

Odontogenic inflammation II.
Clinical features, diagnosis, therapy.
The question of dental foci.

Odontogenic inflammation

odontogenic (Greek)

dental (Latin)

Infections in the maxillofacial region

Origin:

- ▶ **Odontogenic:**

 - Diseases arising from caries

 - Periodontal

 - Dentition

- ▶ **Non odontogenic:**

 - After dental treatment

 - Traumatogenic

 - Haematogenic

Cascade of odontogenic infections

Intact tooth

caries

hyperaemia of pulp

pulpitis

gangrene (= necrosis of pulp)

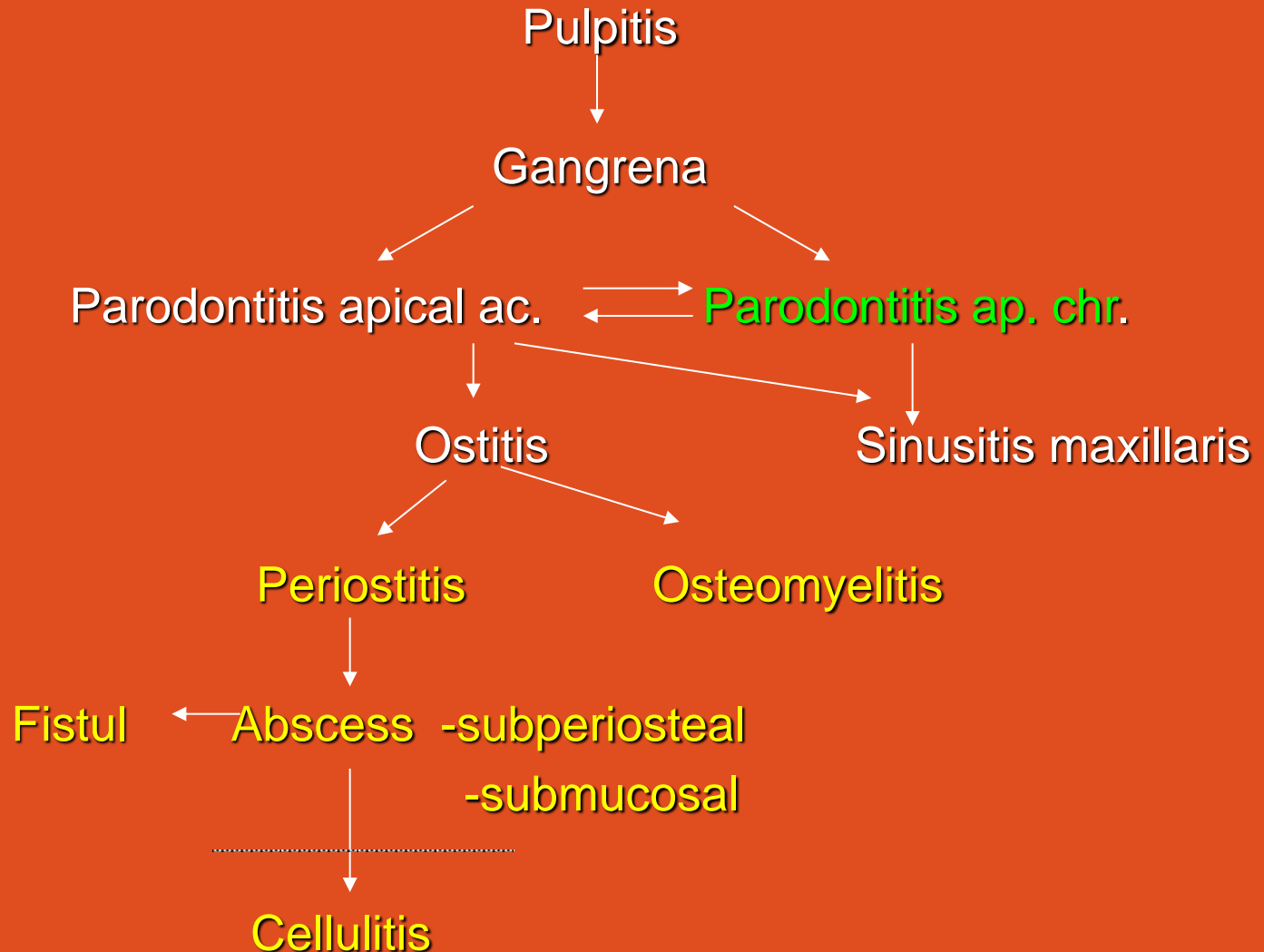
Apical periodontitis (= periodontitis)

