Department of Pediatric Surgical Dentistry

Odontogenic and non-odontogenic jaw cysts

Lector Popelo Julia

Viber 066-460-33-03

Plan

1. Etiopathogenesis, clinical picture, diagnosis and treatment of epithelial odontogenic cysts of the jaws.

2. Etiopathogenesis, clinical picture, diagnosis and treatment of epithelial non-odontogenic cysts of the jaws.

3. Etiopathogenesis, clinical picture, diagnosis and treatment of non-epithelial cysts of the jaws.

Clinical and morphological classification jaw cysts

(I.I. Ermolaeva et al., 1975)

Epithelial cysts		Non-epitheliale cysts
Odontogenic	Non-odontogenic	
• radicular • follicular • tooth-bearing •paradental (periodontal) •• nasolabial •cyst eruptions • gingival	• incisor cyst channel • Globulomaxillary •naso-alveolar cholesteatoma •primary (keratocyst) 	Bone cysts: • aneurysmal • traumatic • hemorrhagic

Radicular cyst

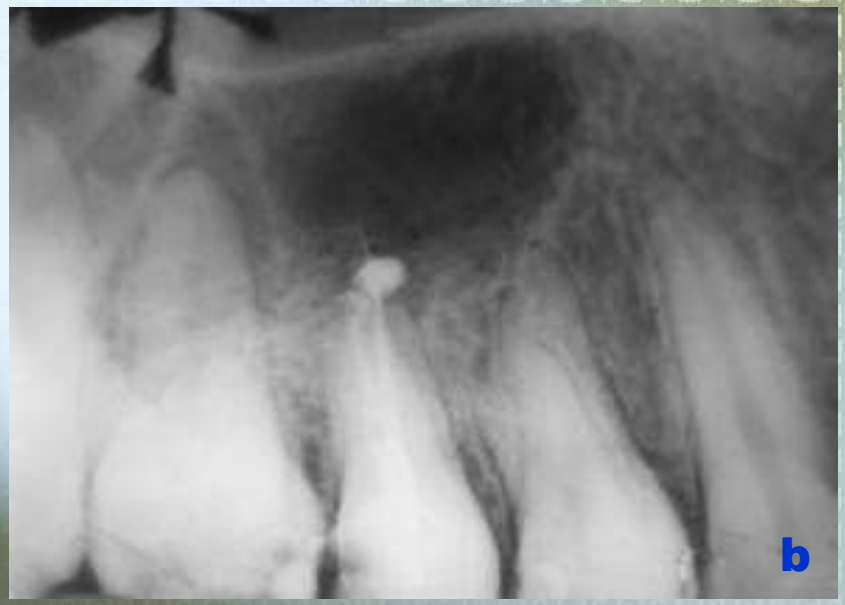
the last stage of development of chronic periodontitis

Morphologically:

cystic formation with a transparent yellowish liquid with inclusions of cholesterol crystals; the inner wall is made with stratified squamous epithelium (4-12 layers). Under the epithelium – granulation and young fibrous connective tissue. Deeper fibrous connective tissue is gradually replaced by scar tissue. The capsule has a large number of nerve endings.

Microscopic structure walls of the radicular cyst.
Microdrug. Coloration hematoxylin-eosin. About. ten x, OK. ten x.
1 - coarse fibrous connective tissue;
2 - foci of inflammatory infiltration;
3 - stratified squamous epithelium with symptoms proliferation

X-ray picture radicular cysts

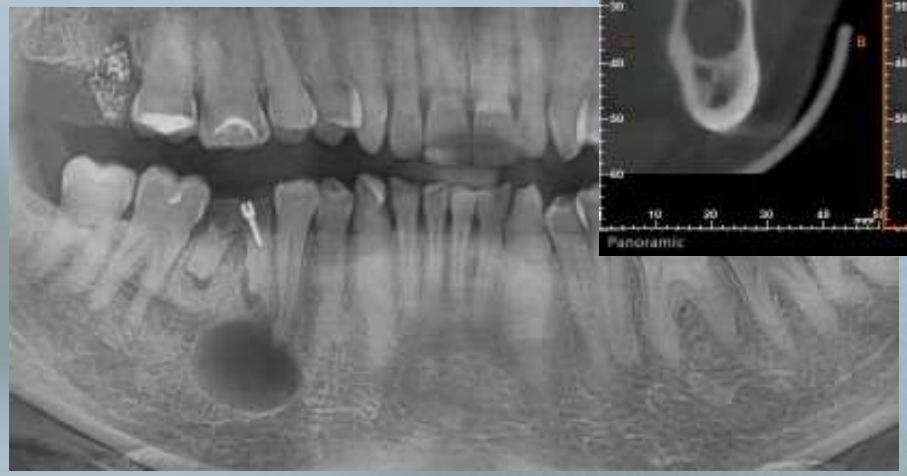


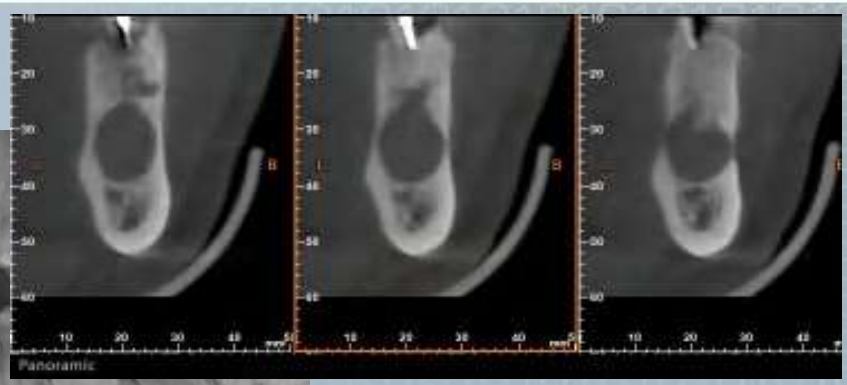
a) *from 21 teeth;* ***b)*** *from 15 tooth;* ***c)*** *from 36 teeth; e****)*** *from 41 teeth; d) from 44 tooth*

X-ray picture radicular cysts

Radicular cyst

from 46 tooth

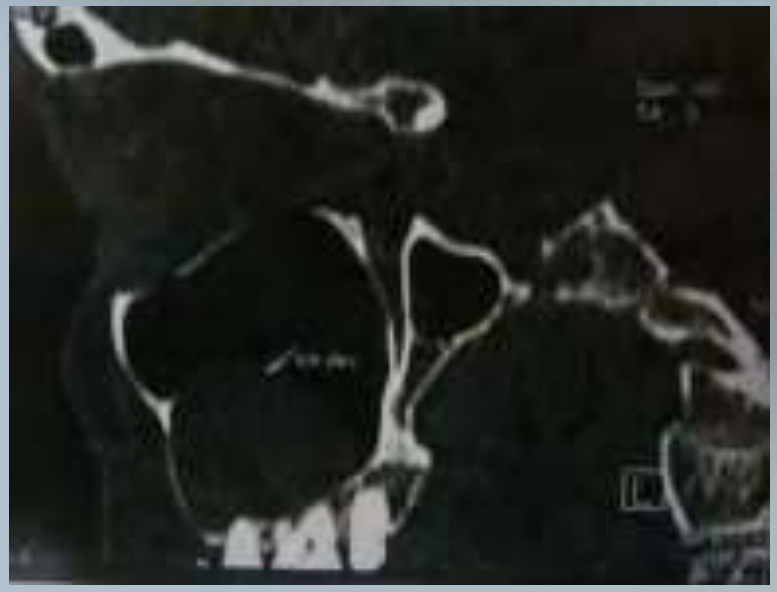




Radicular cyst

from 46 tooth

Radicular cyst from 44 tooth



Fragment computer tomograms top jaw patient with RK from 16 tooth, sprouted in cavity right maxillary sinuses

Clinical manifestations of radicular cysts

Usually do not cause complaints (outside suppuration), but in large sizes there is a deformation of the alveolar process of the jaws and a change in the position of the teeth.

