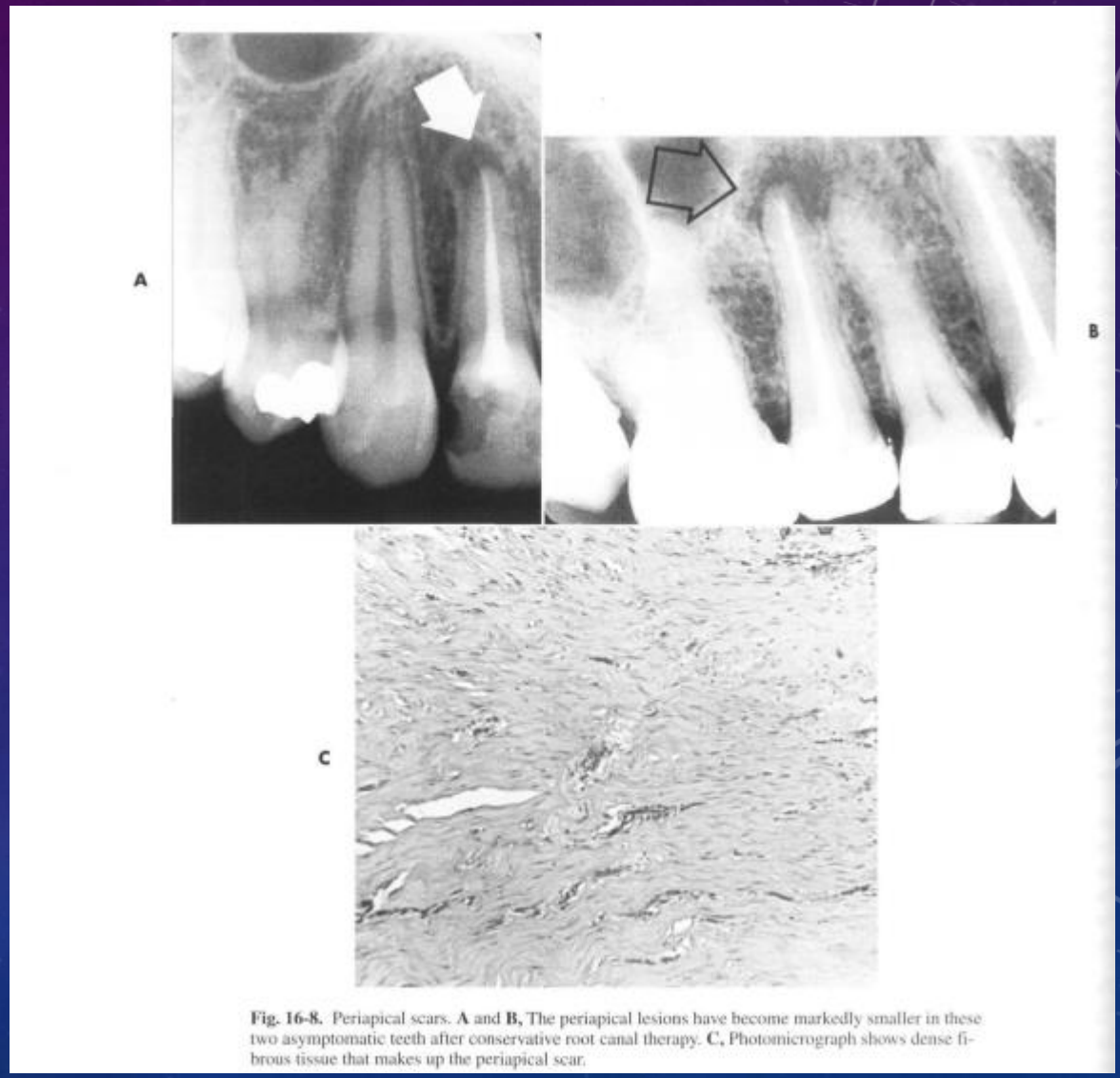


Fig. 16-8. Periapical scars. **A** and **B**, The periapical lesions have become markedly smaller in these two asymptomatic teeth after conservative root canal therapy. **C**, Photomicrograph shows dense fibrous tissue that makes up the periapical scar.

Periapical abcess:

- Features:
- Differential diagnosis:
- Management:

