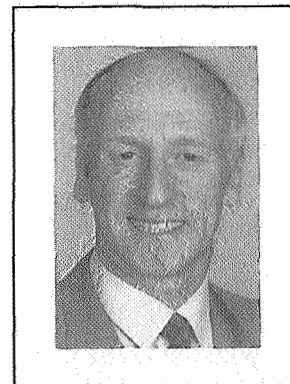


Intracoronal radiolucencies in unerupted teeth of orthodontic patients: three case reports

Stanley G. Jacobs B.D.Sc.(Melb.) F.D.S.R.C.S.(Eng.) D.Orth.R.C.S.(Eng.)
F.R.A.C.D.S.*

Melbourne, Australia



ABSTRACT: Three cases of intracoronar radiolucencies in unerupted teeth are reported. The aetiology and treatment of this condition which may first be detected by the orthodontist are discussed. In extreme cases, involved teeth may be lost.

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MeSH words: tooth resorption; tooth, unerupted

Key words: developmental anomaly, intracoronar radiolucency, intervention, surgical exposure

CASE REPORTS

Case 1: The patient, a female born on 18/5/1974, had a panoramic radiograph (orthopantomogram (OPG))# taken on 5/2/88 (*Figure 1 (a)*) prior to commencing orthodontic treatment. An intracoronar radiolucency was noticed in the unerupted 37. The decision was taken to allow 37 to erupt and to restore the tooth as soon as the crown was accessible.

On 25/1/89 the 37 was restored and the dentist found a pinpoint exposure of the pulp which was subsequently covered with calcium hydroxide. The 37 has been symptomless for twenty-two months after being restored. On reviewing the radiographs taken up to seventeen months earlier, *Figure 1(b) and 1(c)*, the radiolucency was seen to be present. The radiolucency is more noticeable in the OPG (*Figure 1(b)*), than in the periapical (*Figure 1(c)*) taken three months later.

Case 2: The patient, a female date of birth 30/8/69, presented for orthodontic treatment on 16/11/83. An OPG (*Figure 2 (a)*) taken at presentation displayed a radiolucency in the crown of the unerupted 28. The OPG taken at debanding on 29/3/88 (*Figure 2 (b)*) showed that the lesion, in the still unerupted tooth, had enlarged.

Case 3: A male, aged 12 years, presented for orthodontic treatment and an OPG was taken (*Figure 3*). This disclosed an intracoronar radiolucency in the unerupted 47. After discussion with the patient's dentist, it was decided to permit 47 to erupt and to restore it as soon as possible. The dentist subsequently reported that the lesion, although deep, did not involve the pulp and appeared to be carious.

LITERATURE REVIEW

Brooks (1988) stated that most cases of intracoronar radiolucencies are found in mandibular molars and premolars. The incidence of this condition is not known.

Ignelzi et al. (1990) elaborated on the four theories that have been proposed to explain intracoronar radiolucencies: (1) apical inflammation of a primary precursor; (2) dental caries; (3) developmental abnormality

manifesting itself as an inclusion of uncalcified enamel matrix; and (4) internal or external resorption. They claimed that the first theory, apical inflammation of a primary tooth is obviously not relevant for unerupted molars but it may be an aetiological factor in some cases. No evidence exists to confirm or deny that caries, the second theory, can appear in an embedded unerupted tooth. The third cause, a developmental abnormality, has been proposed by Walton (1988) who reported histologic findings of two permanent mandibular first molars. The diagnosis was of a developmental inclusion of uncalcified enamel matrix for both teeth. Giunta and Kaplan (1981) reported the histologic findings of a radiolucency in an unerupted first premolar and concluded that it was a developmental hypoplastic lesion of both enamel and dentine.

Ignelzi et al. (1990) stated that resorption appears to be a logical explanation for external defects in unerupted teeth. External resorption is said to occur when the reduced enamel epithelium, surrounding the unerupted tooth, is lost bringing the enamel into contact with the surrounding connective tissue (Stafne and Austin 1945). The aetiology of internal resorption is not as well understood. Ignelzi et al. (1990) declared that histologic confirmation is essential for proper diagnosis but is often not possible when the goal is to maintain the tooth because sufficient tissue may not be available for histological study. The clinician who detects a radiolucency should immediately arrange treatment if the lesion is : enlarging, encroaching on the pulp or causing symptoms. The presence of symptoms is uncommon but a case has been described where the patient was in pain. In this case there was so much destruction of the partially erupted tooth that extraction was necessary (DeSchepper, Haynes and Sabates 1988). Otherwise the clinician should periodically monitor the lesion with radiographs and intervene if continued destruction of the unerupted tooth proceeds. Treatment entails surgical exposure, removal of the lesion and subsequent restoration.

