

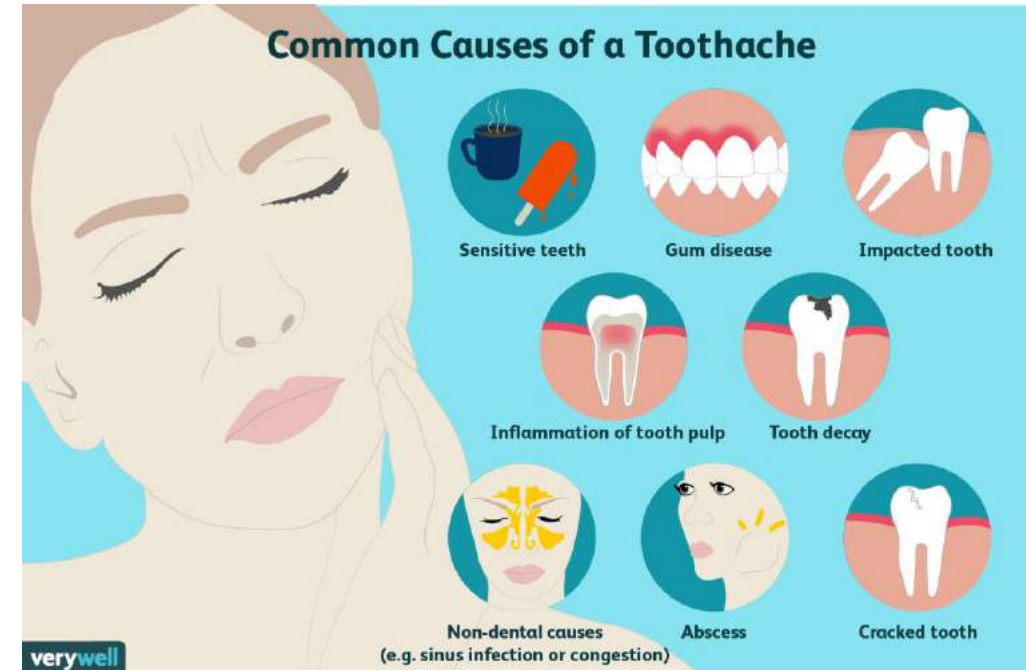
PAIN IN DENTISTRY

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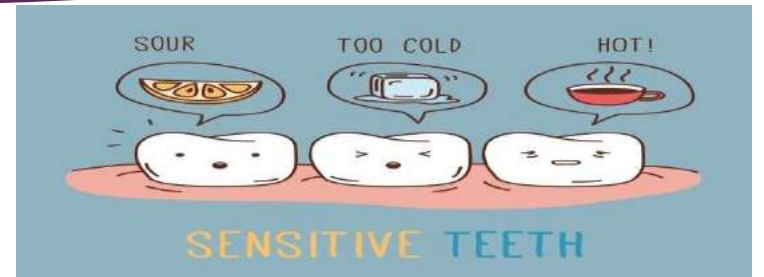
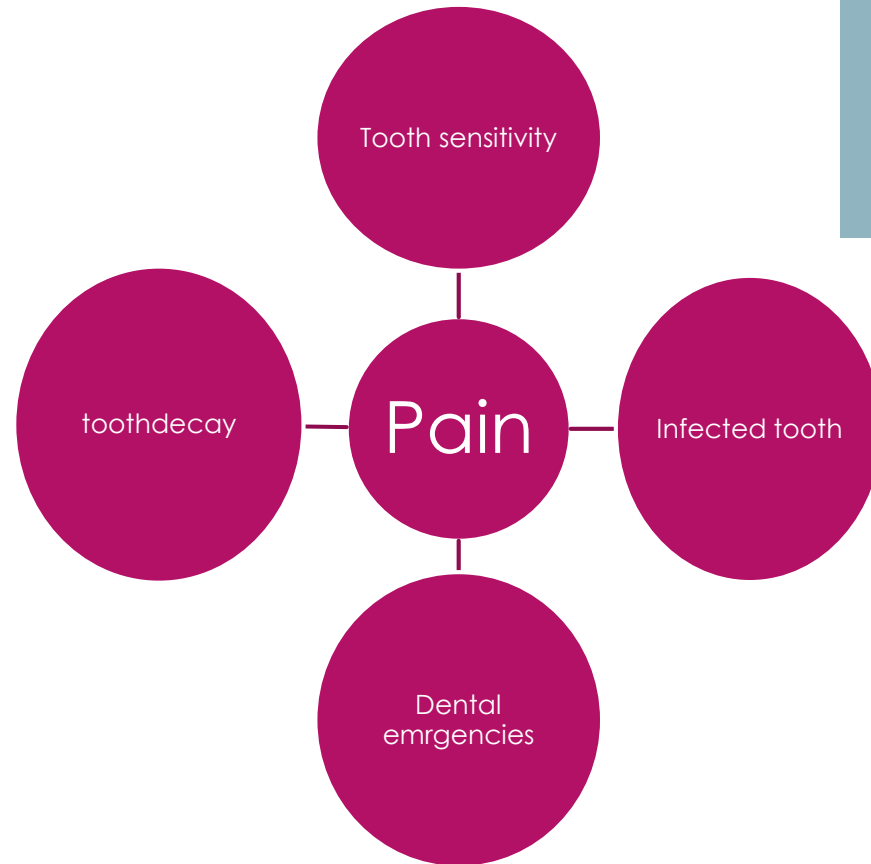
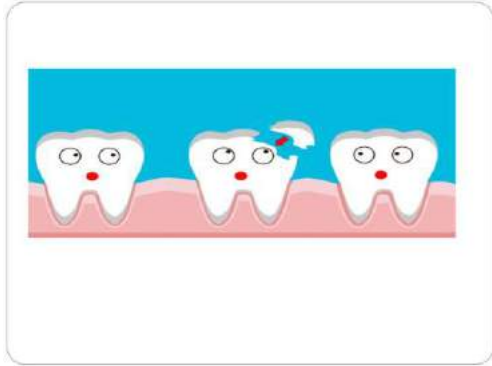