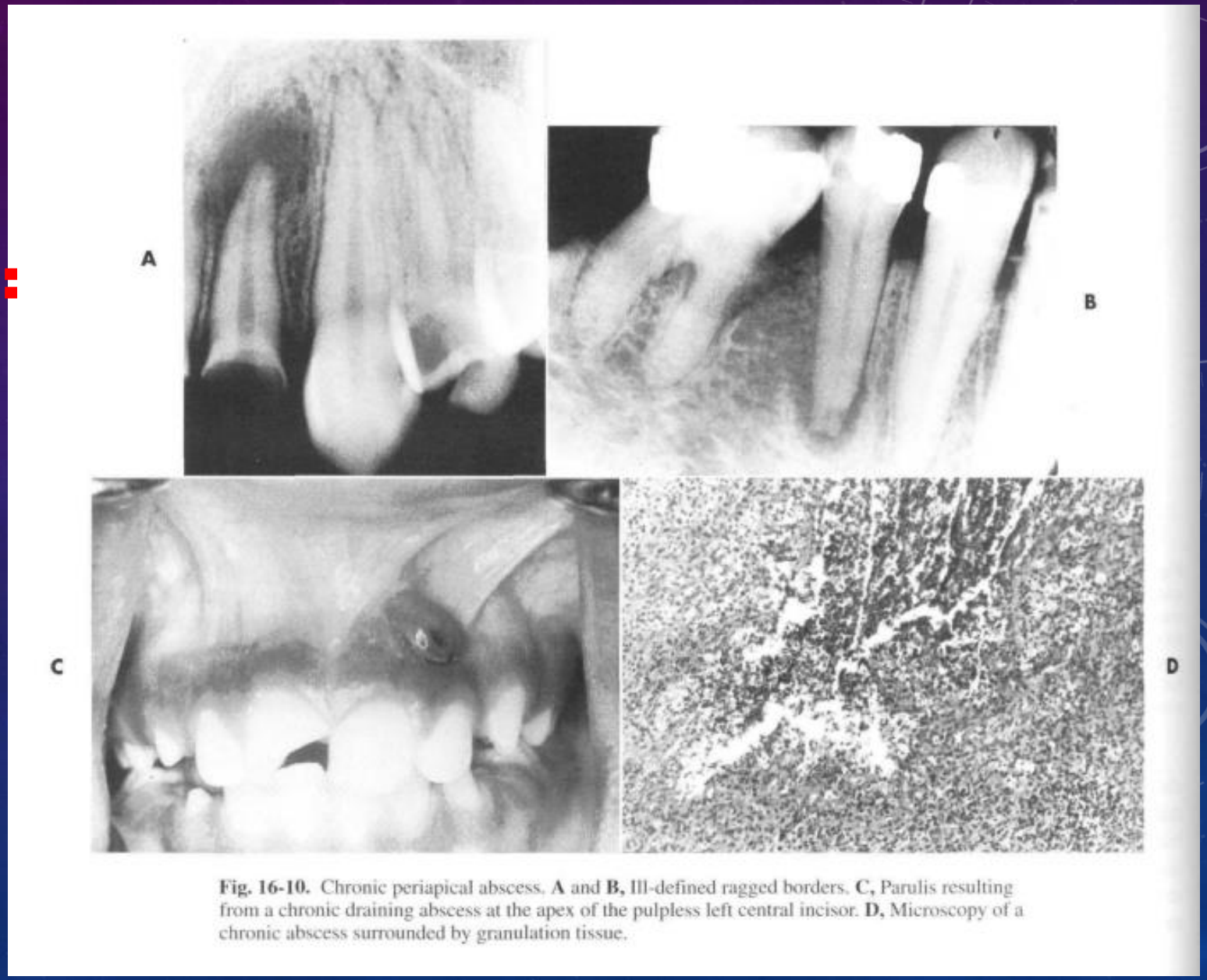


Fig. 16-10. Chronic periapical abscess. **A** and **B,** Ill-defined ragged borders. **C,** Parulis resulting from a chronic draining abscess at the apex of the pulpless left central incisor. **D,** Microscopy of a chronic abscess surrounded by granulation tissue.

Periapical surgical defect:

- Features:
- Differential diagnosis:
- Management:

Fig. 16-11. Periapical surgical defects.

