

# Endodontic Microbiology

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## Endodontic Microbiology

The indigenous oral microflora may gain access to the pulp and impair its function along a number of different routes:

- Direct exposure of the pulp tissue i.e., following caries, cavity and crown preparation, or dental trauma.
- Exposure of accessory canals and apical foramina in periodontal disease.
- Exposure of dentin following caries, periodontal disease, dental restorative procedures, cracks in enamel, erosion etc.

### Anachoresis:

metastasis due to transient bacteremia has been suggested as a possible pathway for bacterial penetration into areas of pulp necrosis.

- Such a route of bacterial invasion requires, that :
- pulp be partially or totally damaged, and
- bacteria have been disseminated into the bloodstream and are to be capable of leaving the circulation and entering the damaged pulp.

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Conditions conducive to growth of bacteria in the necrotic pulp:  
nutritional factors,  
influence of oxygen,  
bacterial interactions.

Microbial flora of the infected root canal is NOT the same, as  
the the microbial flora of the mouth.

Microbial flora of the periodontal pocket is more complex, but  
similar to the flora of the infected root canal.

The pathogenic role of bacteria in periapical pathoses:

necrotic debris alone (although stimulating phagocytosis and  
tissue repair) will not produce enough irritation to sustain  
inflammatory responses in the periapex.

## Therapy of root canal infection

Aseptic conditions

Sterile instruments

1. Debridement: cleaning and shaping
2. Antimicrobial irrigating with tissue dissolution  
/NaOCl/ and  
antimicrobial dressing /Ca(OH)<sub>2</sub>/
3. Complete obturation

### ASEPSIS

Process of excluding contamination by  
microorganisms

1. Rubber dam isolation
2. Excavation of all caries, removal of  
defective fillings, plaque, and calculus from all  
tooth surfaces
3. Cleaning, disinfection
4. Sterile instruments, handling
5. Temporization

## The use of antibiotics

cannot substitute for a thorough diagnosis and proficient endodontic therapy !!

Systemic antimicrobial treatment is generally!! Antibiotics indicated when symptoms of endodontic infections are present that suggest marked \_progression or systemic involvement.

Fever, malaise, cellulitis, unexplained trismus...

Daily monitoring !

Before treatments with bacteraemia

- Scaling
- Extraction, sculption
- Rootcanal treatment + additional surgery (curettage, resectio)
- Intraligamental injection
- Treatments with bleeding of the gingiva (surgery)

(Magyar Belorv. Arch. 1995. )

## The use of antibiotics

Non penicillin-allergic patient:

1 h before treatment    adult: 2 g Amoxicillin p.o.  
child: 50 mg/kg Amoxicillin p.o.

Penicillin-allergic patient:

1 h before treatment    adult: 600 mg Dalacin C p.o.  
child: 20 mg/kg Dalacin C p.o.

## Antibiotic prophylaxis of high-risk patient

Always

- Heart valves damaged by rheumatic fever
- Bacterial endocarditis
- Congenital cardiac malformations
- Surgically constructed systemic - pulmonary shunt
- Idiopathic hypertrophic subaortic stenosis
- Mitral valve prolapse with insufficiency

After consultation their physician

- Immunosuppressive therapy
- Therapy on cytotoxic drugs
- Receiving irradiation for cancer
- Prosthetic joint implants or systemic infection

Careful history ---- consultation

## INFECTION CONTROL

(HIV, Hepatitis B, disinfection, sterilization)

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