Tooth Pain

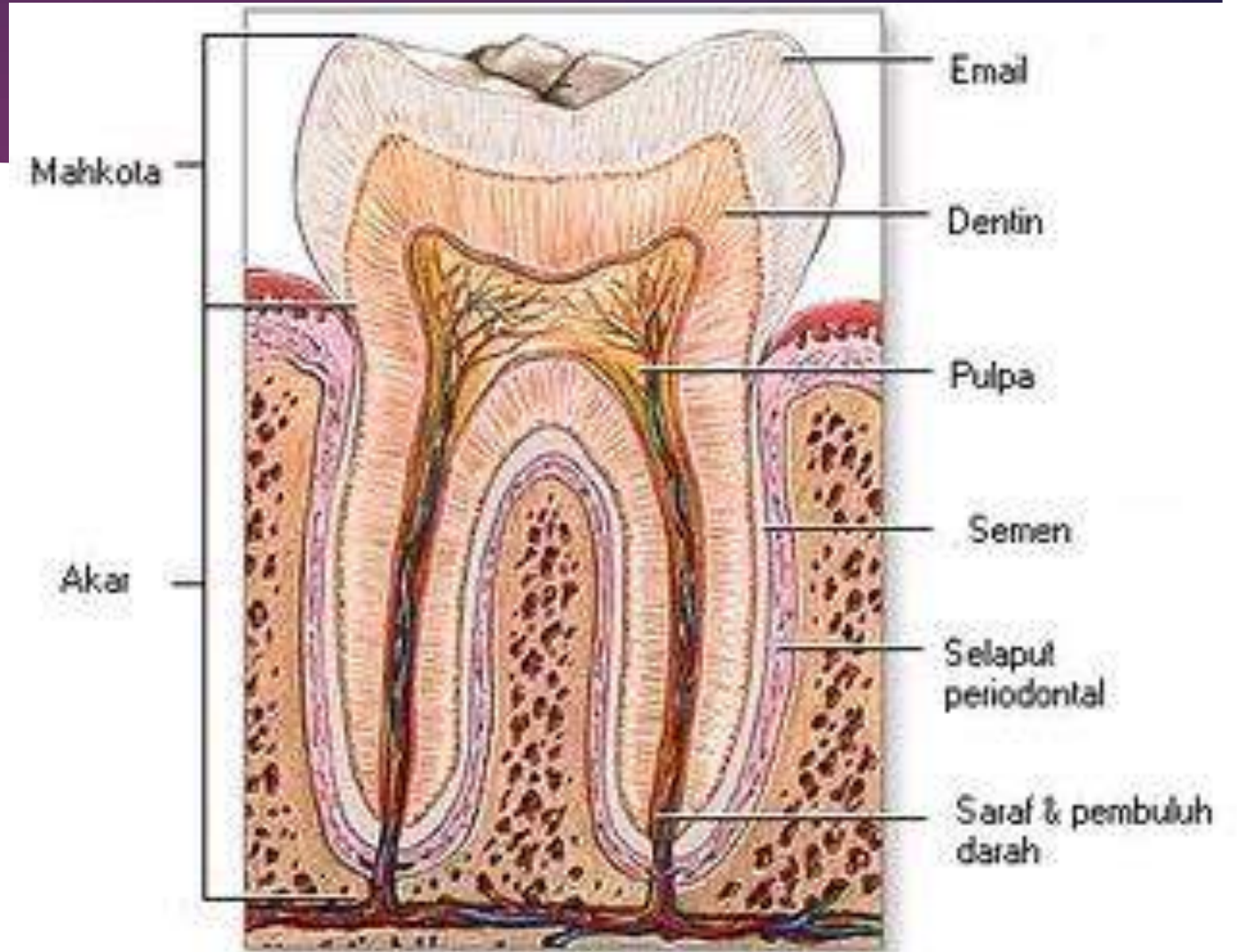
- ▶ **Pain** is a distressing feeling often caused by intense or damaging stimuli.
- ▶ The International Association for the Study of Pain's widely used definition defines pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage"