osteomyelitis

- **Features:**
- **Differential diagnosis:**
- **Management:**

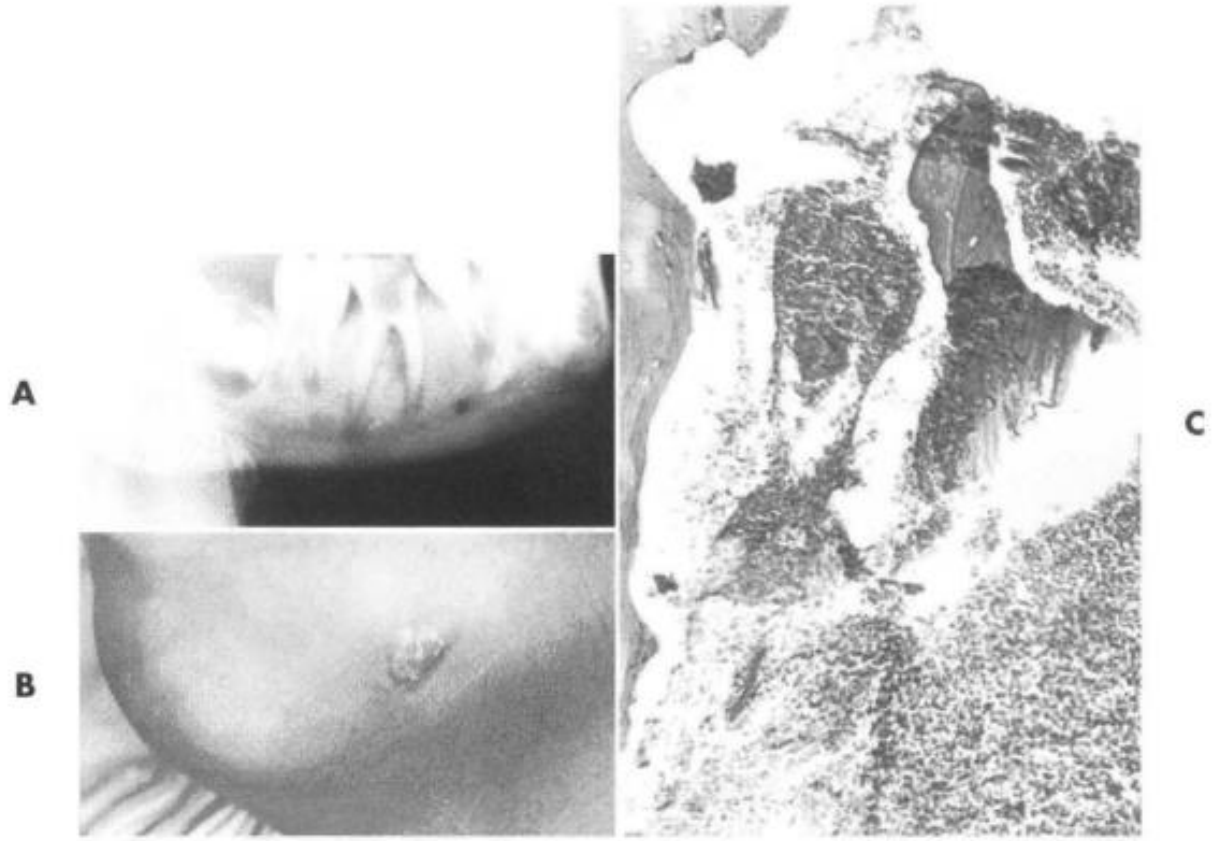


Fig. 16-12. Chronic osteomyelitis. **A,** Radiolucencies around the roots of the first molar. **B,** Sinus draining extraorally. **C,** Nonvital bony trabeculae (empty lacunae), inflammatory infiltrate, and necrotic material. (**A** courtesy R. Moncada, Maywood, Ill.)

Hyperplasia of sinus

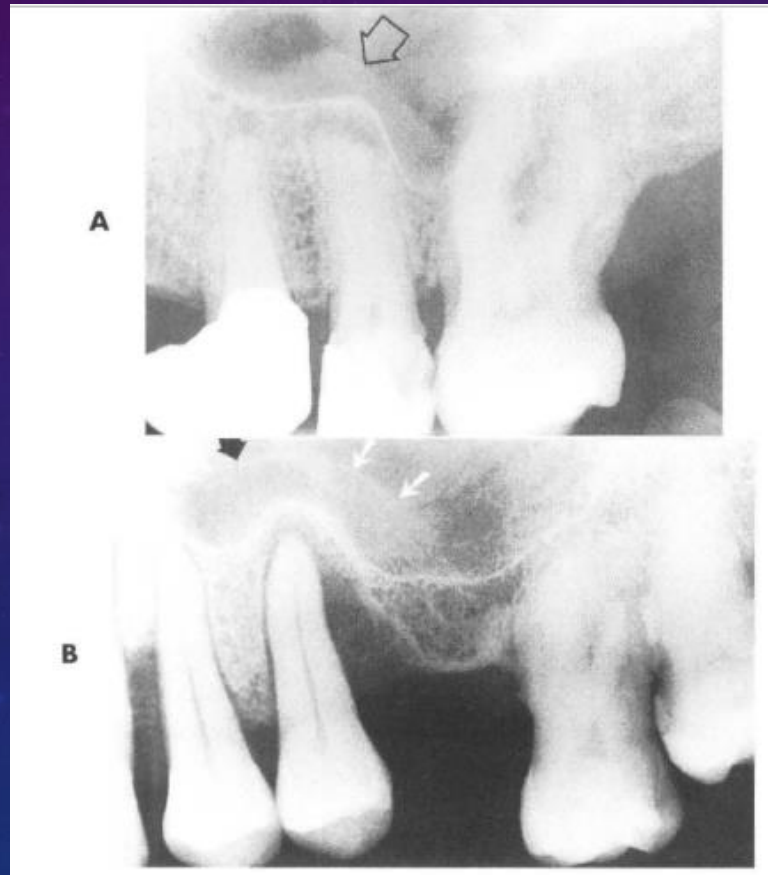


Fig. 16-13. Hyperplasia of the soft tissue membrane of the maxillary sinus floor *(arrows).* **A,** Etiology is a pulpoperiapical infection involving the second premolar tooth. **B,** Etiology is advanced periodontal disease involving the second premolar tooth.

