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CASE REPORT

GHOST TEETH: UNUSUAL RADIOLOGICAL APPEARANCE OF TEETH

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ABSTRACT

Regional odontodysplasia (ROD) is a rare, localized developmental anomaly of the dental tissues with distinctive clinical, radiographic, and histologic findings. It affects the primary and permanent dentitions in the maxilla and the mandible or both, however, the maxilla is frequently involved. Although the aetiology of the ROD is uncertain, it has been suggested that numerous other factors play a role. The treatment plan should be based on the degree of involvement as well as the functional and aesthetic needs in each case. Here we describe a case of regional odontodysplasia in an 8 year old boy with an overview of aetiology and treatment modalities. The main aim of this article is to provide valuable information to dental community about the review and treatment alternatives for ROD.

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INTRODUCTION

Regional odontodysplasia (RO) is an uncommon, nonhereditary developmental anomaly affecting dental tissues derived from both the mesoderm and ectoderm. Clinically it presents as irregular, hypoplastic soft teeth usually localised in one arch. Radio graphically, it presents as 'ghost teeth', because of lack of contrast between enamel and dentin. This paper focuses on the clinical presentation, etiology along with a note on treatment aspects of this unusual dental anomaly.

CASE REPORT

A 8-year-old boy visited the outpatient department with a chief complaint of decaying of right upper back teeth since 6-7 months. His prenatal, birth, medical, and family history was unremarkable. According to his mother, her son's tooth was yellowish brown in color and was gradually destroyed after its eruption accompanied by pain.

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General physical examination revealed nothing noteworthy. Intraoral examination revealed that the patient had late mixed dentition. Hypoplastic enamel was seen in respect to crown of primary second molar tooth, which was soft in consistency on probing (Fig. 1). Proximal caries was seen with respect to canine and first molar of the same side. The second molar on the left side was grossly decayed. Intraoral Periapical radiograph of right maxillary molar region showed very thin enamel and dentin layers with lack of differentiation between them and with enlarged pulp chambers, giving them a typical "Ghost-like" appearance (Fig. 2A). Further orthomopantogram was advised which revealed lack of demarcation between enamel and dentin when compared with unaffected counterparts from other quadrants (Fig 2B). On the basis of clinical and radiographic findings, a provisional diagnosis of Regional odontodysplasia was made. The differential diagnosis includes amelogenesis imperfecta, dentinogenesis imperfect, dentinal dysplasia types I and II shell teeth and hypophosphatasia. But all these anomalies, tend to affect the entire dentition instead of showing segmental distribution (as seen in ROD in our case). Radiographically, unerupted teeth affected by ROD may be incorrectly diagnosed as undergoing

root resorption or being an odontoma. The treatment includes surgical excision of the affected tooth followed by prosthetic replacement. The outcome of this case was good with no involvement of the succedaneous counterparts.

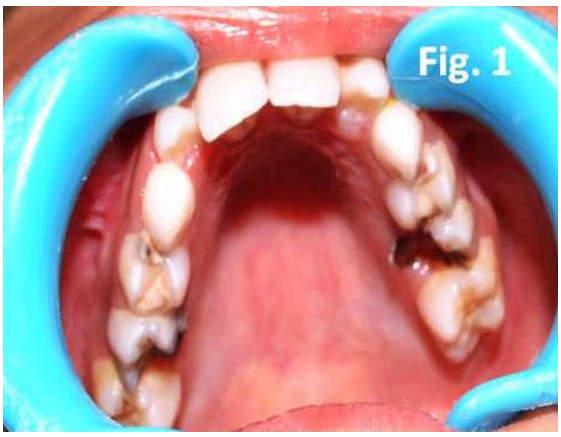

Fig. 1. Intraoral view showing hypoplastic enamel seen in respect to crown of primary maxillary second molar tooth, which was soft in consistency on probing

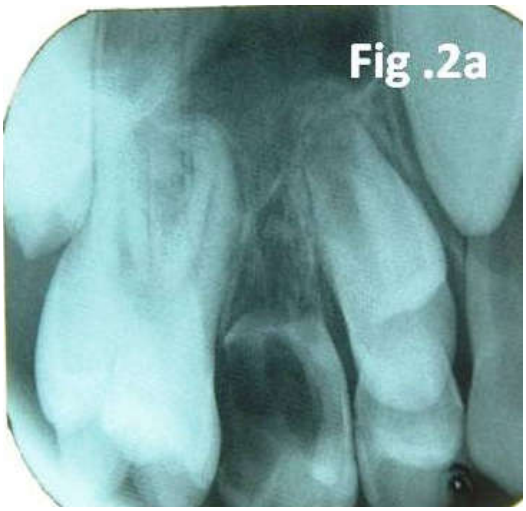

Fig. 2A. Intraoral Periapical radiograph of right maxillary quadrant showing very thin enamel and dentin layers with lack of differentiation between them and with enlarged pulp chambers, giving them a typical "Ghost-like" appearance