Causes

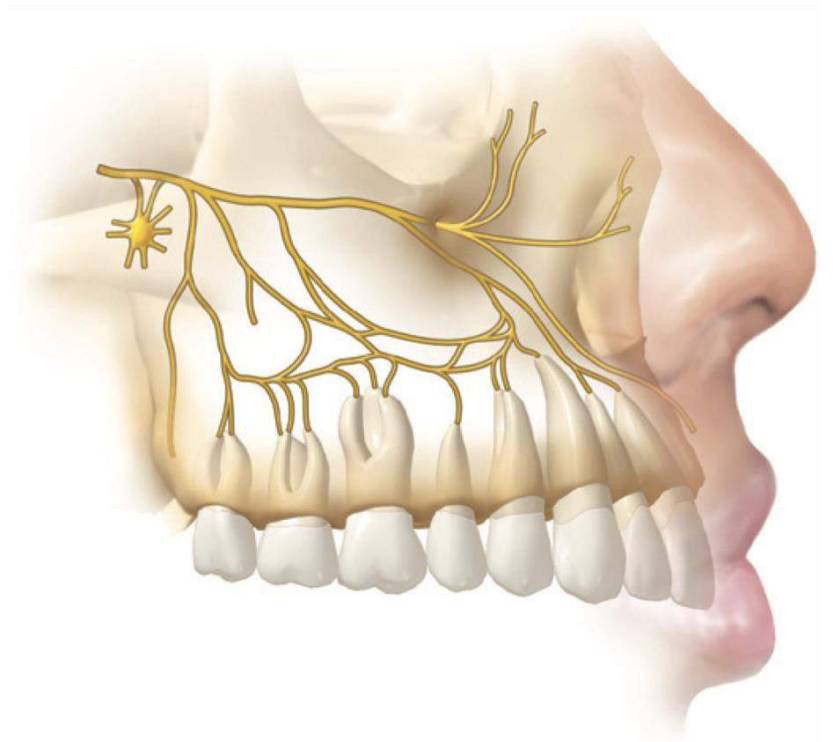


Anatomi



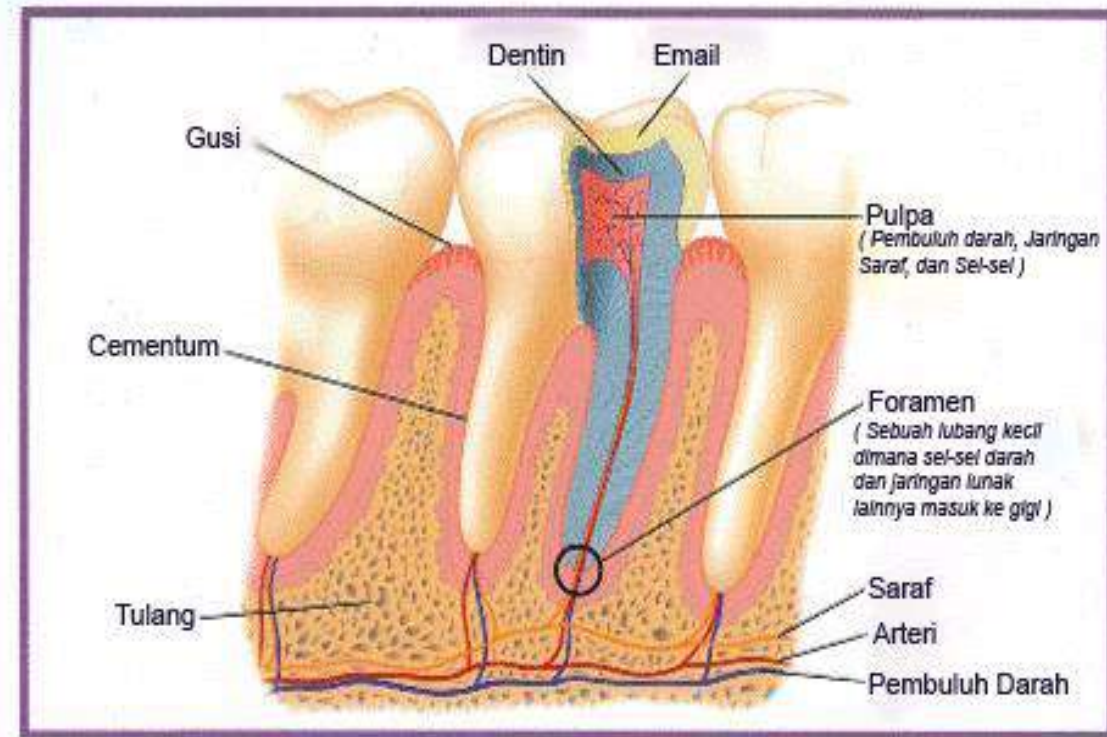
Pulp Dentin Complex

- ▶ Pulp consist : blood vessels, nerve,, calagen, interstitial, fibroblast, odontoblast and immune cell
- ▶ Pulpa adalah sistem mikrosirkuler, komponen utama yaitu arteriol dan venula yang memasuki pulpa melalui foramen apikal dan saluran akar tambahan
- ▶ Pada saluran akar, yang masuk ke rongga pulpa (jaringan limfe, pembuluh darah dan jaringan saraf



Persarafan pulpa

- Berasal dari n. trigeminus, selain saraf otonom
- dua jenis serabut syaraf pulpa yaitu serabut syaraf bermyelin (serabut A) dan tanpa myelin (serabut C)
- Serabut syaraf A terletak di daerah perbatasan dentin-pulpa, rasa sakit tajam
- Serabut syaraf A delta mayoritas dalam serabut A
- Serabut syaraf C terdistribusi di seluruh kamar pulpa, rasa sakit yang lebih berat dan biasanya gigi telah mengalami cedera
- Bagian tepi pulpa hanya dikelilingi sel schwan
- Ujung-ujung saraf bebas terdapat pada pulpa, 1/3 jaringan saraf C, 2/3 jaringan A
- Ujung jaringan syaraf berukuran kira2 1 mm masuk ke predentin atau dentin diantara odontoblas



Syaraf

Serabut syaraf A delta	Serabut syaraf C
Nyeri cepat dan tajam	Nyeri lama dan sakit tumpul, tipis
Serabut syaraf bermielin Terletak pada pulpa perifer	Serabut syaraf tidak bermielin Berhubungan erat dengan odontoblas

Serabut syaraf

Table 3.1 Examples of different nerve fiber types, their functions, diameters and conduction velocities.