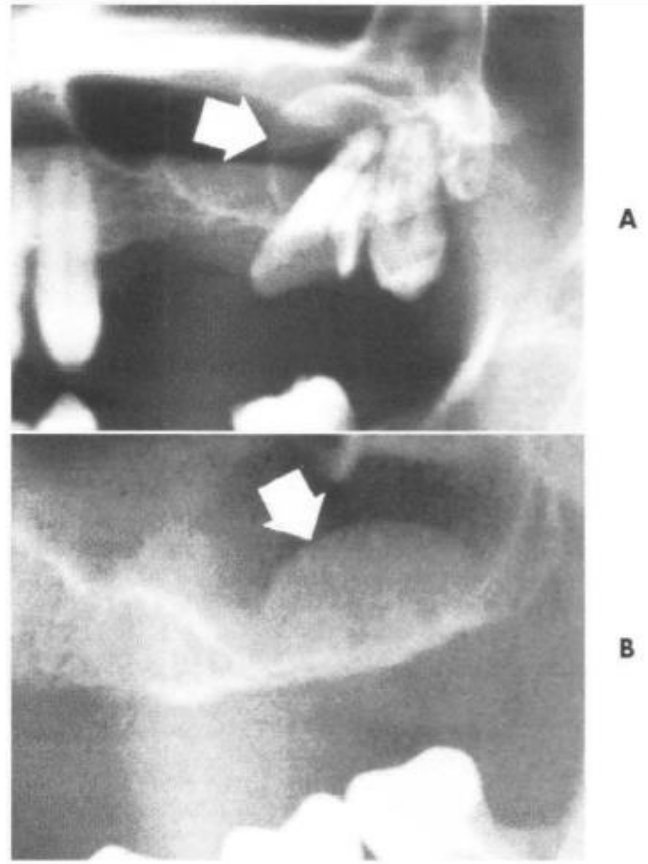


Fig. 16-14. Shadows in the sinus floor. **A,** Radicular cyst at the periapex of the second molar *(arrow).* Note the thin, curved bony rim of the cyst that separates the cyst from sinus. **B,** Benign mucosal cyst on the sinus floor *(arrow).*

Dentigerous cyst:

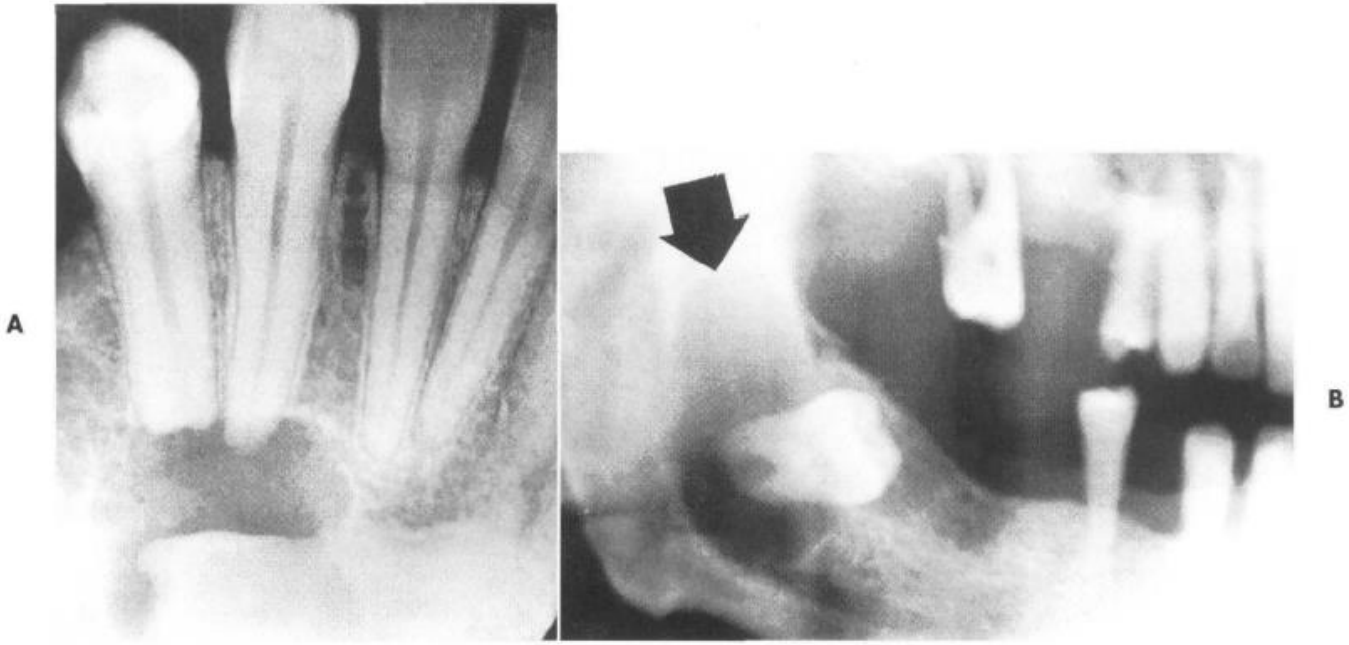


Fig. 16-15. Dentigerous cysts seen as periapical radiolucencies. **A,** The pulps of the canine and first premolar teeth tested vital. **B,** Unusual radiographic shadow of a circumferential dentigerous cyst *(arrow)*, which gives the illusion that the cyst is associated with the root rather than the crown. (**B** courtesy R. Latronica, East Amhurst, NY.)