Symptom complex (may be typical for most jaw cysts):

- **Destroyed and discolored "causal tooth" (a yellowish liquid may be released from the canal);**
- **Percussion of the causative tooth is painless (sometimes unpleasant), and its EDI is not less than 100 μA;**
- **Symptom of root divergence and convergence of tooth crowns;**
- **Runge-Dupuytren's symptom (rarely observed in children under 2 years of age);**
- **YI Bernadsky's symptom;**
- **Symptom of elastic tension (in 21.8% of cases);**
- **A symptom of fluctuation (in 18.3% of cases) and deformity of the face (in 36.4% of patients);**

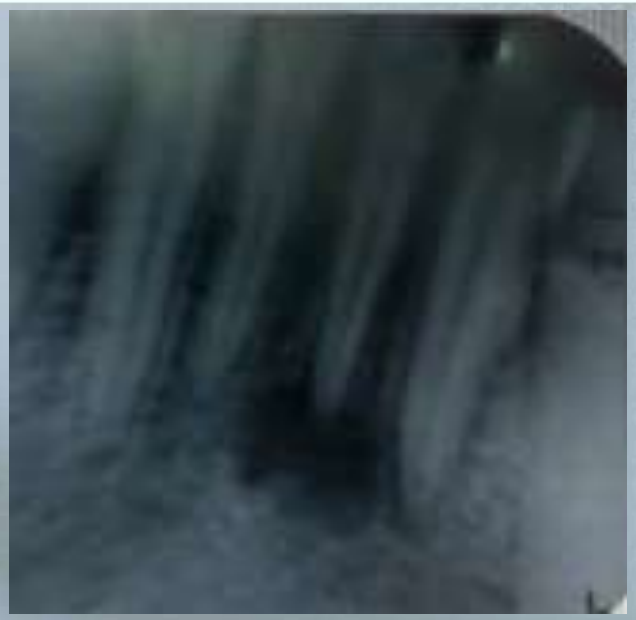
With suppuration - intoxication, reactive lymphadenitis, fistulas;

On the roentgenogram: the area of bone tissue clarification with clear contours (with suppuration, the clarity of the contours disappears);

When localized in the area of the upper anterior teeth, the formation of a "Gerber roll" is possible;

When localized near the neurovascular bundle – pain

Suppurating radicular cyst



X-ray picture in front endodontic treatment

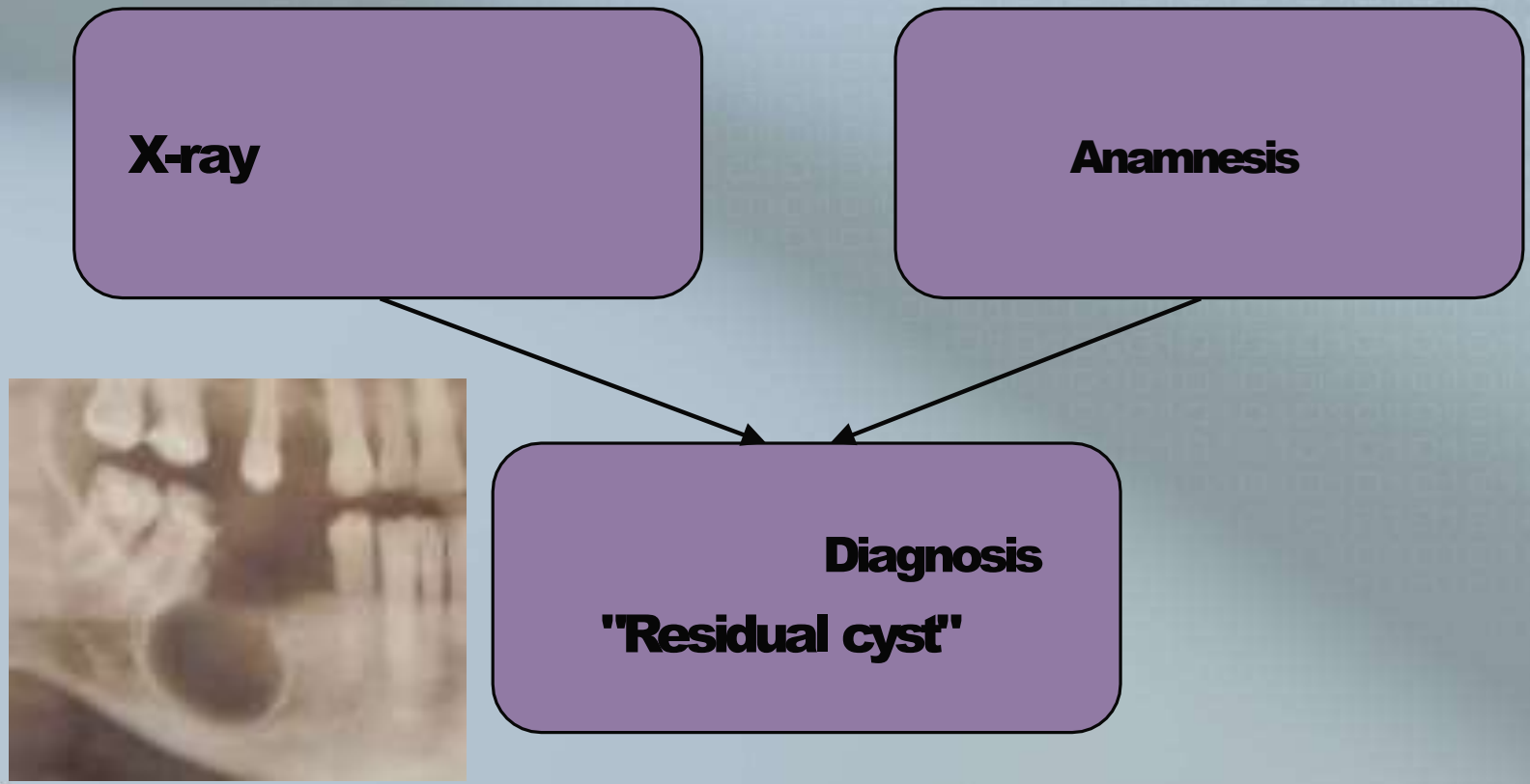
X-ray picture after endodontic treatment

Residual (residual) cyst

About 30% of residual cysts are radicular.

