EAS Journal of Dentistry and Oral Medicine
Abbreviated Key Title: EAS J Dent Oral Med
ISSN: 2663-1849 (Print) & ISSN: 2663-7324 (Online)
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-2 | Issue-3 | May-June-2020 | DOI:10.36349/EASJDOM.2020.v02i02.002

Case Report

Treatment by Ceramometal Crown of a Case of Improper Amelogenesis in the University Hospital Center for Odontostomatology of Mali

Coulibaly B*[1], Touré K[1], Kamissoko K[2], Traoré H[1], Ba Boubacar[1], Ba A[1], Niang A[1], Gueye S[1], Diawara O[1], Traoré L[1], Ba M[1], Diallo B[1], Sangaré B L C[1], Touré A[1], Sissoko S[1], Sissoko Y[1] and Kané A.S.T.[2]

[1]Bamako University Hospital Center for Odontology, Bamako
[2]Department of dentistry of the armies of Mali, Bamako

Article History
Received: 11.04.2020
Accepted: 06.05.2020
Published: 10.05.2020

Journal homepage:
https://www.easpublisher.com/easjdom

Quick Response Code

Abstract: Imperfect amelogenesis (IA) is an inherited disorder that impairs the development of the structure of enamel. This congenital disorder is characterized by an amelar alteration which can take several clinical forms. This clinical study outlines the diagnosis, treatment plan and prosthetic rehabilitation in a 21 year old young woman with AI. The dental evaluation, carried out after the clinical and radiographic examination, confirmed the diagnosis of hypomineralized IA. The treatment consisted of prosthetic rehabilitation (to be specified). Rigorous monitoring was done during (a period of… to be specified) to assess functional adaptation. At the end of this follow-up period, the patient said that she was satisfied with her prosthesis, in terms of aesthetics, function and phonation.

Keywords: Amelogenesis imperfecta; hereditary disorder; prosthetic rehabilitation.

INTRODUCTION

Imperfect amelogenesis (AI) is a group of developmental anomalies affecting the structure and clinical appearance of the enamel of all or almost all temporary and / or permanent teeth (Chafaie, A. 2010). This rare genetic defect is not necessarily associated with general pathology or systemic disease. Its incidence is from 1/700 to 1 / 14,000 depending on the population studied and the diagnostic criteria used (Millet, C. *et al.*, 2017; Witkop, C. J. 1957; & Robinson, F. G., & Haubenreich, J. E. 2006). The diagnosis is based on family history, the study of the family tree and a meticulous clinical and radiographic examination (Chafaie, A. 2010). Phenotypically, there are 4 recognized forms of imperfect amelogenesis: hypoplastic, hypomature, hypomineralized and mixed (Chafaie, A. 2010 ; & Millet, C. *et al.*, 2017).

The hypoplastic form is characterized by an enamel of reduced thickness, the surface of which may present wells or cracks. For the hypomature form, the enamel has an opaque and chalky appearance. These enamel defects can be associated with eruptive problems, severe attrition, loss of vertical dimension of occlusion (DVO) and open bite problems. In the hypomineralized form, the enamel is brittle, discolored and quickly removed. Mixed forms are a combination of at least two of the above forms.

Radiologically, this condition manifests itself in crowns of altered morphology, sometimes a disappearance of the enamel layer or a density similar to that of dentin (Millet, C. *et al.*, 2009). These enamel defects can be associated with eruptive problems, severe attrition, loss of vertical dimension of occlusion and open bite. If the most severe problems are encountered in the hypomineralized form, the aesthetic complaints are always expressed by the patients, whatever the form of the imperfect amelogenesis (Millet, C. *et al.*, 2009). The aesthetic and functional treatment varies depending on the severity of the injury: partial coronary reconstructions (composites, inlays, veneers), removable prostheses (conventional or supraradicular), complete fixed reconstructions. In addition, this treatment generally requires multidisciplinary management (Walter, B. *et al.*, 2009 ; & Coley-Smith, A., & Brown, C. J. 1996).