CLASSIFICATION OF FIBROOSSEOUS LESIONS

I. Fibrous dysplasia

II. Reactive (dysplastic) lesions arising in the tooth-bearing area.

These are presumably of periodontal ligament origin. It is convenient to divide them into three types based on their radiologic features, although they seem to represent the same pathologic process.

Periapical cementoosseous dysplasia

Focal cementoosseous dysplasia

Florid cementoosseous dysplasia

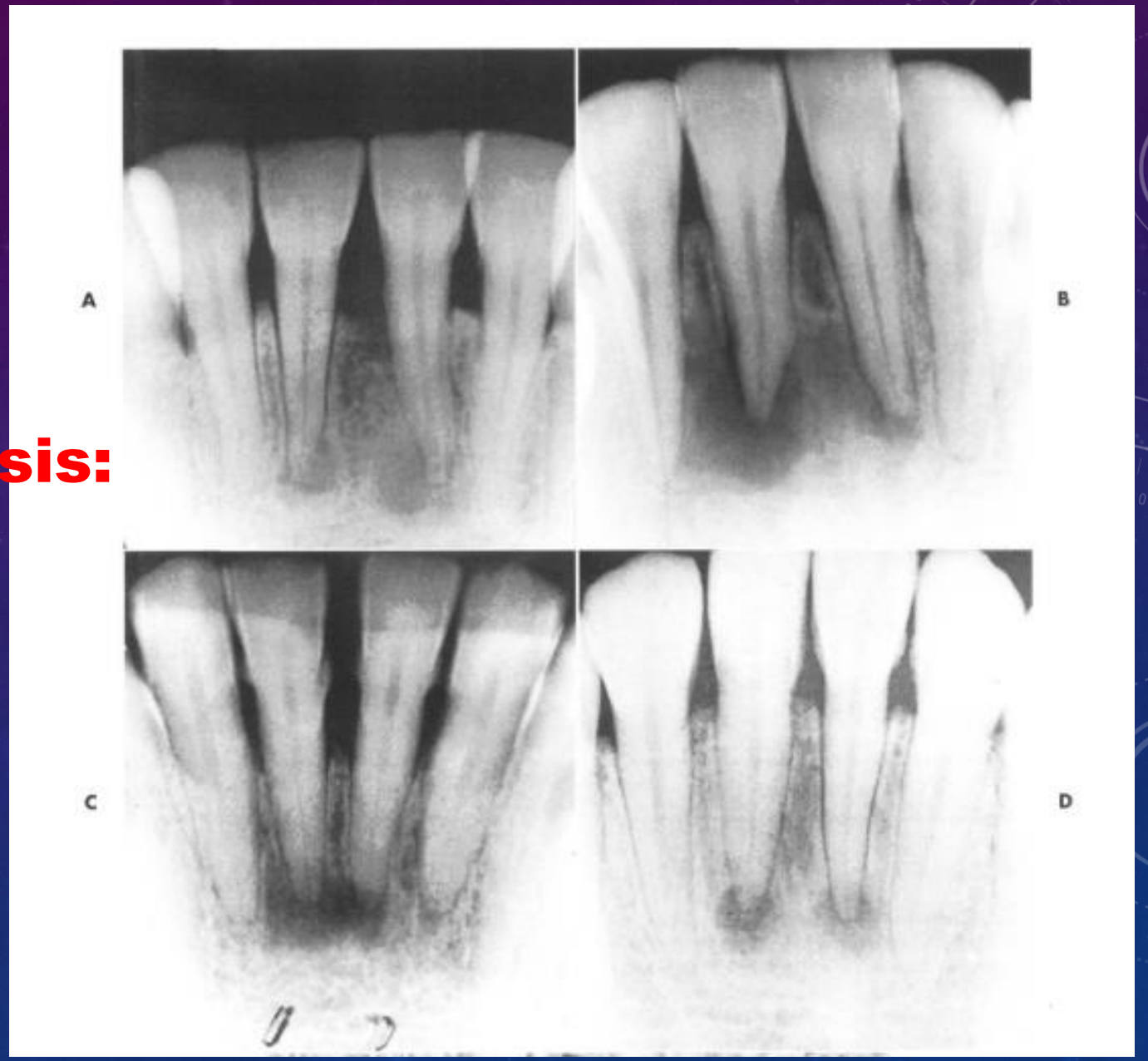
III. Fibroosseous neoplasms

These are widely designated as cementifying fibroma, ossifying fibroma, or cementoossifying fibroma.

Modified from Waldron CA: Fibro-osseous lesions of the jaws, *J Oral Maxillofac Surg* 51:828-835, 1993.