Fiber type	Function	Diameter (μm)	Conduction velocity (m/s)
A α	Motoneurons Muscle afferents	12–20	70–120
A β	Mediation of touch and pressure sensations	5–12	30–70
A δ	Mediation of pain, temperature and touch	2–5	5–30
C	Mostly mediation of pain	0.4–1.2	0.5–2.5

Teori Nyeri

- ▶ Direct Innervation (DI) Theory
- ▶ Odontoblast Receptor (OR) Theory
- ▶ Fluid Movement/Hydrodynamic Theory.

The transducer theory, the modulation theory, the “gate” control and vibration theory, and the hydrodynamic

Teori Stimulasi langsung pada syaraf

- ⑩ Stimulusrangsang mencapai ujung syaraf secara langsung didalam dentin
- ⑩ Tidak menjelaskan bagaimana caranya stimuli mencapai ujung syaraf
- ⑩ bukti ilmiah yang mendukung teori ini sangat sedikit-----**tidak diterima**

Teori Transduksi

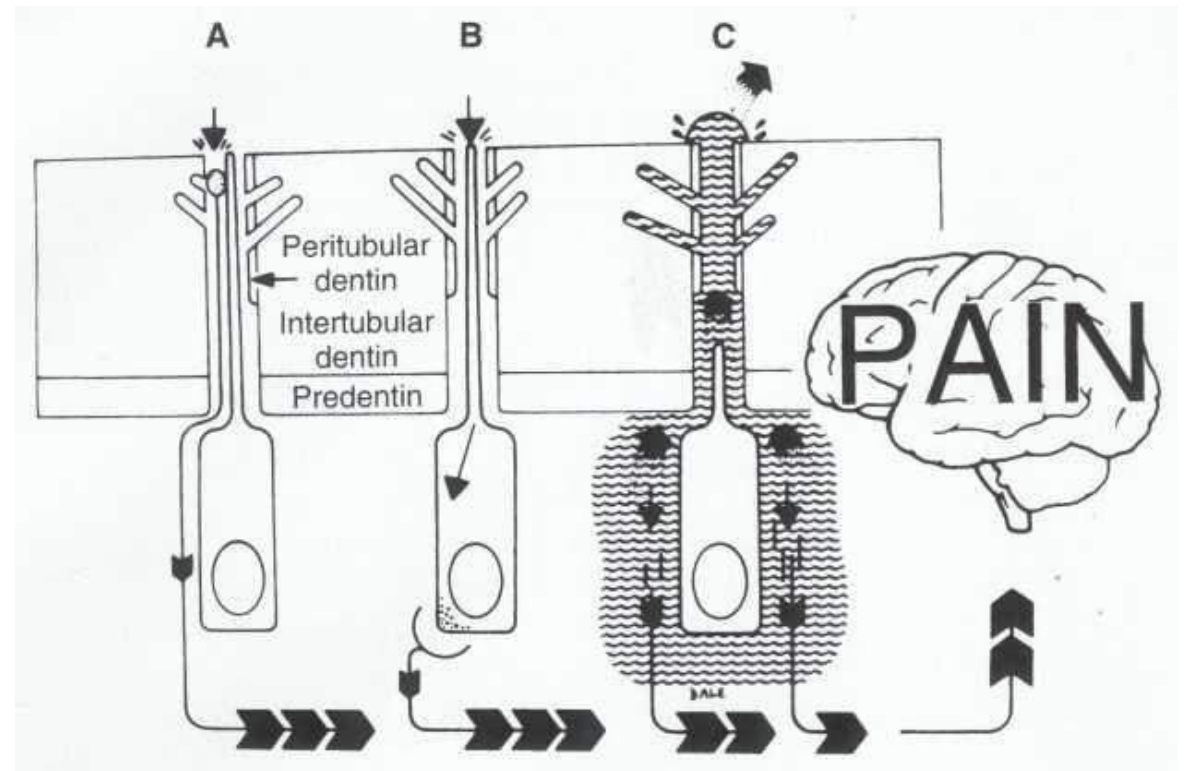
- ▶ Proses odontoblastic terangsang stimulus dan mentransmisi impuls ujung syaraf
- ▶ Teori agak lemah karena diketahui tidak ada neurotransmitter di dalam dentin

