

Multidisciplinary and Chronological Management during 6 years of Regional Odontodysplasia

Isabelle Bailleul Forestier^{1*}, Mohammad Bassam Al Obeid², Marie Sophie Pujos³ and Frédéric Vaysse¹

¹Department of Pediatric Dentistry, Faculty of Dental Surgery, Toulouse III-Paul Sabatier University, France

²Student, University Degree in Pediatric Odontology and Sedation, Faculty of Dental Surgery, Toulouse III-Paul Sabatier University, France

³Qualified Specialist, Department of Dentofacial Orthopedics, Henri Arnault Health Center, France

*Corresponding author: Isabelle Bailleul Forestier, Department of Pediatric Dentistry, Faculty of Dental Surgery, Toulouse III-Paul Sabatier University, France

Received: 📅 September 19, 2022

Published: 📅 October 04, 2023

Abstract

Regional odontodysplasia (ROD) or the ghost teeth is an anomaly of form and structure, it is a sectoral injury of the development of dental tissues of ectodermal and mesodermal origin. It affects several teeth of one or more quarters, known as ghost teeth, inconspicuous on the x-ray. Clinically, often characterized by retained small permanent teeth and frequent abscesses. On x-ray, we see a thin enamel, abnormal coronal dentin, wide pulp chamber, short roots with open apices and an indistinct dentin-enamel limit. The etiologies are not of genetic origin and several hypotheses had been proposed, either local causes (vascular disorders) or environmental etiologies (metabolic disorder) [1,2]. In this case report, we will address the treatment of a regional dysplasia which concerns the maxillary upper left sector and describe mineralization of teeth included in this region. Multidisciplinary management follows a variable chronology depending on the case. It aims to maintain or restore mastication, phonation and aesthetics functions [3].

Keywords: Ghost teeth; regional odontodysplasia etiologies; regional odontodysplasia; odontodysplasia management approach; multidisciplinary approach

Abbreviations: ROD: Regional odontodysplasia; PMLLI: Permanent Maxillary Left Lateral Incisor; PMLEF: Permanent Maxillary Left First Premolar; PMLCI: Permanent Maxillary Left Central Incisor; PMLFM: Permanent Maxillary Left First Molar; PMLSP: Permanent Maxillary Left Second Premolar; PMLC: Permanent Maxillary Left Canine; PMLSM: Permanent Maxillary Left Second Molar

Introduction

Hitchin in 1934 was the first one who described the ROD [3]. ROD is a rare developmental anomaly affecting a specific region of teeth. Tissues of mesodermal and ectodermal origin are affected (enamel, dentin, cementum and pulp) [4]. The affected teeth are usually small with yellow or brown discoloration. They often develop abscess during or shortly after eruption. In general, this anomaly is usually localized on a single dental arch, the maxilla being more affected than the mandible [5]. This incidence is usually unilateral with no tendency to cross the midline. The X-rays taken of teeth affected by ROD have a ghostly appearance. Histologically,

almost all dental tissues are changed. Enamel and dentin appear with hypoplasia and hypocalcification, while the pulp is larger than normal [5]. The etiology of ROD remains obscure, although there have been many theories offered and considered. According to some authors, these etiologies were a radiation, a heredity, a birth trauma, a local trauma, a vitamin deficiency, a metabolic and a nutritional disorder, a systemic disease, a local vascular anomaly, a dental lamina region affected by somatic mutations, odontodysplasia management: case report. pharmacotherapy during pregnancy and a viral infection [1,6]. The treatment plan varies according to the

age of the patient. Some dentists prefer to keep the affected teeth as long as they are free of infections or abscesses until the completion of bone growth. Oral rehabilitation requires a multidisciplinary management, involving teams of orthodontist, pedodontics, oral surgeon and prosthodontist, to place the final supported-implants prosthesis with the object of reconstruction masticatory, phonation and aesthetic functions [7,8].