PCOD:

- Features:
- Differential diagnosis:
- Management:



DIFFERENTIAL LIST FOR PCOD

- Anatomic radiolucency
- Pulpoperiapical radiolucency
- Traumatic bone cyst
- Focal cementoosseous dysplasia[74]
- Cementoossifying fibroma
- Cementoblastoma
- Malignancy

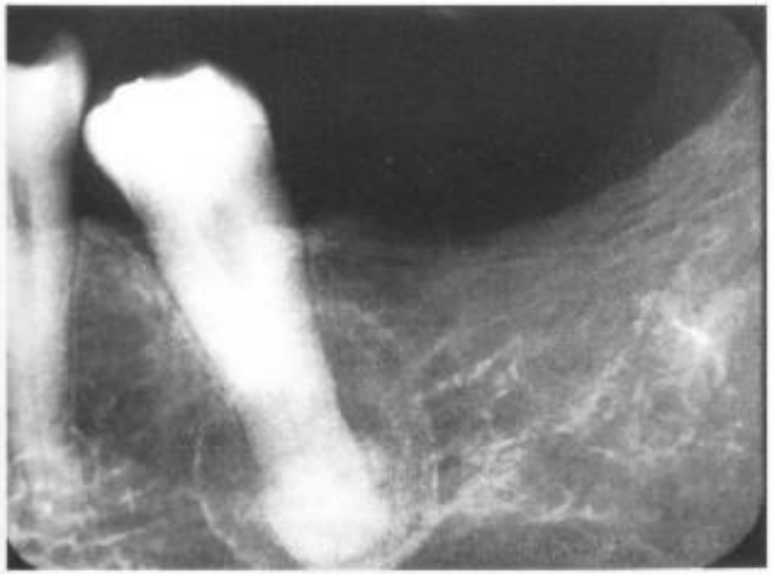


Fig. 16-17. Focal cementoosseous dysplasia (FCOD) and root of the second premolar tooth. Some intralesional calcification is present.

Fig. 16-18. Periodontal disease. Periapical radiolucencies caused by periodontal disease. The teeth tested vital.

Traumatic bone cyst

- **Features:**
- **Differential diagnosis:**
- **Management:**

Fig. 16-19. **A** and **B,** traumatic bone cyst. All teeth tested vital. (**B** courtesy M. Kaminski, deceased.)

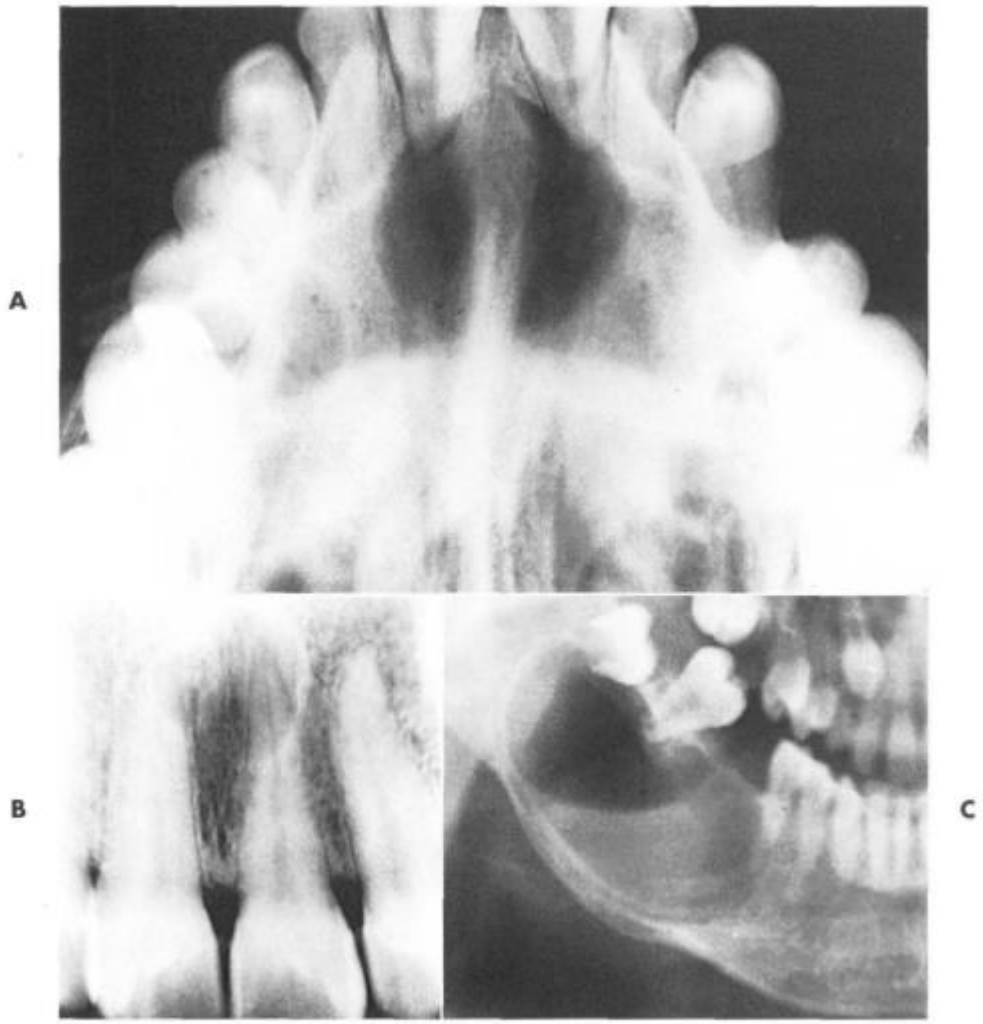


Fig. 16-20. Nonradicular cyst. **A** and **B,** Incisive canal cysts. **C,** Primordial cyst. (Courtesy N. Barakat, Beirut, Lebanon.)

