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內文：

Introduction

- ✓ This case report presents the **diagnosis** and **non-surgical endodontic management** of a tooth 22 with **multiple developmental abnormalities**. They include a **dens evaginatus (DE)** and a **dens invaginatus (DI)** that extends to an apical burst in a second truncated root.
 - First documented** case of DI and DE in an indigenous Australian.
 - Treatment was achieved **without CBCT** and **endodontic microscopy**.
 - Academic perspective**: ambiguities appearing in the literature relating to classification systems and associated terminologies
 - General practitioner's view**: role of a specialist's experience to endodontic diagnosis and intervention.
- ✓ Terms and definition
 - DI, DE and fusion appear early** in the American Association of Endodontists' *Glossary of Endodontic Terms*.
 - However, classification systems and associated terminologies **describe the developmental origins** and **ignore the endodontic landscape**.
 - Confusing use** of terminologies for anomalous dental developments appears in the endodontic literature.
- ✓ Another attribute of the published research relating to these anomalies is multidisciplinary authorship. Surgeons, paediatricians, orthodontists, endodontists, radiologists and periodontists often **focus on the management of a specific clinical circumstance and its environs**.
- ✓ Hallett provided the first classification of '**palatal invagination of maxillary incisor teeth**'.
 - Based on 'degree of affection' from 'normal'
 - 14 subdivisions of aberrancy.
- ✓ Oehlers categorised DI according to apparent **radiographic extension of the invagination**.
 - Group I are limited to the crown.
 - Group II penetrate the crown and root.
 - Group III penetrate the crown and root and communicate with the **periodontal ligament**.

The pseudo-foramen, termed "burst", can be located either laterally or apically.

Case report

The patient “P”

- a 15-year-old female with **no relevant medical history**.
- Prior dental records are **not complicated**.
- A district dental officer **ordered an orthopantomogram (panorex)** to assess periodontal bone height.



- The appearance of tooth 22 is **most suggestive of a dens invaginatus**.
- There is a reasonably **well defined lucency** lying between tooth 22 and 23 roots.
- Lucency in tooth 22/23 region is most suggestive of **longstanding inflammatory disease** associated with **a nonvital 22**.
- The dental officer’s referral advised that tooth 22 was asymptomatic and requested ‘**Treatment for non-vital (distal canal) 22**’ It also cautioned ‘**22 responded positively to cold.**’
- No familial history, personal history of either dental or facial trauma.

	<ul style="list-style-type: none"> ✓ A 6 mm-long clinically non-cavitated, inverted, U-shaped, stained fissure was present on the <u>palatal surface</u> and limited to the <u>coronal enamel</u>. ✓ A significant evagination without occlusal interference was present. ✓ A cingulum was present but the normal 22 palatal concavity was obliterated by a 3 mm-high evagination with an invagination at its peak.
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The 21, 22 and 23 responded positively to cold **sensibility testing**, and also normal to **percussion, palpation, mobility test and periodontal probing**. Also, no palatal groove defect was detected.



- ✓ At the palatal opening of the invagination,
 - An ascending radio-opacity resembles of **enamel**
 - It appears to extend apically well above the level of the cemento-enamel margin.
 - The ill-defined radio-opacity across the crown suggests **diffuse calcification of the dentine**.

According to those mentioned above, the **dentino-pulpal complex** in the **main root** was both autonomous and **healthy**. If it is correct, non-surgical management of the invagination had to be considered as a serious option.

Discussion

- ✓ Many characteristics of an Oehlers type III DI are present to this case.
- ✓ Inner enamel epithelial proliferation **within enamel organ** and **into dental papilla** during the morpho-differentiation phase was pronounced.
- ✓ In-folding of inner enamel epithelial cells:
 1. Extend the invagination through the dental papilla for the accessory root
 2. Create a simultaneous reverse-pressure out-folding to produce evagination
- ✓ Interface between **internal enamel epithelium** and the **dental papilla** would be the only boundary to carry a basement membrane, which is critical to both amelogenesis and dentinogenesis.
- ✓ -Diagnosis of Oehlers type III DI => from a single tooth bud.
-Some evidence suggests a supernumerary tooth bud fused onto the 22.
- ✓ Potential indicators of fusion (tooth 22)
 1. Subtle (maximum 2 mm) broader labio-palatal contours
 2. The presence of correct tooth count.
 3. A common site for a supernumerary tooth.