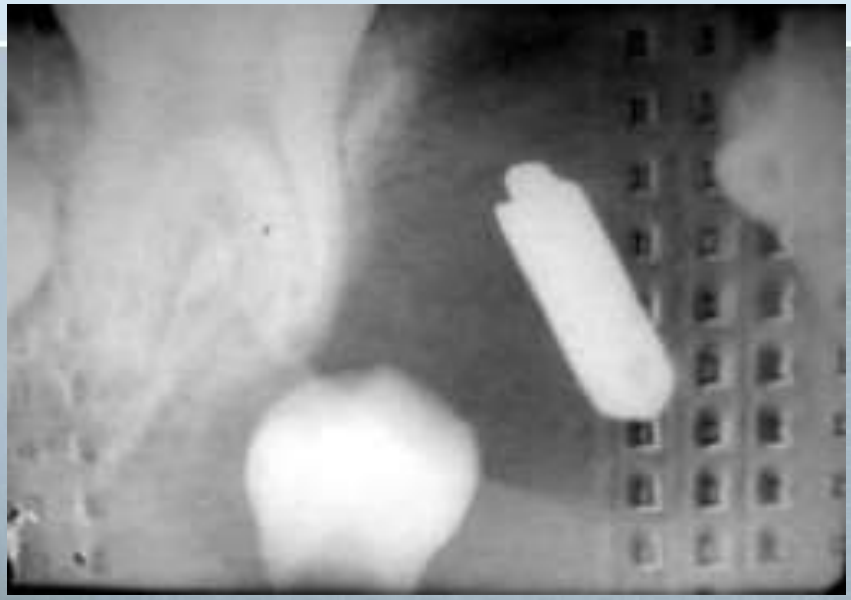
Mechanism of occurrence:

1. **Scraps of odontogenic granuloma remaining in the alveolus after tooth extraction.**
2. **The result of an inaccurate cystectomy.**



X-ray picture residual cyst

Residual cyst in the area of 46 and 47 teeth



Residual cyst in the area of the 45 tooth (in the cavity of the cyst is observed foreign body)

Residual cyst in the area of the 14th tooth

Residual cyst in the region of 44 and 45 teeth

Follicular cyst

Cystic result degeneration of dental tissues rudiment.

It occurs more often in people under 25 years old (34% of patients under 14 years old). Children and adolescents make up from 35.5% to 42% of all odontogenic cysts.

Dimensions (according to L.K. Akvazmatova, S.A. Min'kov)

	diameter, cm	volume, cubic cm
small	up to 1.5	until 3
average	1.5-2.5	to 10
big	more than 2.5	up to 40

Follicular cyst

Localization depends on age:

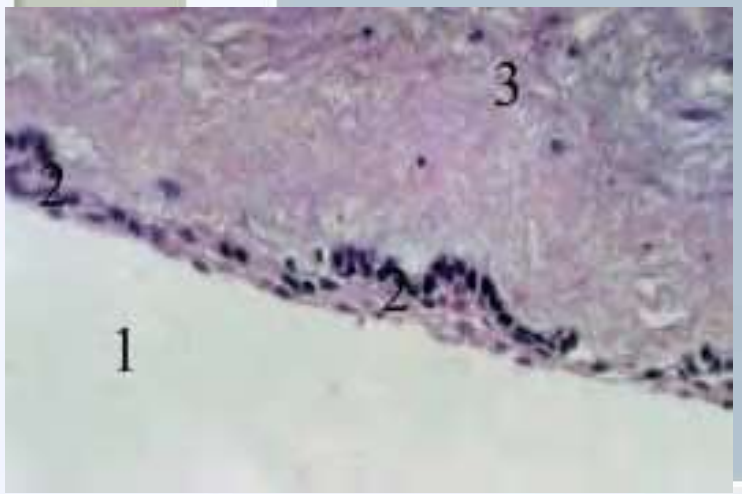
- **in children: more often in the area of molars (20.8%) and upper canines (10%)**
- **in adults: in the area of wisdom teeth (23.3%) and upper canines (18.3%)**

Microscopically:

Sheath - poorly differentiated connective tissue with a large number of fibroblasts, and the fibrous structures are loose bundles of collagen fibers.

The inner lining is a stratified squamous epithelium without signs of keratinization.

The presence of the epithelium is a differential diagnostic sign that determines the onset of the development of follicular cysts (it is absent with normal dental retention).



The microscopic structure of the follicular cyst wall. Microdrug. Hematoxylin-eosin staining.
1 - the lumen of the cyst cavity; 2 - stratified squamous epithelium; 3 - coarse fibrous connective tissue

Follicular cyst development mechanism

1. **The source of FC growth is small cysts located between the crown of the tooth and the capsule of the primordium.**

2. **FC develop as a result of degenerative changes in the epithelium of the dental follicle through the accumulation of fluid between the crown of the tooth and the epithelial membrane.**

3. **FC is the result of infection from carious deciduous teeth and tonsils into the follicle of a permanent tooth.**

Heredity, trauma, inflammation, hypothermia contributes to the development follicular cysts.

Follicular cysts development

Embryoplastic stage

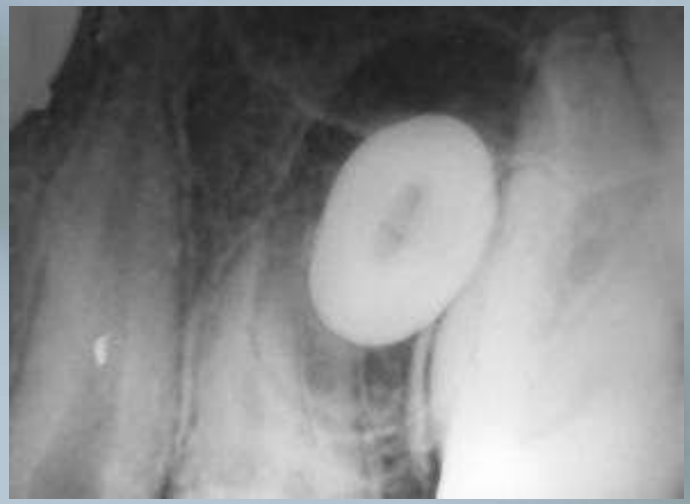
(toothless (primordial) (cysts)

X-ray:

homogeneous bone loss round fabric or oval with clear contours, wherein determined crown of one or several impacted teeth.

Odontoplastic stage

(before completing the formation root)



X-ray picture follicular cysts from 25 tooth and from 35 tooth

X-ray picture follicular cysts

Polycystic (multiple follicular cysts) on lower jaw (after on the left)

Follicular cyst from 43 teeth formed as a result trauma

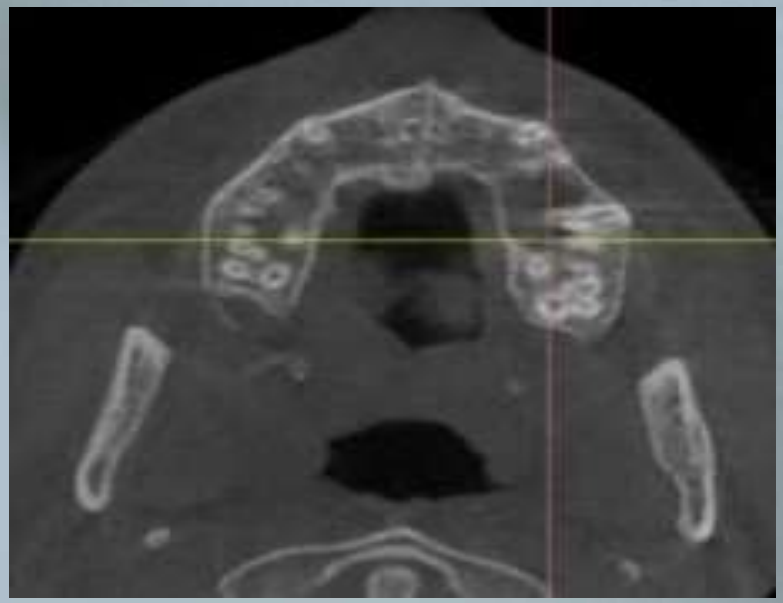
X-ray picture follicular cyst from tooth 13