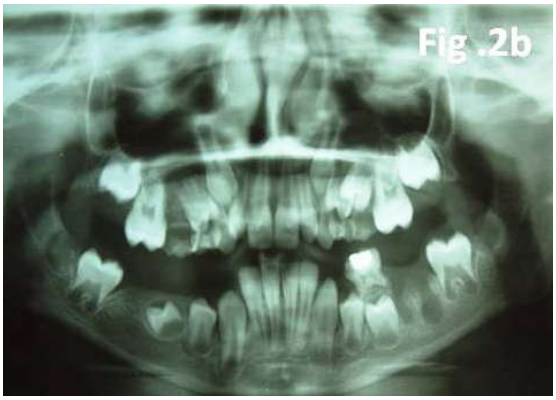

Fig. 2B. Orthomopantogram revealed abnormal morphology and hypoplastic crown in right maxillary quadrant with thin enamel, dentin layers and abnormally large pulp chamber. There is lack of contrast between enamel and dentin when compared with the unaffected counterparts

DISCUSSION

The first report of this condition was published by McCall and Wald in 1947, but the term 'odontodysplasia' was introduced by Zegarelli *et al.,* in 1963. Later Pindborg added the prefix "Regional" to it, as this anomaly has the tendency to affect only one quadrant. Since that time, a number of cases have been described under a variety of names; such as localized arrested tooth development, regional odontodysplasia, ghost teeth. The etiology is uncertain; numerous factors have been suggested and considered as local trauma, irradiation, hypophosphatasia, hypocalcemia, hyperpyrexia (Gardner and Sapp, 1977; Ozer *et al.,* 2004). It has also been related to the activation of latent viruses in the odontogenic epithelium, to the presence of nevus, hemangiomas and hydrocephaly (Steiman *et al.,* 1991). However, it is noteworthy that the patient described here did not present with any of these conditions. This anomaly tends to affect several adjacent teeth within a particular segment of the jaw, and generally does not cross the midline. Frequently, it is located only on one arch, and themaxilla is involved twice as often as the mandible (Melamed *et al.,* 1994). The condition is more common in female than in male patients and is more frequent in the anterior region. There is no tendency toward a specific race or ethnic group. When the primary teeth are affected, the permanent dentition is usually affected also (Fanibunda *et al.,* 1996). Clinically the affected teeth demonstrate abnormal morphology, an irregular surface contour with pitting and grooved surface, yellowish or brown discoloration, hypoplastic or hypocalcified, and the teeth eruption may be delayed or completely failed. The enamel is soft on probing and the affected teeth are more susceptible to caries and extremely friable fracturing at a slightest trauma. Radiographically, the affected teeth show abnormal morphology and hypoplastic crowns. There is lack of contrast between enamel and dentin when compared with the unaffected counterparts and there is little demarcation between enamel and dentin. Additionally the enamel and dentin layers are very thin, giving the teeth a typical "Ghost-like" appearance. The pulp chambers are abnormally enlarged with open apices and enlarged follicles, and the teeth tend to be shorter, particularly the roots and shell-like crowns giving a dysmorphic appearance (Courson *et al.,* 2003). Histologically, areas of hypocalcified enamel are visible and enamel prisms appear irregular in direction. Coronal dentin is fibrous, consisting of clefts and a reduced number of dentinal tubules; radicular dentin is generally more normal in structure and calcification (Kinirons *et al.,* 1988). The mineral content of the affected enamel has been found to be higher than that of dentin in microradiographic studies (Melamed *et al.,* 1994; Fanibunda and Soames, 1996; Kinirons *et al.,* 1988). Treatment of this condition is a bit controversial as some clinicians advocate extracting the affected teeth as soon as possible and inserting a prosthetic replacement While other clinicians prefer restorative procedures, if possible, to protect the affected erupted teeth. The selection of method and timing appear to be critical factors in the treatment. Although in very young children teeth in the arch should be retained, teeth involved with abscesses cannot be restored, and need to be extracted and restored with acrylic removable appliances to:

- Maintain esthetic and masticatory functions

- Avoidovereruption of opposing teeth
- Achieve space preservation and normal vertical dimension
- Lessen the psychological effects of premature tooth loss

As the bone itself is not affected, autotransplantation offers good alternative if suitable donor teeth are available. Auto transplantation is an accepted therapeutic option in dentistry. A risk of ankylosis in auto transplanted teeth has been previously reported. Other alternative is the prosthetic treatment with implants will be considered once the patient's craniofacial growth is completed.

Summary

This article presents a case of regional odontodysplasia in a young male patient and serves as a ready reckoner for this usually overlooked clinically entity.

Conclusion

- In Regional dysplasia, the extracted tooth should be replaced as soon as feasible in order to prevent supraeruption, loss of arch space and malocclusion.
- Prosthesis can be in form of auto transplantation, implants or regular acrylic plates.

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