Abscess (\approx Periostitis)

osteomyelitis

Cellulitis (=phlegmone)

Odontogenic infections



Symptoms of odontogenic infections

Local

Dolor- pain

Calor - Elevated temperature

Rubor - redness

Tumor - swelling

Functio laesa - malfunction

General

Fever

Elevated sedimentation

Shift to the left in blood counts

Leukocytosis

Regional

Swelling of lymphnodes

Reversible pulpitis (Hyperaemia of the pulp)

- ▶ Reversible
- ▶ Reaction to physical irritation (cold, hot, osmotic...)
- ▶ X-ray finding: caries
- ▶ *Treatment:* filling

Pulpitis

- ▶ **Clinical picture**
 - ▶ acute
 - ▶ chronic
- ▶ **histology**
 - ▶ serous
 - ▶ purulent
- ▶ **extension**
 - ▶ partial
 - ▶ total

Pulpitis

- ▶ Reaction to physical irritation (strong pain) + spontaneous pain typically at the night
- ▶ Low chance to keep the vitality of the tooth
- ▶ X-ray finding: caries
- ▶ Therapy
 - ▶ Root canal treatment
 - ▶ Tooth extraction

Gangrene of pulp

- ▶ Pulp - necrosis
- ▶ Symptoms of pulpitis disappeared
- ▶ Sensitivity to heat in some cases
- ▶ X-ray finding: caries
- ▶ Therapy:
 - ▶ Root canal treatment
 - ▶ Tooth extraction

Periodontitis

- ▶ **Acute**

- ▶ acute apical
- ▶ acute diffuse
- ▶ acute marginal

- ▶ **Chronic**

- ▶ Periapical abscess
- ▶ granuloma
- ▶ cyst

Acute periodontitis

- ▶ Pulp - necrosis
- ▶ Symptoms of pulpitis disappeared
- ▶ Sensitivity to heat in some cases
- ▶ Inflammation in the periapical region
- ▶ Elongated tooth, pain - spontaneous or for biting
- ▶ X-ray finding: caries, wider periodontal space
- ▶ Therapy:
 - ▶ Root canal treatment
 - ▶ Tooth extraction

Chronic periodontitis

- ▶ Necrotic pulp, symptoms of pulpitis disappeared
- ▶ Sensitivity to heat in some cases
- ▶ Chronic Inflammation in the periapical region – bone resorption
- ▶ Sensibility to biting
- ▶ X-ray finding: caries + circular radiolucent area in periapical region
- ▶ Types
 - ▶ Periapical abscess
 - ▶ granuloma
 - ▶ cyst
- ▶ Therapy:
 - ▶ Root canal treatment
 - ▶ Root canal treatment + apicectomy
 - ▶ Tooth extraction

Provocative agents

- ▶ Thermal and osmotic changes
 - ▶ Cold, sweet, osmotic sensitivity = Vital (or partially vital) pulp
 - ▶ Hot sensitivity = ?? ($\Delta T = ?$) necrotic pulp tissue ??
- ▶ Biting, percussion sensitivity = inflammatory process, irritation in periodontal (apical or marginal) region
 - ▶ Acute or chronic periodontitis (apical - caries effected diseases)
 - ▶ Periodontitis (marginal: , chronic, acute abscess, food impaction – dehiscence of interapproximal contact)
 - ▶ Overloading (occlusal problem – filling, crown, bruxism, clenching)
- ▶ Spontaneus pain
 - ▶ Pulpitis (typically during the night)
 - ▶ Acute periodontitis
 - ▶ Chronic periodontitis mild symptoms, but sometimes recurrent – connection to windy condition, weather changes, stronger biting, flu ...)