X-ray picture follicular cysts

a

b

c



d

X-ray picture and fragments of computed tomograms of follicular cysts from 25 tooth with germination (a, b) and without germination (c, d) left maxillary sinus

X-ray picture follicular cysts

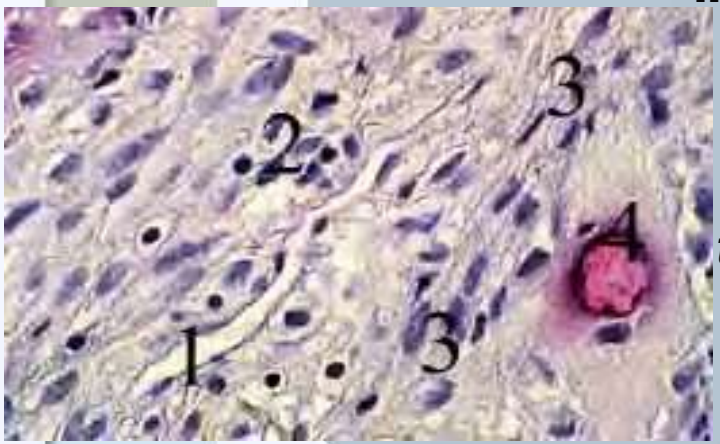
Follicular cyst from 35 tooth

Tooth cyst

Occurs due to inflammatory process in the area of the roots of deciduous teeth, when the rudiments of the permanent ones fall into the focus. In this case, the crown of a permanent tooth is located in the cavity of the cyst, and the root with the growth zone is outside its borders.

Only found in children (mainly during the shift

More often porpargiaceutssaya). Lower jaw in the area molars.



Among children examined at the clinic department for chronic periodontitis of temporary molars, in 5.95% of cases tooth-containing cysts were observed (A.M. Gogol, 2006).

Fragment of the ZSK wall. Microdrug. Hematoxylin-eosin staining. About. 25 x, OK. ten x. 1 - blood vessel; 2 - focus of lymphoplasmacytic infiltration; 3 - fibroblastic cells; 4 - bone tissue of the alveolar process of the lower jaw

X-ray picture of ZSK

a

b

c

d

a-b) *from 75 and 85 teeth;* ***c-d)*** *from 75 tooth.*

Tooth cyst from 84 tooth

orthopantomogram

fragments of computer tomograms

Tooth cyst from 75 tooth

Tooth cyst from 75 tooth (dynamics)

after 1 year

Stages of the formation of KYC

in the area of the molars of the lower jaw

Development stages of FC and ZSK

(E. Yu.Simanovskaya, 1964)

1) **Latent development with the absence of clinical symptoms: the absence of a permanent tooth or a delay in temporary physical exercises is determined;**
2) **The appearance of deformation of the alveolar process or the body of the jaw due to dense painless or slightly painful swelling (if without suppuration); there is a "parchment crunch" and fluctuation (infection is possible at this stage).**

In punctate: *clear yellow liquid with admixed with cholesterol crystals.*

FC can be combined with radicular cysts and cysts eruption, solid odontoma, retention and dystopia of teeth, ameloblastoma (1/3 ameloblastoma arises from FC)

There are known cases of development of squamous keratinizing cancer in the FC wall.

Paradental (periodontal) cyst

In its cavity is part of the crown of the tooth, and the cyst itself is adjacent to the lateral the surface of its root.

Sometimes the cavity can to hit the whole tooth, which is usually in its place, but is tilted forward with a crown and abuts medial tubercles in crown (root) in front standing tooth.

X-ray picture

paradental cyst

from 37 tooth

Gingival cyst (a variant of the periodontal cyst)

in the area of 32 teeth

Retromolar cyst

A kind of paradental cysts.

Localized in the corner of the lower jaw and occurs as a result of chronic inflammatory process in the periodontal tissues due to difficult teething (most often a wisdom tooth).

X-ray picture retromolar cyst from 48 tooth

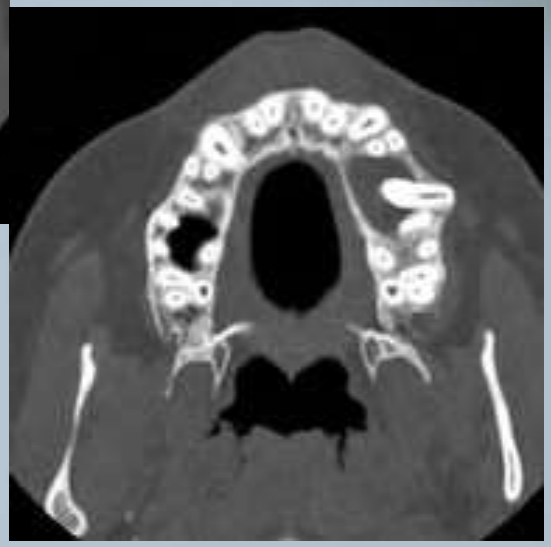
X-ray picture of the paradental cyst from 38 tooth

Primary cyst (keratocyst)

Malformation of dentition epithelium. First described by Philipsen in 1956.

It occurs in 9.2% of cystic lesions of the jaws (more often in people 20-40 years old), 7-9% of cases - multiple.

Trauma, hypothermia, pregnancy and puberty contribute to growth. It occurs in places where there are teeth, but has no connection with them (more often in the area of the molars of the lower jaw).



Fragments of CT patients with keratocysts of the upper jaws sprouted in left and right maxillary sinuses; dystopia, retention and horizontal 15 tooth position

Fragments of CT patient with keratocytic upper jaw, sprouted in right maxillary bosom

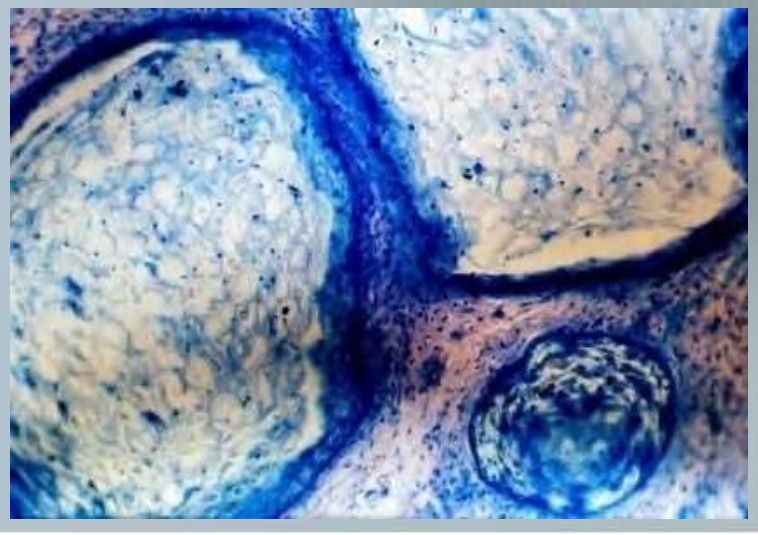
Primary cyst (keratocyst)

Mechanism of occurrence:

1. Degenerative changes in the stellate epithelium of the enamel pulp organ at the stage when the hard tissues of the tooth germ are not yet differentiated.
2. The source of keratocysts is the islets of Malasse.