***Corresponding Author:** Dr. Coulibaly B

CLINICAL CASE

A 19-year-old girl of Malian nationality presents for consultation in our Fixed Prosthetics Department of the CNOS University Hospital in Bamako for unsightly reasons and dental dyschromia. There was no family history of imperfect amelogenesis in the interrogation. Detailed dental, medical and social history was obtained from the patient. General medical history did not guide the diagnosis.

Physical examination

The extraoral does not show any facial asymmetry on the face. The vertical dimension of occlusion is preserved.

The endobuccal examination reveals fine and spaced teeth in the upper sector presenting a rough rough friable enamel of thin thickness revealing in places more or less dark dyschromias and more accentuated in the upper maxilla than in the mandible. There is a presence of two crowns on the 11 and 21 made in Ghana about 5 years ago. We note the presence of several carious lesions in the posterior sector (16, 17, 46, 37) with insufficient oral hygiene. The dental examination reveals a slight innoclusion. A panoramic X-ray was performed on the patient to assess the condition of the dental roots.

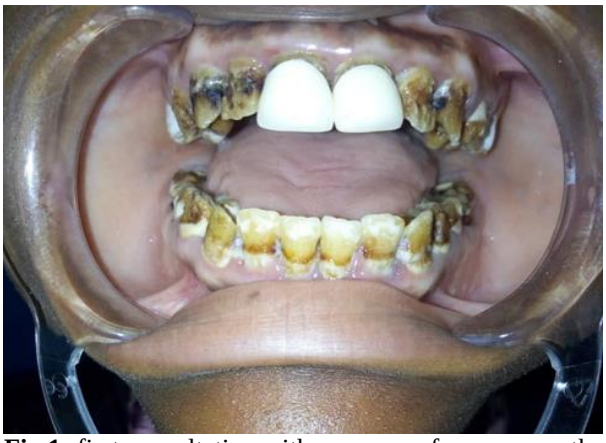

Fig 1: first consultation with presence of a crown on the upper central incisors

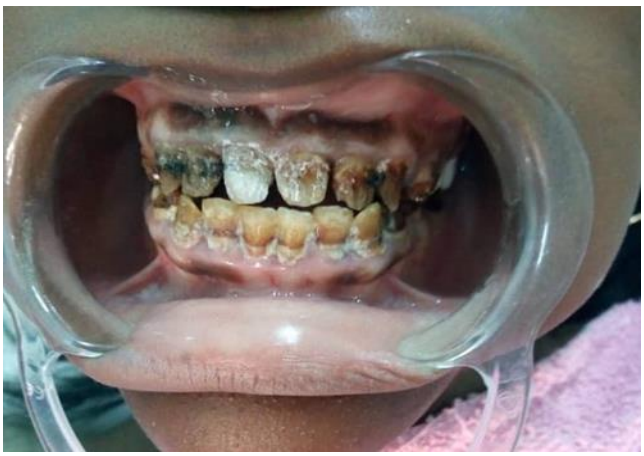

Fig 2: state of the mouth teeth before treatment

In our working methodology the following variables have been studied:

- The clinical state in the mouth (the state of the oral cavity and the degree of friability of the teeth),
- Social factors (age and then one's status as a single person)
- the patient's financial conditions,
- Laboratory technicality and collages

After consultation with the patient, it was decided to make a ceramic crown (MCC) on teeth plumped from 15 to 25 in the maxilla then from 35 to 45 in the mandible, would be the best therapeutic option.

Treatment Plan

The treatment plan is composed of two phases: an endodontic phase which will consist in devitalizing and filling all of the teeth to be crowned thus eliminating sensitivity and in the second part a prosthetic phase with preparation and making of crowns.

• Endodontic phase:

It took place under local anesthesia in several sessions over 3 weeks, i.e. a hemiarcade per session, followed by a two-week observation period to assess the care provided.

• Prosthetic phase:

To reduce the blow and exempt the provision of temporary crown, in common agreement with the laboratory, the time between making the crown and dental preprosthetic preparation has been reduced to one week. The preparation was carried out in two sessions, one session per arch. The ceramometallic crown made up of two distinct materials: a cobalt chrome alloy, which is used to make the framework, and the ceramic which gives the shape to the main prosthesis. The shade was chosen with the shade shade class "VITA".