Origin of pain	Pulpal origin (hyperaemia, pulpitis)	Acute periodontitis	Dental abscess	Acute pericoronal infection	Dry socket
Type of pain	1.strong, sharp 2.attacks, continuous	dull, for biting stronger	dull, pulsate, sometimes strong	dull, pulsating, for the moving the mandible	dull, pulsating, constant
Localisation of pain	affected tooth, neighbouring teeth or edentate jaw parts	affected tooth	affected tooth	affected area	alveolar socket, 2-4 days after tooth extraction
Referred pain	lower teeth→ear, face upper→temporal region, eye, face	--	ear, eye, face, temporal region	ear	ear
Provocative agent	thermal and osmotic changes in oral cavity, later spontaneous	biting (axial direction), or spontaneous	biting, touching (lateral direction also)	eruption of (lower) wisdom teeth	touching or spontaneous
Relieving agent	elimination of provocative agent or analgesics	analgesics	heating, analgesics	heating	heating, analgesics
Duration	1. during the provocation 2. 20-30 min. or more _(typically at night)	constant, worse at eating	constant, worse during the night	constant, worse during eating	constant, worse during eating, wakefulness
Other symptoms	caries, new filling, split or fracture on enamel	hyperaemia of the gum, elevated tooth	swelling on face and lymphnodes, fluctuation	dentition, fever, swelling on face, foetor ex ore	foetor ex ore, sensitive bone area
Consequence without treatment	acute periodontitis, abscess	abscess	fistulisation, become chronic	abscess, become chronic	sequestration of alveolar bone
Therapy	root canal treatment or extraction	root canal treatment or extraction	extraction or root canal treatment	liberation of crown or removal	conservative(local eg. Chlumsky sol.) or surgical (curettage)

Periostitis Abscess

- ▶ Acute

- serous

- purulent

- abscess -subperiosteal

- submucosal

- subcutaneous

- deeper spatial

- ▶ Chronic

Periostitis Abscess

-serous -purulent (abscess) -chronic

Differential diagnose of different stages:

- Medical history
- Physical examination (fluctuation)
- Ultrasound
- CT
- (MRI)
- (Needle aspiration)

Therapy of abscesses

- ▶ Removal or root canal treatment of tooth causing inflammation
- ▶ Wet pack
- ▶ Antibiotics (if necessary)
- ▶ Incision (if necessary)- intraoral
- extraoral

Periostitis Abscess - THERAPY

▶ Acute

Serous



- ▶ Removal or root canal treatment of tooth causing inflammation
- ▶ Wet pack
- ▶ Antibiotics (if necessary)

Periostitis Abscess - THERAPY

- ▶ Acute

Purulent →

- ▶ Removal or root canal treatment of tooth causing inflammation
- ▶ Antibiotics (if necessary)

▶ Incision - intraoral
- extraoral

Indications for use of antibiotics:

- ▶ Acute onset infections
- ▶ Diffuse swelling
- ▶ Compromised host defence
- ▶ Involvement of fascial spaces
- ▶ Cellulitis
- ▶ Severe pericoronal infection
- ▶ Osteomyelitis

Modifying factors to indication for use of antibiotics

- ▶ State of the patient, compromised host defence
- ▶ Age of the patient
- ▶ Progression of infections
- ▶ Treatment of the dental origin

Antibiotics in oral surgery

▶ Penicillin

- ▶ Amoxicillin+clavulanic acid (e.g. *Augmentin*)
- ▶ Ampicillin+sulbactam (*Unasyn*)

▶ Macrolids

- ▶ Erythromycin (*Eryc*)
- ▶ Spiramycin (*Rovamycine*)
- ▶ Josamycin (*Wilprafen*)
- ▶ Roxithromycin (*Rulid*)
- ▶ Clarithromycin (*Klacid*)
- ▶ Azithromycin (*Sumamed*)

▶ Clindamycin

- ▶ (*Dalacin C*)

Criteria for referral to a specialist

- ▶ Rapidly progressive infections
- ▶ Difficulty in breathing
- ▶ Difficulty in swallowing
- ▶ Fascial space involvement
- ▶ Elevated temperature
- ▶ Severe jaw trismus (<10 mm)
- ▶ Toxic appearance
- ▶ Compromised host defence

Compromised host defences I.

- ▶ Uncontrolled metabolic diseases

- Uraemia

- Alcoholism

- Malnutrition

- Severe diabetes

Compromised host defences II.