Superficial thin section of the lower jaw at 14-16 weeks of intrauterine development. Stained with methylene blue. 1 - rudiments of medial temporary incisors; 2 - dental plate, 3 - complexes of epithelial cells along the dental plate; 4 - integumentary epithelium of the vestibule of the oral cavity; 5 - integumentary epithelium of the oral cavity itself

Thin section of the bottom jaws at 23-25 weeks of embryogenesis. 1 - anlage of the medial temporary incisor; 2 - rudiment lateral temporal incisor; 3 - the rudiment of a temporary canine; 4 - the rudiment of the first temporary molar; five - venous vessels; 6 - bone beams; 7 - integumentary epithelium, 8 - epithelial education in the mucosa the shell of the mouth



Cystoid epithelial formation of a palatine suture at 14-16 weeks intrauterine development. Epoxy grinding. Coloration methylene blue. About. 20 x, OK. ten x

Primary cyst (keratocyst)

In punctate: thick gray structureless mass with an unpleasant odor (keratin masses).

Microscopically:

a cavity filled with a grayish-yellow mass.

Cyst wall - fibrous connective tissue with a predominance of collagen fibers; lining – *multilayer epithelium with pronounced keratinization.*

High probability development of squamous carcinomas.

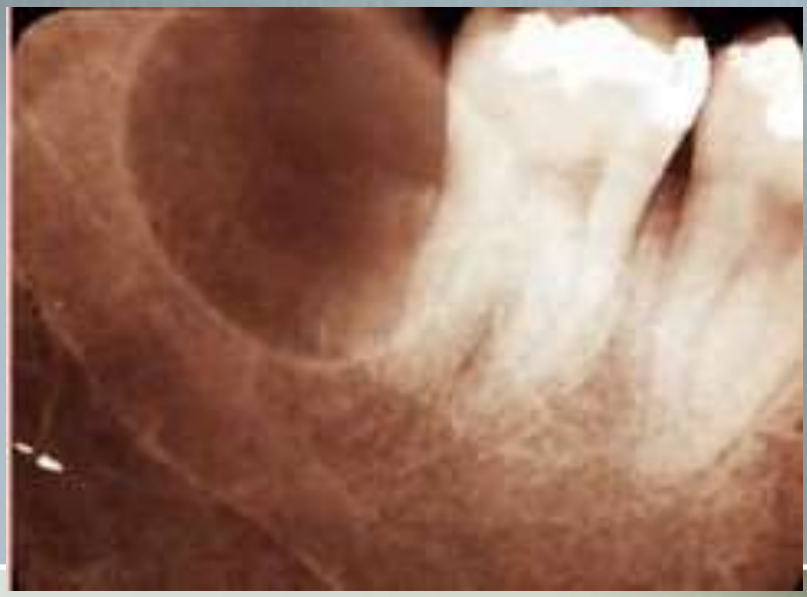
A fragment of the microscopic structure of the wall of a keratocyst that has grown into the maxillary sinus. Microdrug. Hematoxylin-eosin staining.

About. ten x, OK. ten x. 1 - coarse fiber connective tissue of the cyst wall; 2 - bone tissue; 3 - blood microvessels; 4 - stratified ciliated epithelium

mucous membrane of the maxillary sinus

Primary cyst (keratocyst)

Radiography: single or polycystic vacuum section bone tissue with clear contours; periodontal gaps of teeth, located in the cyst cavity, saved.

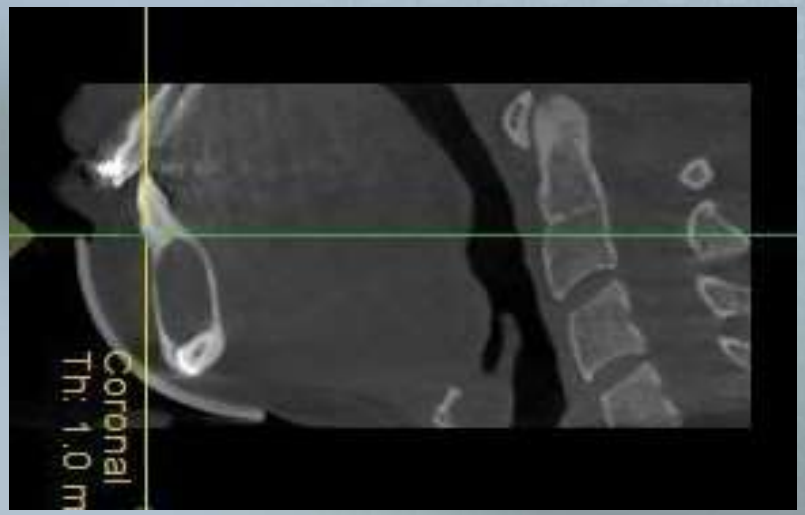


Primary cyst (keratocyst)