Case Report

A 7 years-old male patient presented to the Department of Pediatrics of the Faculty of Dental Surgery, Toulouse, France, with a primary complaint of unerupted maxillary anterior teeth without any history of impacting trauma to the previous primary teeth.

Clinical examination revealed mixed dentition, erupted Permanent Maxillary Left Lateral Incisor (PMLLI), partially erupted Permanent Maxillary Left First Premolar (PMLFP), simple extrusion of permanent mandibular left first molar, extracted primary maxillary left second molar, unerupted Permanent Maxillary Left Central Incisor (PMLCI), extracted of Permanent Maxillary Left First Molar (PMLFM). Radiographic examination (Figure 1) revealed mixed dentition, PMLCI and Permanent Maxillary Left Second Premolar (PMLSP) were not easy to define with a particular aspect and an absent of Permanent Maxillary Left Canine (PMLC) and (PMLFM), but on the other hand, (PMLLI) and PMLFP were normal, and the Permanent Maxillary Left Second Molar (PMLSM) was under erupting. odontodysplasia management: case report



Figure 1 : Digital orthopantomogram pretreatment showing ghost teeth in the upper left maxilla.

Treatment Plan

Treatment depends on the degree of ROD and the age of the patient, it requires a multidisciplinary approach, but in all cases, the preservation of teeth without abscesses remains a priority because of its importance in the development of the alveolar bone, thus maintaining the vertical dimension and avoiding malocclusions. The consequent, maintenance of masticatory, phonation and aesthetic functions. Although the treatment is still somewhat controversial, there is a consensus based on the extraction of abscessed teeth. The treatment plan often requires a partial removable denture with or without orthodontic treatment and then an implant-supported fixed prosthesis in adulthood around the 25 years old [9]. Since the aesthetic aspect was the first priority of the parents, a removable partial denture with a band on primary maxillary left

first molar was considered, but the weakness of the roots of this tooth prevented this solution.

Orthodontic Therapy

Since the placement of a removable partial denture was not possible at this stage due to the lack of prosthetic space, priority was given to orthodontic treatment to bring the PMLCI to the plane of occlusion, thus a flap surgery was performed and a vestibular button was bonded over exposed surface of the PMLCI. Figure 2 shows the traction process carried out on the PMLCI with the aim of preparing it to take the position of PMLLI on the dental arch. Figures 3 & 4 show the 3-faces composite restoration of the PMLCI and realization of a composite stump on the PMLCI to bond the bracket with the aim of distalization of PMLCI in position of the PMLLI and the PMLLI in position of the PMLC.



Fig.2 Orthodontic treatment, intraoral radiographic view.

Figure 2 : Orthodontic treatment, intraoral photographic view.