- ▶ Suppressing diseases

 - Leukaemia

 - Lymphoma

 - Malignant tumours

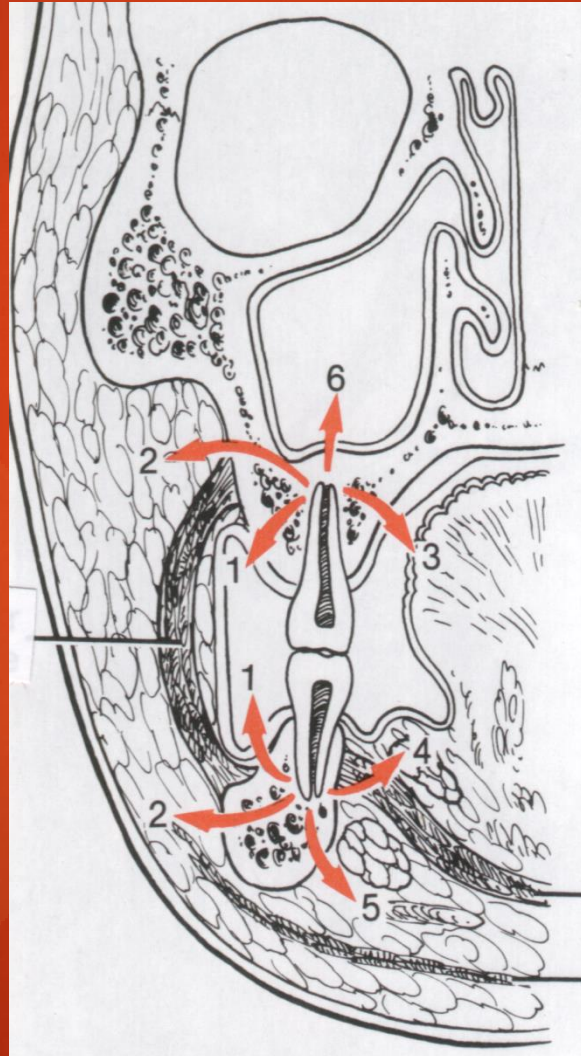
- ▶ Suppressing drugs

 - Cancer chemotherapeutic agents

 - Immunosuppressive

Direction of propagation of infections

M. buccinator



M. mylohyoideus
Platysma

Potentially infected mandibular spaces

- ▶ Submental region
- ▶ Submandibular region
- ▶ Sublingual region
- ▶ Buccal region
- ▶ Submasseteric region
- ▶ Parotid region
- ▶ Parapharyngeal region
- ▶ Pterygomandibular region
- ▶ Peritonsillar region