a

b

c

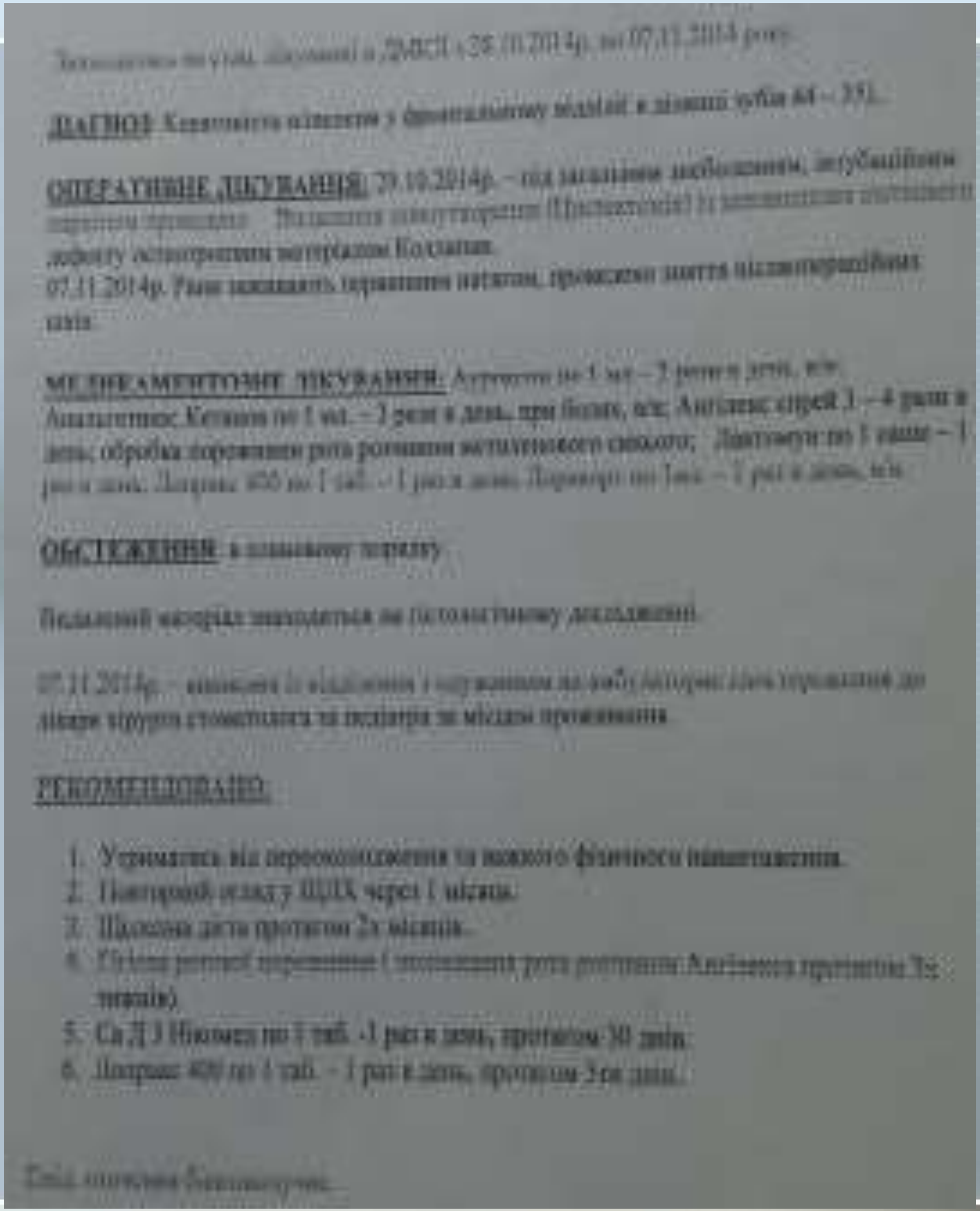


d

View in the oral cavity (a), orthopantomogram (b) and fragments of a computer tomogram (c, d) of a child with a keratocytic body of the mandible **d** *in the frontal area, which developed after 8 years after cystectomy for follicular cyst from 42 tooth (e)*

Primary cyst (keratocyst)

Orthopantomogram after endodontic intervention before carrying out a cystectomy and an extract from the medical history after inpatient surgical treatment of a child with a keratocytic body of the lower jaw in frontal area



ДІАГНОЗ

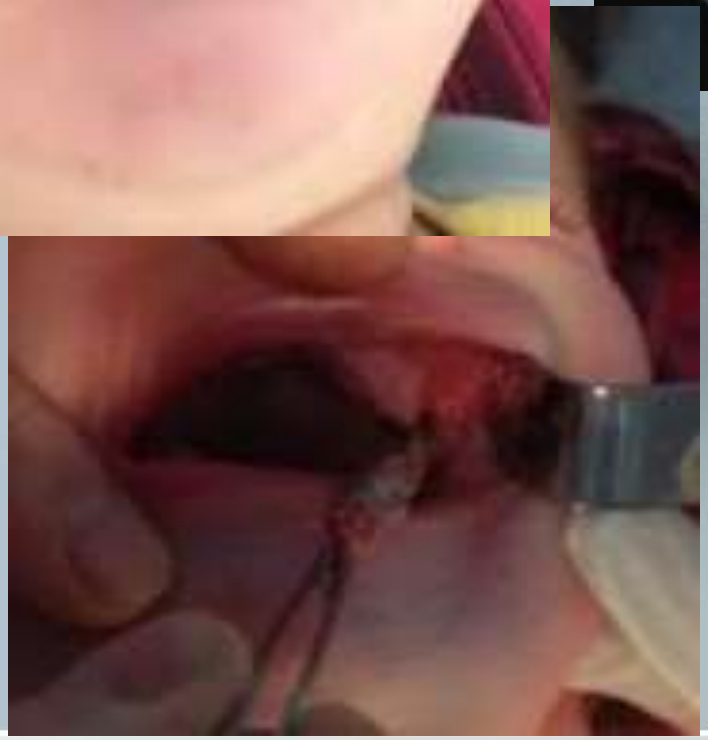
ОПЕРАТИВНЕ ЛІКУВАННЯ:

МЕДИКАМЕНТОЗНЕ ЛІКУВАННЯ:

ОБСТЕЖЕННЯ

РЕКОМЕНДОВАНО:

Primary cyst (keratocyst)



Fragment of a tomogram, 3D image, removal of iodoform turundas and general view of the postoperative defect in the breast a child who keratocyst germinated in left haimorov bosom, destroying it front wall

Cholesteatoma (pearl tumor)

A type of keratocyst, often affecting the upper b

ABOUT I about Yu I from och t to b and. lined with epidermis, and in the mushy content - horny masses and crystals of cholesterol (160-180 mg% in punctate), which give the formation a greasy (stearic, pearlescent) shade.

Cyst eruptions

Arises over erupting I have a tooth in the form bulging, covered unchanged gum. Wherein in the bone cavity is not are observed.

X-ray picture eruption cysts

From 36 and 46 teeth, combined with follicular cysts

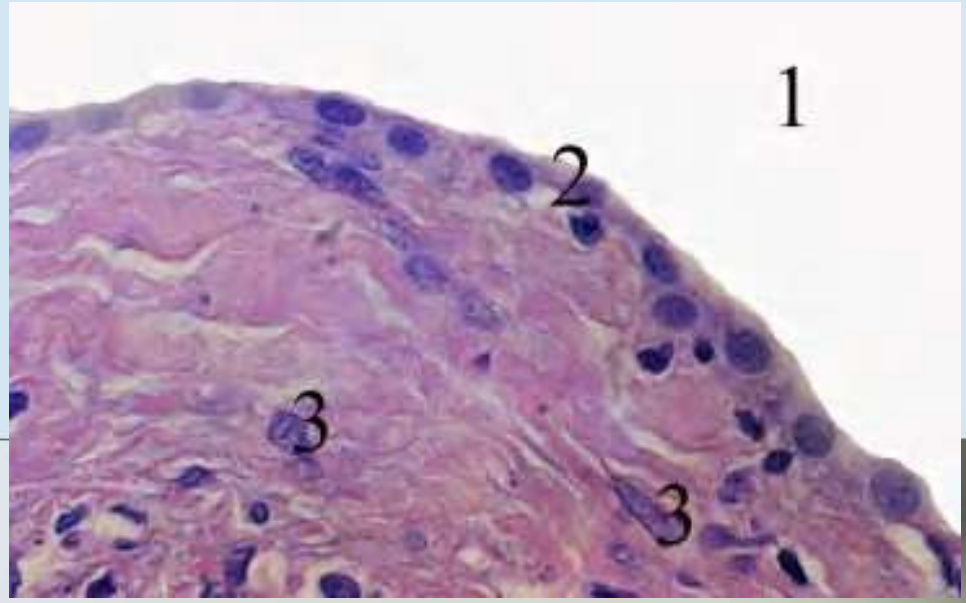
from 44 tooth

Gingival cysts

("Serre's glands", "Epstein's pearls")

Whitish, asymptomatic, very dense globular formations on the gums or gingival roll that have pearlescent shade.