- ✓ Beside diagnosis and origins, **Attention is focused on problems management**, including consideration of its anatomy, infection, situation of apical lesion and canal health of main root, etc.
- ✓ Surgery was ruled out because:
 1. The enamel-lined invagination possibly communicated with the dentino-pulpal complex.
 2. Instance surgically induced **fenestration and dehiscence**
 3. The remaining **spindly and curved root** are improper for occlusal overload or prosthodontic intervention
- ✓ Although there was some doubt about the diagnosis, **endodontic intervention was recommended**;
 - conservative options** would be attempted first (success for conservative modalities would require at least 6 months of observation)
 - surgical intervention was a **last resort**
 - Tooth 22 may be **aesthetically compromised** throughout teenage years
 - It **may have to be extracted** either during or after treatment.
- ✓ Treatment course
 - Open access was made **via the tip of the evagination**
 - Scouting of the invagination with a gutta-percha point and an file (suggested that enamel extended almost to the apex of the second root)
 - There was **exudate** but **no haemorrhage**
 - **Irrigation** involved 4% sodium hypochlorite (NaOCl).
 - Calcium hydroxide **dressing** was sealed in place using a temporary restorative material covered with self-cure glass ionomer cement
 - Throughout all the visits for endodontic treatment, the **22 responded to cold**.
 - 2 months later, S/S is free, still respond to cold. The canal is sealed with white mineral trioxide aggregate, self-cured temporary restorative material and glass ionomer restoration.

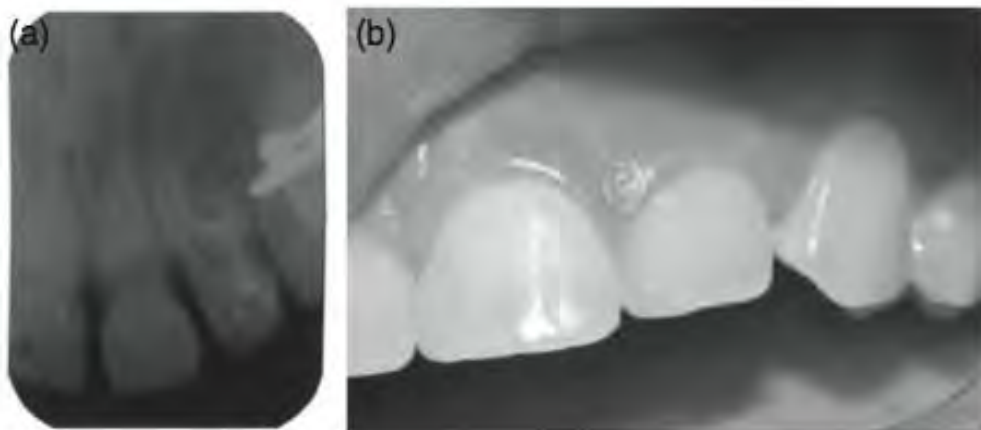


Figure 3 (a) Note the osseous healing. (b) The buccal view with minimal, if any, discoloration.

Conclusion

This case report demonstrates the importance of many themes in endodontic practice. There could also be debate concerning the nature and classification of the anomalies. The definitive diagnosis, probably DE and DI, is irrelevant to treatment outcome.

題號	題目
1	Choose a WRONG answer below (A) Dens evaginatus is a cusplike elevation of enamel (B) It locates in central groove or lingual ridge of buccal cusp of premolar or molar teeth (C) Prevalence is higher in whites than Asian (D) It is also named occlusal pearl, evaginated odontome
答案(C)	出處：Oral and maxillofacial pathology third edition P. 88~89
題號	題目
2	Which choice of the following answers is INCORRECT about Dens invaginatus (A) Also named Dens in Dente (B) Has been classified into two types (C) Most involved permanent lateral incisors, premolars, canines, and molars (D) Type II extends below the cemento-enamel junction
答案(B)	出處：Oral and maxillofacial pathology third edition P. 90~91