



2. Dens Evaginatus

Dens Evaginatus (DE)

- DE is thought to be the proliferation and **evagination** of an area of the inner enamel epithelium and subjacent **dental papilla into the enamel organ** during early stage of tooth development.
- DE is a developmental anomaly of tooth by presence of an extra cusp, **tubercle** or bulge **protruding from the occlusal surface of posterior teeth and from lingual surface of anterior teeth.**
- It consists of enamel covering dentin core that usually contains pulp tissue.

Shafer et al. 1983

Levitan et al. 2006, Stecker et al. 2002



Dens Evaginatus (DE)

- Tuberculated premolar, Evaginated odontoma, Mongoloid or oriental premolar, Leong's premolar, cone-shaped supernumerary cusp.
- For anterior teeth, it is called talon cusp.

Dehlers FAC. 1956, Curzon et al. 1970,
Merrill RG. 1964, Villa et al. 1959, Mellor et al. 1970



Etiology

- Trauma
- Growth pressure on the dental arches during odontogenesis
- Genetic factors (Familial tendency)

Davis et al. 1986,
Siqueira et al. 2004, Levitan et al. 2006

Prevalence

- The prevalence of DE is between **0.5-4.3%** depending on the population group. *(Levitan et al. 2006)*
- DE occurs commonly in people in the **Mongoloid racial group**. *(Loh et al. 1985, Stecker et al. 2002, Oehlers FAC. 1956)*
- **In Thailand, the prevalence of DE is found between 1.01-1.8%**. *(Reichart et al. 1975, Arunyanart O. 2002, Sukaram S. 2004)*
- DE is most commonly observed in **premolars** but may occur on molars, canines and incisor. *(Dankner et al. 1996, Jowharji et al. 1992, Abbott PV. 1998)*
- DE observed as bilateral, symmetric distribution with a slightly sexual predilection for females. *(Kocsis et al. 2002)*
- DE occurs in the mandible five times more than in the maxilla. *(Dankner et al. 1996, Reichart et al. 1975, Yip WK. 1974)*

Prevalence

- **The prevalence of DE was 3.2% In Thailand.**
- **98.4% of DE was found in premolar** followed by canine and lateral incisor.
- The ratio between the lower premolar DE to the upper premolar DE was 8:1.
- There was no statistically significant difference between the prevalence found in male and female.

Suksamai et al. 2008

Clinical Importance

- The tubercle is easily fractures or is worn away, exposing the fine pupal extension, which may lead infection.
- Infection and loss of tooth vitality may occur before root development is complete when pulp tests often are unreliable.

Nik-Hussein N. 1986, Cohen et al. 1991

- 14.1-40.2% of DE exhibit pulpal and periapical involvement.
- **In Thailand, 33.1% of DE exhibit apical periodontitis**

Oehlers FAC. 1956, Merrill RG. 1964,
Reichart et al. 1975, Yip WK. 1974, Sukasamai et al. 2008

Management strategies

- Early detection of DE is important so that preventive management can be started as early as possible.
- In the tooth with **DE with vital pulp, selective grinding of the opposing teeth**, in a situation where the tubercle has fractured, it can be sealed with resin composite.

Levitan et al. 2006

Management strategies

- In the case of DE with pulp exposure during early phase of root development, MTA pulpotomy is suggested.
- The necrotic pulp, MTA apexification or Regenerative endodontic procedures in case of immature apex.
- The conventional root canal treatment should be performed on the matured tooth.

Levitan et al. 2006

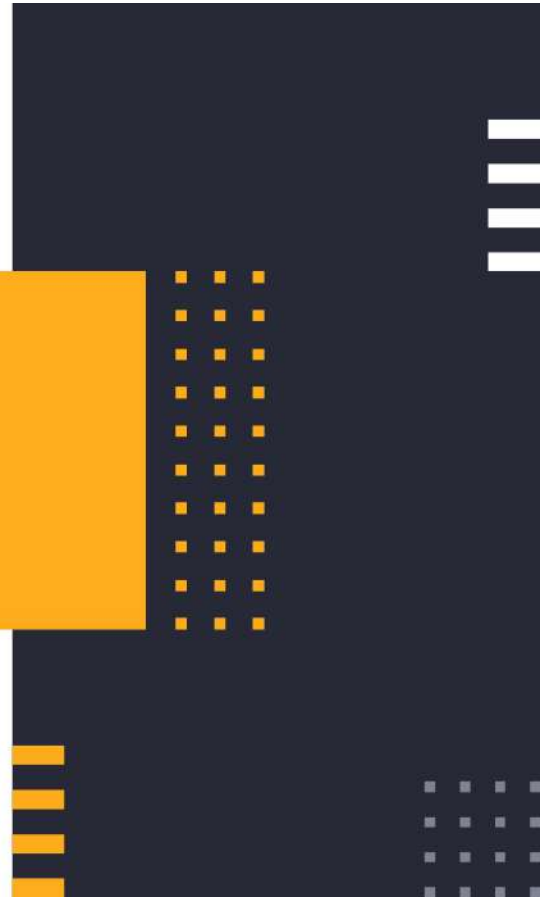
Treatment guideline of Dens Evaginatus

Prophylaxis Tubercle Intact or Without Enamel		Intervention Tubercle with Pulp Exposure			
Normal Pulp		Inflamed Pulp		Necrotic Pulp	
Type I Mature Apex	Type II Immature Apex	Type III Mature Apex	Type IV Immature Apex	Type V Mature Apex	Type VI Immature Apex
Reduce opposing occluding tooth	Same as Type I except:	Conventional root canal therapy	Shallow MTA pulpotomy	Conventional root canal therapy	MTA root-end barrier
Apply acid-etched flowable light-cured resin to tubercle	Reevaluation every 3-4 months until development of mature apex	Restoration	Glass ionomer layer	Restoration	Glass ionomer layer
Yearly reevaluation to assess occlusion, resin, pulp and periapex			Acid-etched light-cured resin		Acid-etched light-cured resin
When reevaluation demonstrates adequate pulp recession, remove tubercle and apply resin					

Levitan ME 2006, Chen JW 2020



Case Reports



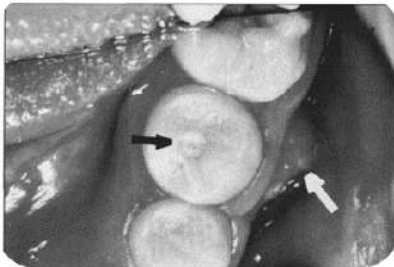
Case report I:

- Pus discharge from sinus tract adjacent to tooth 44 was observed.
- Electrical pulp sensitivity test shows vital mandibular premolar except 44.
- The tubercle on occlusal surface of 34,35 and 45.
- Periapical radiolucency with respect to 44.
- 34,35 and 45 preparation shallow cavity and seal with resin composite
- 44 root canal treatment



Ayer et al. 2015

Case report II:



- 25,35,45 Small round flat surface 1-1.5 mm with pin point dark spot
- 25,35,45 -ve to cold test & EPT
- 25 +ve to percussion
- 34,45 -ve to percussion with gum boil
- 25 Radiolucency area similar to dental follicle around immature root apex
- 34,45 Diffused rarefied area around immature root apex.

Elsa et al. 1994