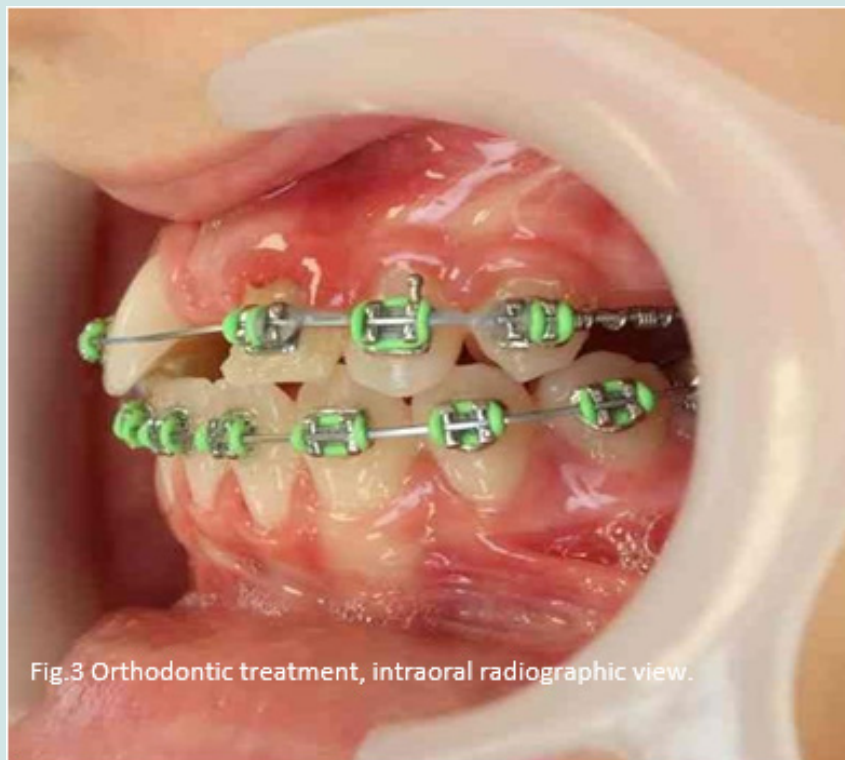


Fig.3 Orthodontic treatment, intraoral radiographic view.

Figure 3: Orthodontic treatment, intraoral photographic view.

Prosthetic Therapy

After completing the intended alignment and leveling of the orthodontic treatment, the case was ready to receive a temporary anterior prosthesis that meets the aesthetic objective, with an appropriate distance for the eruption of the PMLSP, as it is clear

in Figures 4 & 5. Figures 6-8 show new injected composite on the PMLCI and replacement voco bridge the PMLCI with palatal support over the permanent maxillary right central incisor and the permanent maxillary right lateral incisor, thanks to Grand Tec splint.

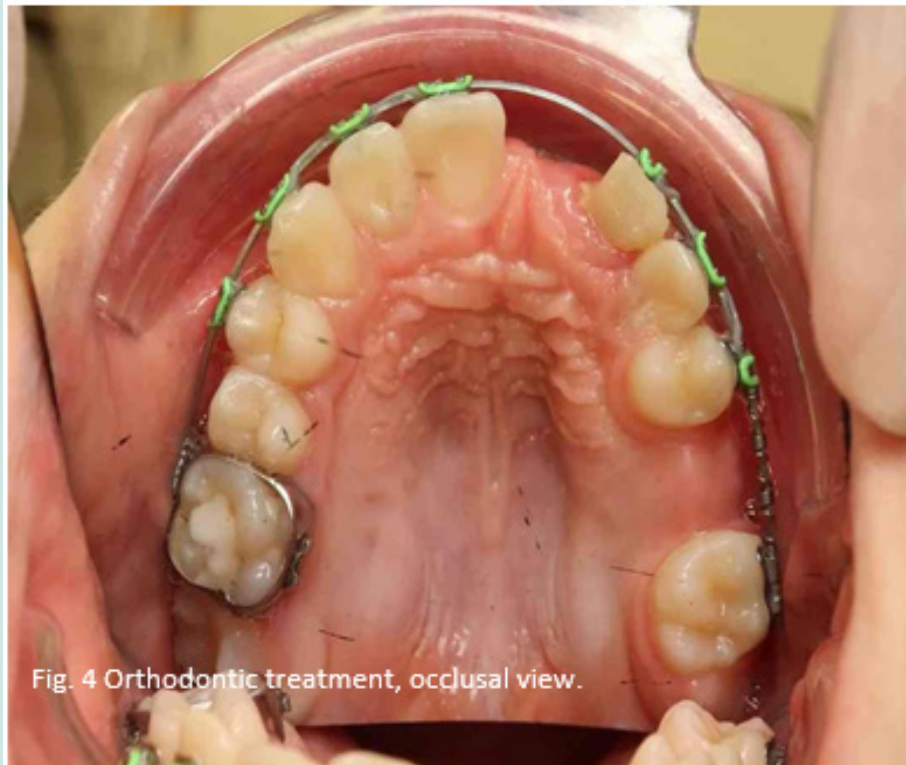


Figure 4: Orthodontic treatment, occlusal view.