malignancy:

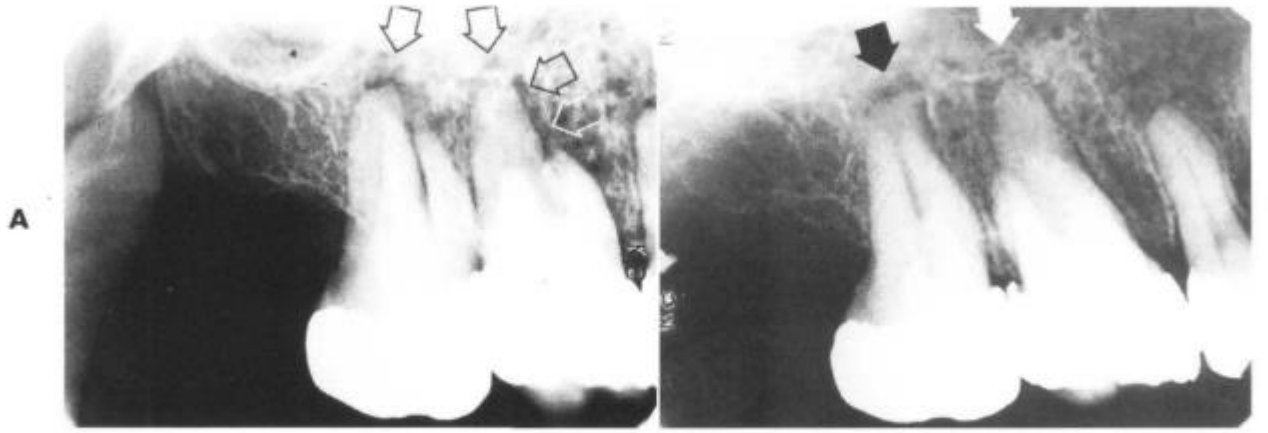


Fig. 16-21. Periapical radiographs. Arrows indicate bony destruction and periapical radiolucencies at the apices of the premolar and molar teeth, all caused by squamous cell carcinoma of the maxillary sinus. Note the bandlike widening of periodontal ligament spaces in the periapices. (Courtesy R. Copeland, Libertyville, Ill.)

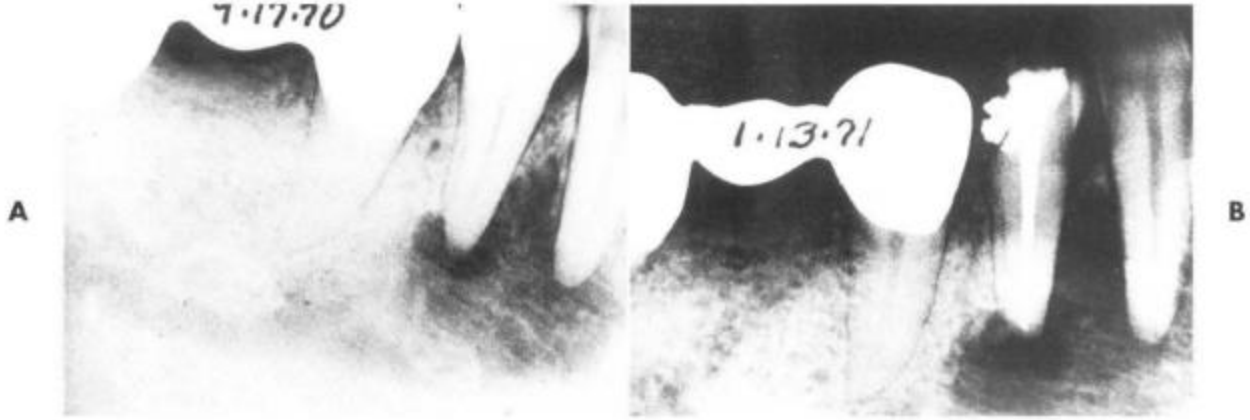


Fig. 16-22. Adenoid cystic carcinoma. **A,** Periapical radiograph showing the existing periapical radiolucency before endodontic treatment. **B,** Periapical radiograph taken 4 months later showing enlargement of the radiolucency. Surgery and microscopic study established the diagnosis. (From Burkes JE: Adenoid cystic carcinoma of the mandible masquerading as periapical inflammation, *J Endodont* 1:76-78, 1975.)