Found in infants age.



Microscopic wall structure gingival cysts. Microdrug. Hematoxylin-eosin staining. About. 40 x, OK. ten x. 1 - cyst lumen; 2 - squamous epithelium; 3 - fibroblasts.

Nasopalatine cyst

(incisal cyst)

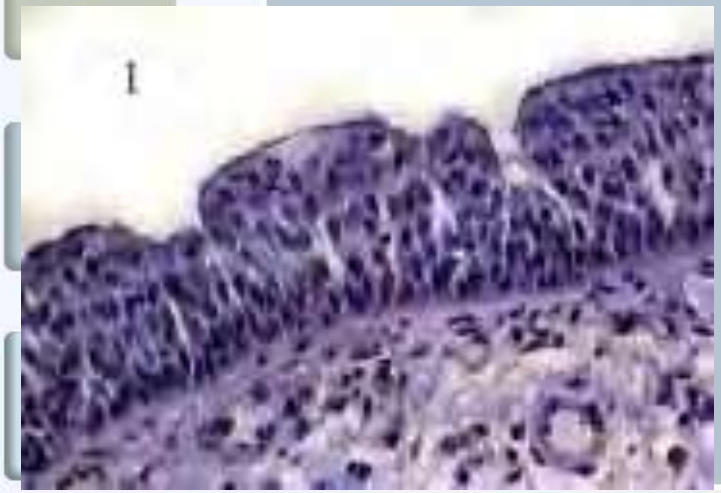
Formed from embryonic epithelial debris the nasopalatine canal, more often in its lower parts.

Usually localized between central incisors, but may also be on the palate.

X-ray:

A focus of homogeneous bone loss rounded shape with clear contours, located along the midline in the area of the incisal foramen, onto which the roots of intact teeth are projected with preserved periodontal gap.

With puncture: clear liquid with crystals cholesterol.



Microscopic cyst wall structure incisal canal. Microdrug. Coloration hematoxylin-eosin. About. 25 x, OK. ten x. 1 - cyst lumen; 2 - ciliated epithelium; 3 - connective tissue with moderate inflammatory infiltration; 4 - blood vessel

Nasopalatine cyst

(incisal cyst)

X-ray
picture and MRI slices patients
with cysts incisal canal

Globular-maxillary cyst

X-ray picture of globular-maxillary cysts

Formed from the epithelium at the fusion of the frontal and maxillary

embryonic facial processes.

Localized between lateral incisor and canine of the upper jaw.

Clinic: painless bulging in anticipation mouth or palate; can grow into the nasal cavity or maxillary sinus.

X-ray: hearth homogeneous rarefaction round bone tissue shapes with clear contours with root divergence and preservation periodontal gap.

Microscopic wall structure globular-maxillary cysts. Microdrug. Hematoxylin staining eosin. About. 40 x, OK. ten x. 1 - cyst lumen; 2 - epithelial cells cubic and cylindrical; 3 - connecting the cloth

In punctate: transparent yellowish liquid with cholesterol crystals.

Naso-alveolar cyst (nasolabial)

Formed from embryonic epithelium in the area of accretion of the frontal, nasal and maxillary embryonic processes,

located on the anterior wall of the upper jaw in the projection of the roots of the lateral incisor and canine.

Clinic: under the wing of the nose in the area of the nasolabial furrows - a sedentary, elastic protrusion of a rounded shape with clear contours.

X-ray no manifestations.

The teeth are intact.

Item: as in globular-maxillary cysts.

Nasolabial cyst filled contrast agent

Nasolabial cyst: a fluctuating nodule

Traumatic cyst

Occurs in the lateral parts of the lower jaw during the period of intensive growth of the skeleton

(12-14 years old).

Developed as a result of injury due to

for hemorrhage in the spongy

substance. The pulp of the teeth adjacent to the cyst

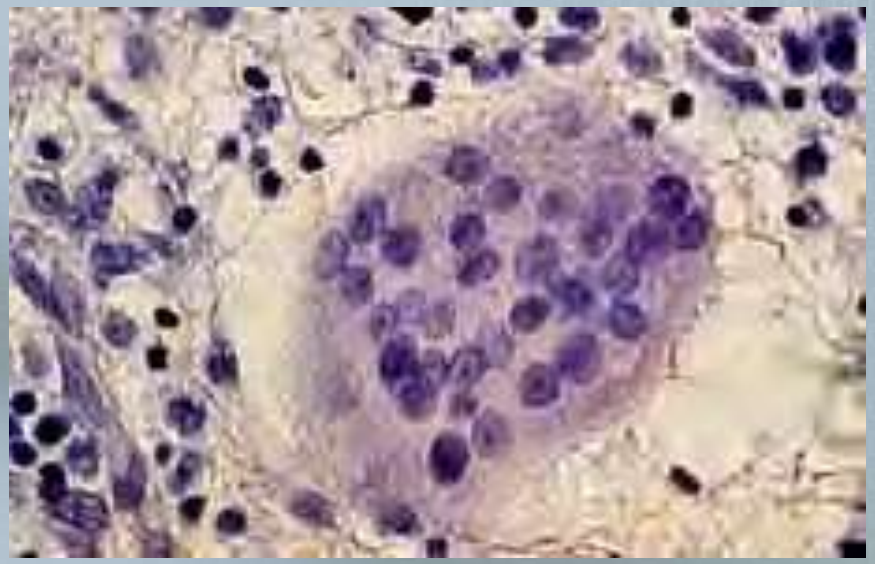
usually alive. Not accompanied deformation and discovered by chance

at radiological

research (clearly limited cavity with sclerosed bony edges,

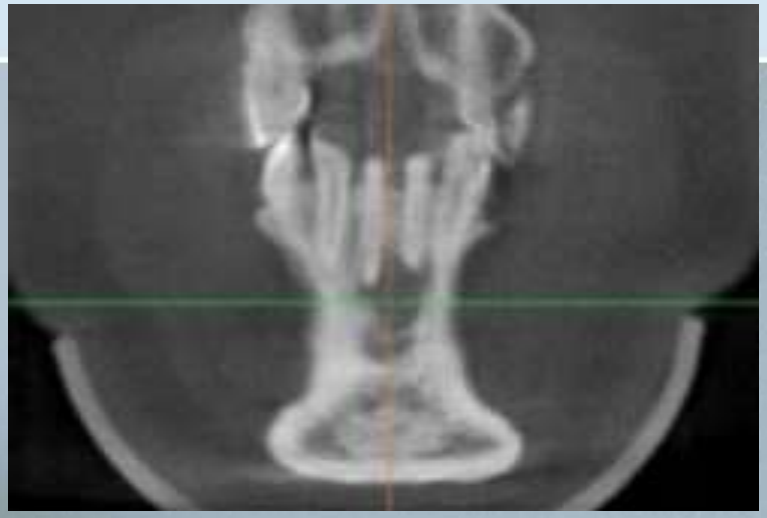
content or filled emorrhagic fluid ***(hemorrhagic cyst).***