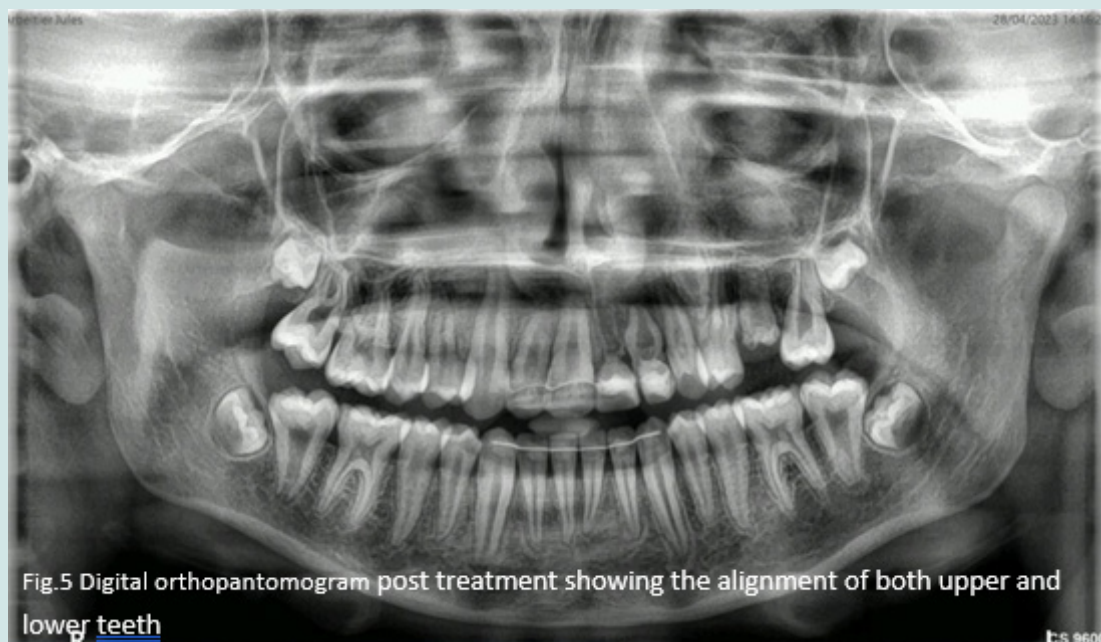


Figure 5: Digital orthopantomogram post treatment showing the alignment of both upper and lower teeth.



Figure 6: Prosthetic treatment, replacement bridge the permanent maxillary left central incisor with palatal support.



Figure 7: Prosthetic treatment, replacement bridge the permanent maxillary left central incisor with palatal support.



Figure 8: Prosthetic treatment, vestibular view.

Discussion

Regional odontodysplasia is localized developmental anomaly characterized by some of structure anomalies at the level of mineralization, calcification and formation of hard tissues [10], and can affect the both dentitions, often unilateral and do not exceed the midline [5]. The prevalence in the maxilla is more than the mandible and specially the female patients [10]. The etiology is unknown, but there are several hypotheses including vascular disorder, irradiation and metabolic disorder [1,10,11]. The positive diagnosis depends on the clinical and radiographic findings. The differential diagnosis includes an amelogenesis imperfecta, a dentinogenesis imperfecta, a dentinal and an enamel dysplasia, a vitamin D deficiency and a turner's tooth [1]. Following the patient during six years, allowed observation of various anomalies of mineralization in this region pulpal calcifications, enlarged root, calcification dens in dente like. The last panoramic x-ray taken, revealed the PMLC crown situated near the nasal fossa with ghostly appearance, permanent upper and lower second molars with taurodont anomaly, an enamel hypoplasia that concern the PMLSP, an intra-radicular calcification looking like dens in dente which concern the PMLLI and an atypical root anatomy related to the PMLCI Figure 5. Returning to the patient's treatment plan, it was always multidisciplinary and follows a different chronology according to the case. It is based on maintaining or re-establishing the masticatory, phonation and aesthetic functions, according to the age.