malignancy:

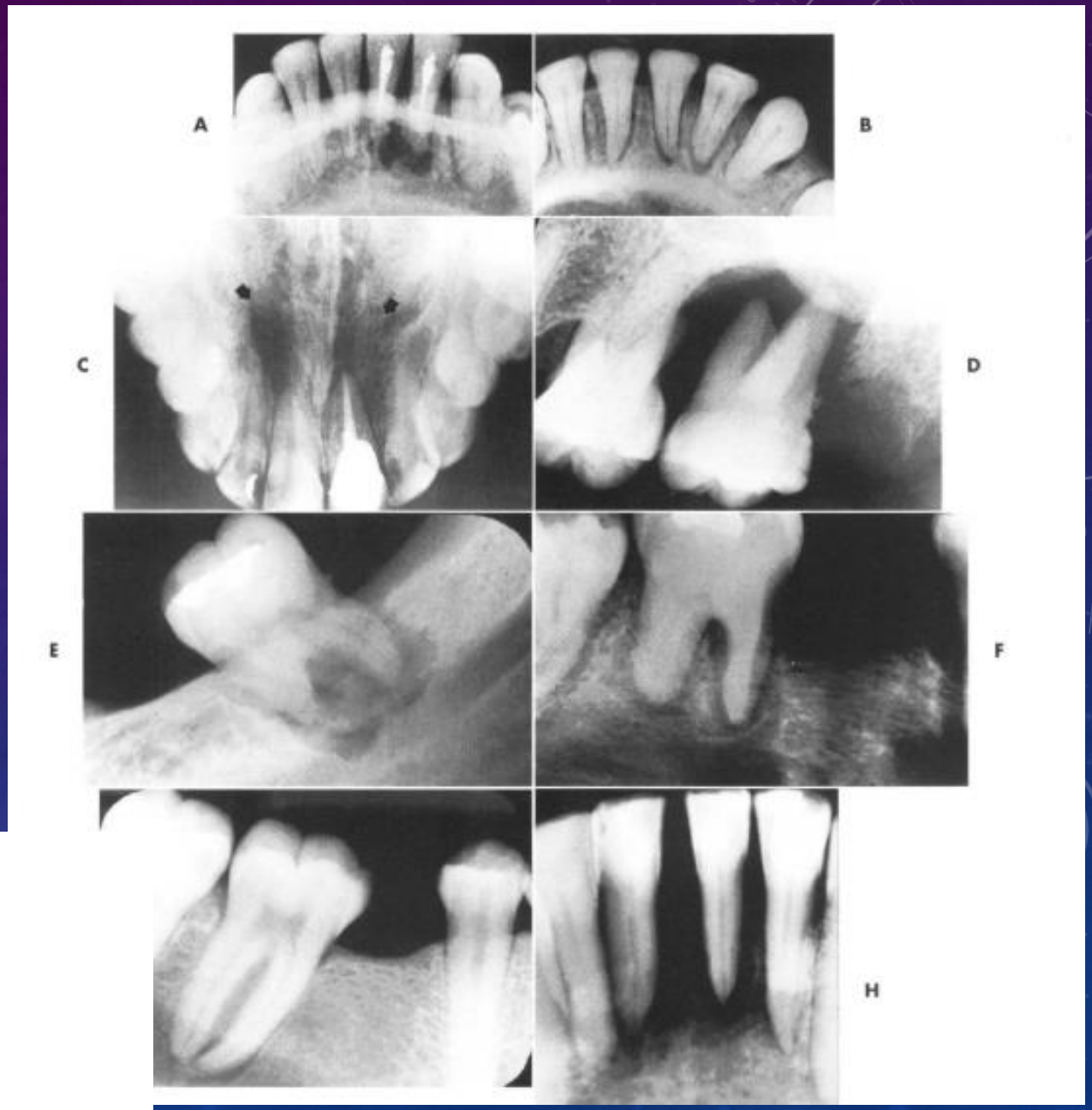


Fig. 16-23. Malignant periapical radiolucencies. **A,** Chondrosarcoma. **B** and **C,** Osteogenic sarcoma. (The bandlike widening of the periodontal ligament spaces around the incisor roots is evident in **B.**) **D,** Adenoid cystic carcinoma on the posterolateral hard palate. **E,** Metastatic carcinoma from the pancreas. **F,** Hemangiosarcoma. The radiolucencies at the apices of the molar and the bandlike widening of the periodontal ligament spaces are evident on all teeth shown. **G,** Metastatic rhabdomyosarcoma at the periapex of a molar. **H,** Metastatic carcinoma at the apices of the central incisors. (**A** courtesy O.H. Stuteville, deceased; **B** and **G** courtesy R. Goepp, Chicago; **C** from Curtis M, Elmore J, Sotereanos G: Osteosarcoma of the jaws: report of a case and review of the literature, *J Oral Surg* 32:125-130, 1974; **F** courtesy D. Skuble, Hinsdale, Ill; **H** courtesy R. Oglesby, Stroudsburg, Pa.)