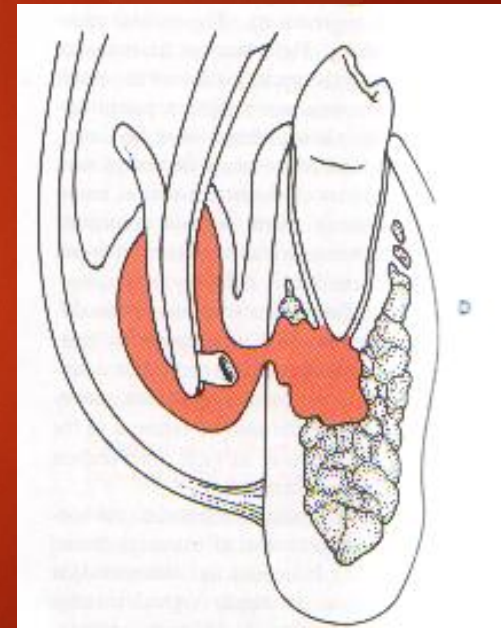
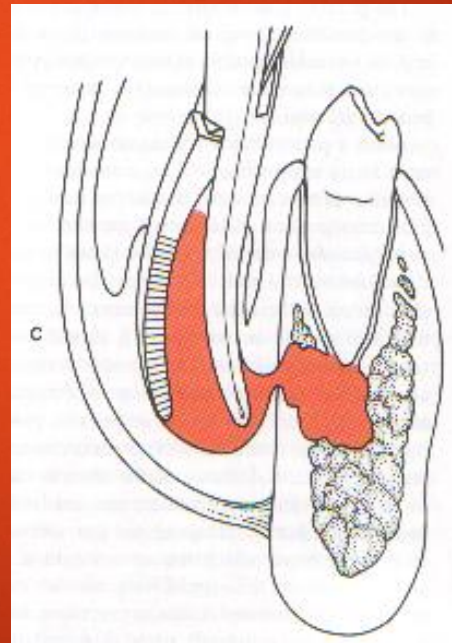
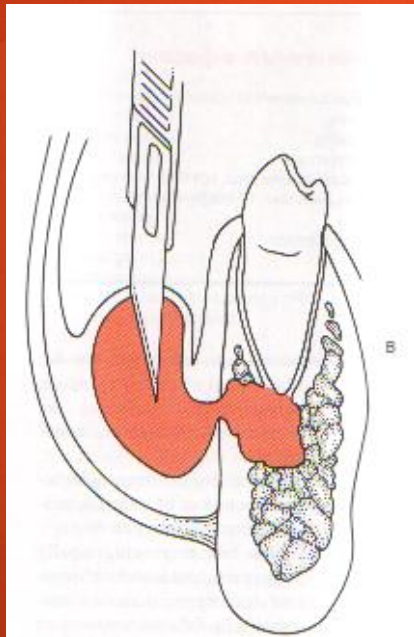
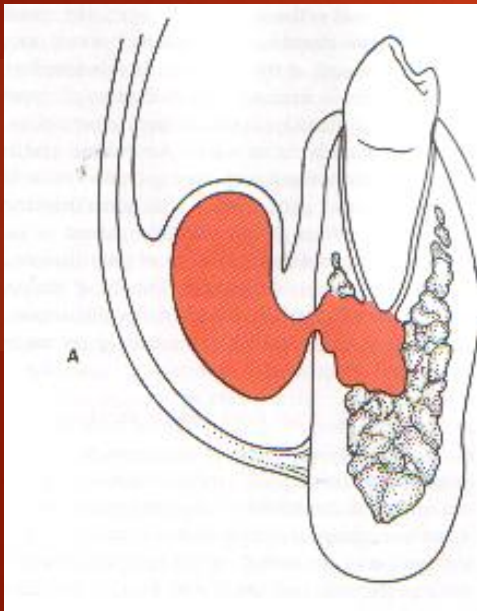
Potentially infected maxillary spaces

- ▶ Upper lip
- ▶ Canine fossa
- ▶ Palatal subperiosteal space
- ▶ Maxillary sinus
- ▶ Infratemporal region
- ▶ Temporal region
- ▶ Retromaxillary region

Therapy I. Extraction



Therapy II. Intraoral incision



Therapy III. Extraoral incision



Sinus tract on the skin



Focal infection –

- dental focus

Primary infection

- ▶ Tonsil
- ▶ Paranasal sinuses
- ▶ Chronic infections in the genital tract (females- adnexum, males- prostate)
- ▶ Cholecystitis

Dental:

- ▶ Periapical region (e.g.. chr. apical periodontitis, different types of cysts, relict root)
- ▶ Partially erupted or impacted teeth (except completely covered by bone)
- ▶ Periodontal region
- ▶ Diagnosis: Radiographs necessary (every affected teeth + site of extracted teeth, except intact teeth)

Secondary diseases

- ▶ 1. Internal diseases: carditis, nephritis
- ▶ 2. Rheumatologic: polyarthritis
- ▶ 3. Ophthalmologic: iritis, iridocyclitis, uveitis
- ▶ 4. Dermatological: dishydrosis, alopecia areata, eczema
- ▶ 5. Neurological: neuritis

Symptoms of secondary disease

- ▶ Objective symptoms (mild)
 - ▶ Elevated temperature
 - ▶ tachycardia
 - ▶ Leukocytosis, monocytosis
 - ▶ Shift to the left in blood counts
 - ▶ Elevated sedimentation

Symptoms of secondary disease

- ▶ General, subjective symptoms:

- ▶ Faintness
- ▶ Dysthymia
- ▶ Tiredness
- ▶ Muscle pain
- ▶ Headache
- ▶ Anorexia
- ▶ Neuralgic, rheumatic pain

Therapy of dental foci

- ▶ Therapy: Root canal filling,
Root canal filling + apicectomy,
curettage,
extraction

periodontal treatment