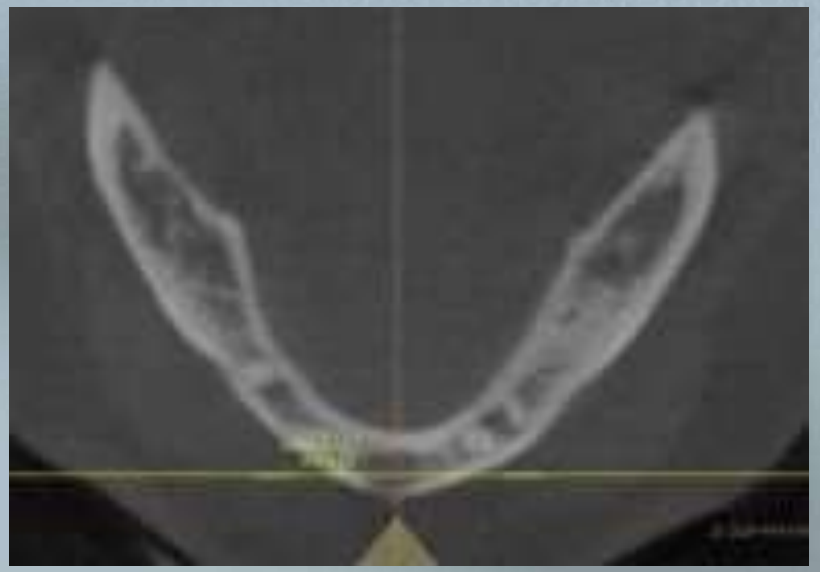
Bone wall covered thin fibrous shell (formed from endosteum).

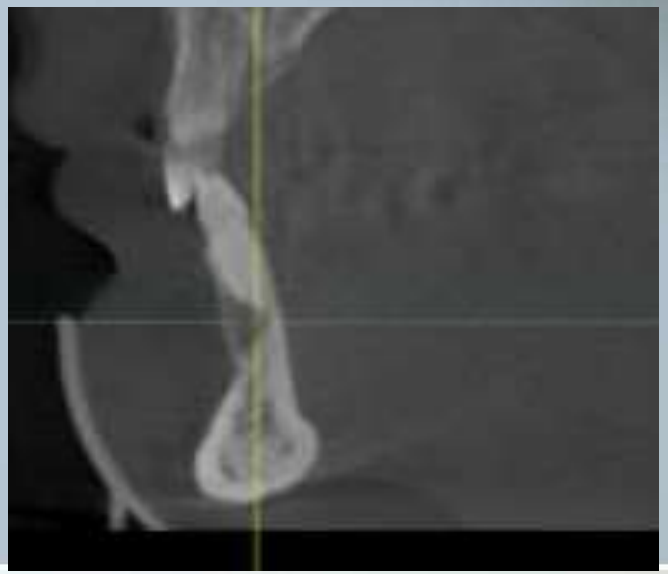


Giant multicore i am a cage type foreign bodies in the wall traumatic coy cysts. About. 40, approx. ten X

Traumatic cyst







fistula on chin and fragments computer tomograms patient with traumatic lower cyst jaw

Traumatic cyst

a

b

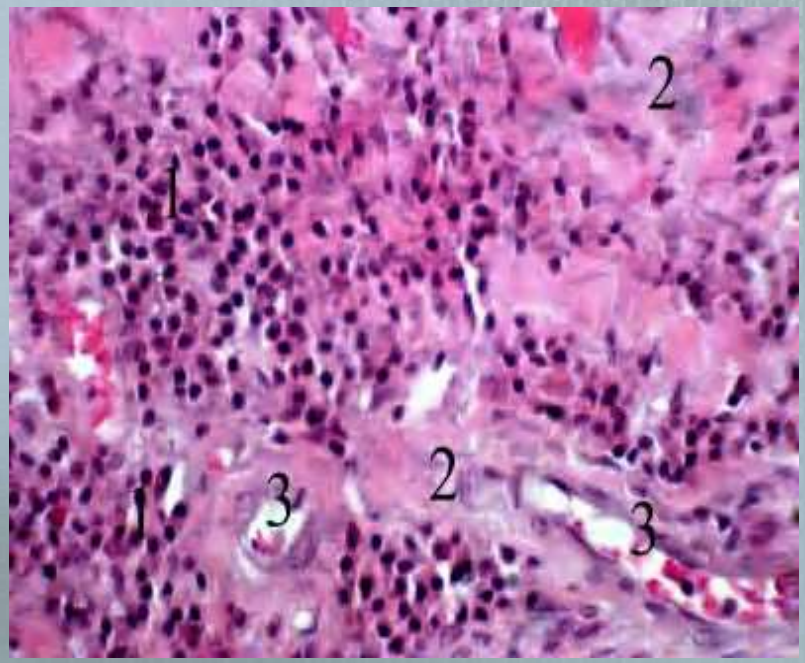
General view of a patient with a traumatic cyst of the lower jaw after 1 week (a) and 3 weeks (b) after endodontic treatment of 31 and 41 teeth

Aneurysmal cyst

More common on the lower jaw in adolescence.

The cyst cavity is filled with blood hemorrhagic fluid or has no content at all.

The fibrous membrane has osteoblasts and osteoclasts.



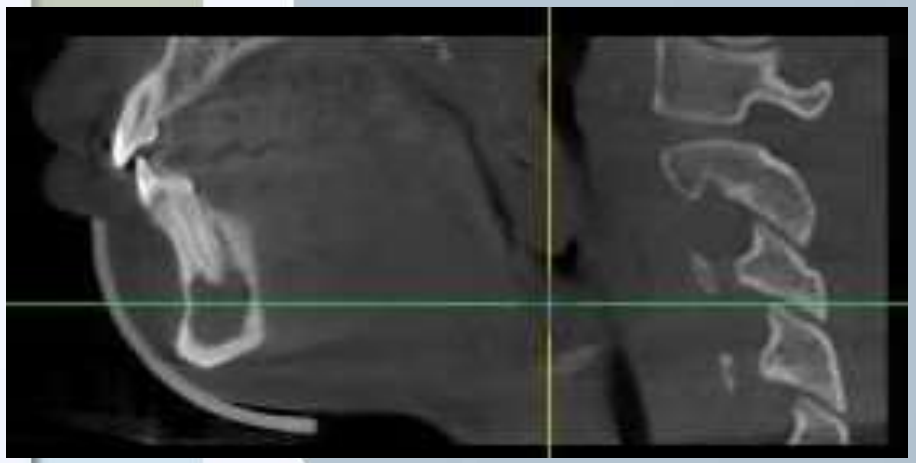
Fragment of the wall of the aneurysmal cyst. Microdrug. Hematoxylin-eosin staining.

About. ten x, OK. ten x. 1 - osteoblasts; 2 - coarse fibrous connective tissue; 3 - blood vessels

Aneurysmal cyst - result intensive bone growth, when the cancellous substance does not have time to rebuild and forms bone cavities.

Aneurysmal cyst

Radiography: plot bone loss with clear contours in as one or several cysts, thinning of cortical plates and deformation jaw.



Orthopantomogram and fragments computer tomograms patient with aneurysmal lower cyst jaw

Surgical treatments for cysts

Cystotomy (Brocade I):

- *large cysts in / h with* germination in maxillary sinus
- *large cysts n / h with* significant *thinning bone* walls
- *changeable bite*
- *signs of suppuration* cysts

Cystectomy (Parch II):

- *Odontogenic and non-odontogenic cysts jaws small sizes*