Ignelzi et al. (1990) presented a case where the unerupted mandibular second molar had such extensive destruction that the above procedures of exposure of the crown, removal of the lesion and subsequent restoration were carried out immediately. Endodontic therapy was planned for the future because the pulp was thought to be

* Specialist Orthodontist, The Royal Dental Hospital of Melbourne;
Associate, University of Melbourne.

Siemens, Erlangen, W.Germany



Figure 1(a). Part OPG, intracoronar radiolucency in unerupted 37 - 5/2/88



Figure 1(b). Part OPG - 10/9/86



Figure 1(c). Periapical 37 - 3/12/86

involved. Subsequently this was not required. Finally a cast restoration was planned for the tooth. An orthodontist had referred the patient to the authors because he detected the radiolucency on a panoramic radiograph. After detecting this lesion the orthodontist had re-examined a panoramic radiograph taken 21 months previously and discovered a smaller, but obvious radiolucent area associated with the crown of the tooth.

Skaff and Dilzell (1978) presented two case histories of defects in the crowns of unerupted teeth. Both cases were similar. The patients were 10 year old males. The lesions were in unerupted mandibular second permanent molars and the teeth were uncovered and restored. In both cases small vital pulpal exposures were present.

Singer et al. (1991) presented three case reports of coronal radiolucencies in unerupted mandibular second permanent molars. In Case 1 and Case 2 the teeth were



Figure 2(a). Part OPG, intracoronar radiolucency in 28 - 16/11/83



Figure 2(b). Part OPG showing radiolucency in 28 has enlarged - 29/3/88



Figure 3. Part OPG, intracoronal radiolucency in 47 - 22/10/70

unerupted but in Case 3 the tooth was partially erupted and associated with acute symptoms. In all three cases most of the coronal dentine had been lost. The normal pulp of the tooth was separated from the area of resorption by a layer of normal dentine. In Cases 1 and 2 the area of tooth loss was filled with a loose connective tissue. Close to the current sites of resorption there was a mild chronic inflammatory cell infiltrate with macrophages and giant cells lying in Howship's lacunae in the dentine. All three teeth were extracted and histologic evidence showed external resorption to be the cause of the radiolucencies. Singer et al. (1991) said if the lesion is extensive or is causing symptoms then removal of the affected tooth may be the treatment of choice, especially if the lesion involves a mandibular second molar and the third molar is present.

DISCUSSION OF CASES

Case 1: The lesion appears to have extended mesially during the period between the radiographs of *Figure 1 (a)* and *1 (b)*. Surgical exposure of the unerupted tooth, removal of the lesion and restoration of the crown may have prevented the pulpal exposure.

Case 2: This case is unusual because most intracoronal radiolucencies are detected in mandibular premolars and molars (Brooks 1988). Cases which have been described involving maxillary third molars usually involve much older patients in the age range 50 - 77 years (Baab, Morton and Page 1984, Nickel and Wolske 1980).

Case 3: The lesion was so deep that the vitality of the pulp could have been compromised. Surgical intervention at the time of detection would have been warranted.

In all three cases the unerupted tooth with the intracoronal radiolucency is not covered by bone. It is extremely difficult to prove that the tooth does not have a communication with the oral cavity. If it does have one, coronal caries becomes a distinct possibility. The patient in *Figure 2(a)* and *2(b)* had a high caries incidence, as can be seen by the number of restorations.

CONCLUSIONS

Orthodontists use panoramic radiographs frequently and may be the first to detect intracoronal radiolucencies in unerupted teeth. They should discuss their findings with the referring dentist. When to initiate treatment depends on whether symptoms are present, the size of the lesion and whether it is progressing. These lesions may involve the pulp and can become so extensive that the crown of the tooth is destroyed requiring extraction of the tooth.

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Correspondence to:

Dr S.G.Jacobs
Orthodontic Department
The Royal Dental Hospital of Melbourne
MELBOURNE
Victoria 3000