Teori Hidrodinamik

- ▶ Menjelaskan reaksi rasa sakit pada pulpa terhadap ***panas, dingin, pemotongan dentin dan probing dentin***
- ▶ Panjang proc odontoblas, panjang serabut saraf dan tubuli dentinalis
- ▶ Teori ini menjelaskan ttg **pergerakan cairan di dalam tubuli---rangsang---ujung syaraf aktif---impuls---korteks serebri---rasa sakit**
- ▶ Jika rangsang **panas---mengembangkan cairan dentin** dan sebaliknya
- ▶ Rangsang **dingin---kontraksi cairan dalam tubuli dentin---pergerakan cairan meningkat---rasa sakit**

Toeri Hidrodinamika

- ▶ Peningkatan volume dan aliran cairan tubuli dentin dipengaruhi : lapisan dentin yang mendekati pulpa, densitas tubuli dan peningkatan diameter---permeabilitas



Tooth Pain

AAE (AMERICAN ASSOCIATION
OF ENDODONTIST)

Tooth Sensitivity

Problem	solusi
Minor decay	Pasta gigi (sensitive teeth)
Abrasi/afraksi	restorasi
Resesi gingiva/abrasi/afraksi	Sikat gigi (soft/extra soft)

Sensitivity after dental treatment

- ▶ Problem : perawatan dental menyebabkan inflamasi pada pulpa sehingga menimbulkan nyeri
- ▶ Solusi : observasi, jika terus berlanjut segera dilakukan perawatan (endodontist)

Sharp pain when biting

- ▶ Problem : decay, tumpatan rusak, tooth crack dan kerusakan pada pulpa
- ▶ Solution : Root canal therapy

Lingering Pain

- ▶ **Possible problem:** It's likely that the pulp has been irreversibly damaged by deep decay or physical trauma.
- ▶ **What to do:** See your dentist or endodontist as soon as possible to save the tooth with root canal treatment.

Constant and severe pain and pressure, swelling of gum and sensitivity to touch

- ▶ **Possible problem:** A tooth may be abscessed, causing an infection in the surrounding tissue and bone.
- ▶ **What to do:** See your endodontist for evaluation and treatment to relieve the pain and save the tooth. Take over-the-counter medications until you see the endodontist.

Dull Ache and Pressure in upper teeth and jaw

- ▶ **Possible problem:** Grinding of teeth, known as bruxism, can cause this type of ache. The pain of a sinus headache may also be felt in the face and teeth.
- ▶ **What to do:** For bruxism, consult your dentist. For a sinus headache, try over-the-counter medication. If the pain is severe and chronic, see your endodontist or physician for evaluation.

Cracked Tooth

- ▶ Whether your tooth cracks from an injury or general wear and tear, you can experience a variety of symptoms ranging from erratic pain when you chew your food to sudden pain when your tooth is exposed to very hot or cold temperatures. In many cases, the pain may come and go and your dentist may have difficulty locating the tooth causing the discomfort. If you experience these symptoms or suspect a cracked tooth, it's best to see an endodontist as soon as possible.



References

- ▶ PM Bartold, Dentinal hypersensitivity: a review, Australian Dental Journal 2006;51:(3):212-21
- ▶ Tooth pain, American Association of Endodontics
- ▶ Bergenholtz EG. Textbook of Endodontology, second edition. :402.