For our patient, a coordination had been done between the pediatric dentist and the orthodontist, to manage the loss of teeth and to re-align the teeth according to the plan proposed by the treating team in appropriate to the growth of the maxillo-facial complex, which allow for the providing of the best temporary fixed prosthesis, changeable in appropriate to growth until the arrival to a time of implants-supported prosthesis. The issue currently being raised is related to the ability to retain the PMLCI as the structure of the crown is very fragile and the root walls are also thin. Now we have the PMLSM that will replace the PMLFM, the permanent

maxillary left third molar will replace the PMLSM, the natural PMLLI will replace the PMLC that has a ghostly aspect, so the crown will be modified to take the shape of a canine, the PMLCI (the ghost tooth) that replaced the PMLLI will mostly be extracted, thus edentulous space in the esthetic zone forming from the loss of the PMLCI and the PMLLI will be reconstructed by implants-supported prosthesis but concerning PMLSP, it is in a condition that allows it to emerge and be preserved.

References

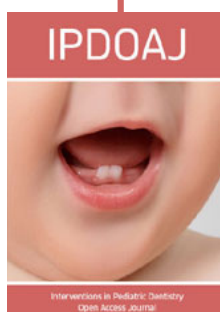
- Pierre A, Lopez S, Callejas G, Muller M (1980) Regional odontodysplasia. Pediatric odontology guide, the clinic by the test, 2nd edition.
- Nijakowski K, Wos P, Surdacka A (2022) Regional Odontodysplasia: A Systematic Review of Case Reports. Int J Environ. Res Public Health 19(3): 1683.
- Koruyucu M, Yaman D, Seymen F, Demirel K, Gençay K (2018) Management of regional odontodysplasia: a 10-year-follow-up case report and literature review. Eur Oral Res (52): 111-116.
- Murthy P, Deshmukh S (2013) Regional odontodysplasia and its treatment maneuver. Int J Health Allied (2): 153-158.
- Jeffery S, Brock GR, Harrison JE and Butterworth CJ (2019) Multidisciplinary Management of Maxillary Regional Odontodysplasia. Ortho Update 12(1): 8-12.
- Jahanimoghadam F, Pishbin L, Rad M (2016) Clinical, Radiographic, and Histologic Evaluation of Regional Odontodysplasia: a Case Report with 5-year Follow-up. J Dent (Shiraz)17(2): 159-163.
- Cho S (2006) Conservative Management of Regional Odontodysplasia: Case Report. J Can Dent Assoc 72(8): 735-738.
- Kappadi D, Ramasetty PA, Rai KK, Rahim AM (2009) Regional odontodysplasia: An unusual case report. JOMFP 13(2): 62-66.
- Cahuana A, González Y, Palma C (2005) Clinical Management of Regional Odontodysplasia. Pediatr Dent 27(1): 34-39.
- Simon S, Kneafsey L, Exeter UK (2023) Odontodysplasia. Br Dent J 234(8): 584.
- Özer L, Çetiner S, Ersoy E (2004) Regional Odontodysplasia: Report of a case. J Clin Pediatr Dent 29(1): 45-48.



This work is licensed under Creative Commons Attribution 4.0 License

To Submit Your Article Click Here: [Submit Article](#)

DOI: [10.32474/IPDOAJ.2023.08.000298](https://doi.org/10.32474/IPDOAJ.2023.08.000298)



Interventions in Pediatric Dentistry : Open Access Journal

Assets of Publishing with us

- Global archiving of articles
- Immediate, unrestricted online access
- Rigorous Peer Review Process
- Authors Retain Copyrights
- Unique DOI for all articles