After trying, correcting and verifying the occlusion, the patient was satisfied with the esthetic result.

The crowns were sealed with Fuji cement. The patient was checked again one week later and two months later. The rest of the checks have been planned with the appointments.

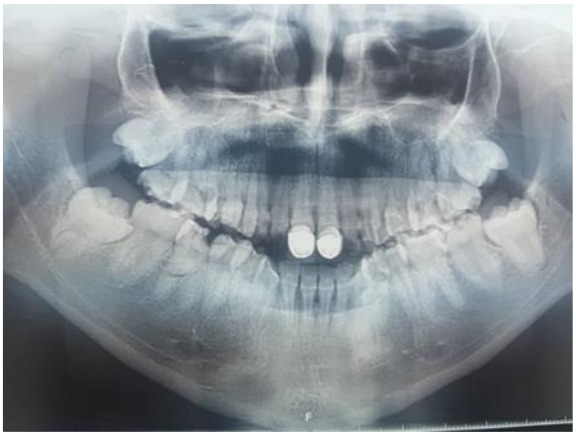

Fig. 3: Picture before treatment

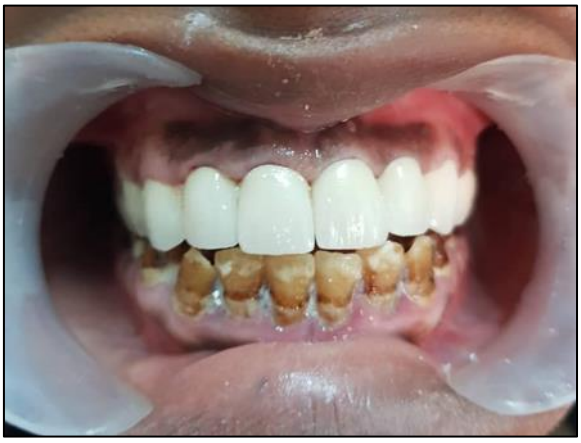

Fig. 4 : essayage au Maxillaire supérieur

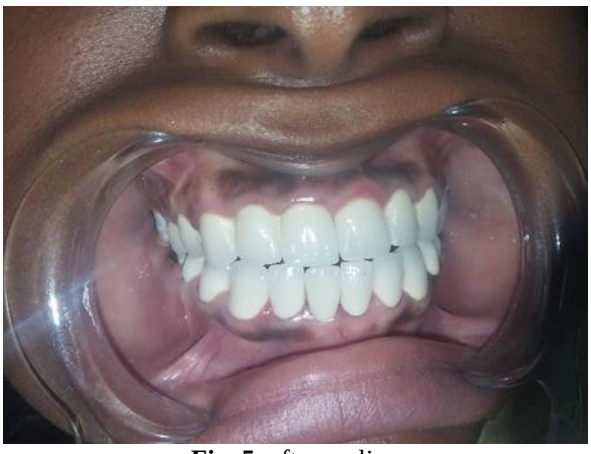

Fig. 5: after sealing

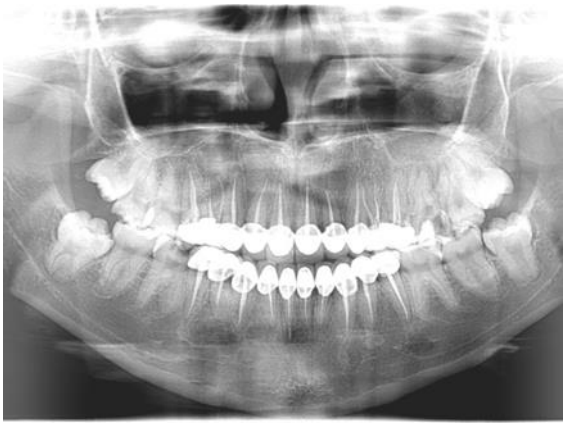

Fig. 6: Post-treatment radiography

Fig. 7: smile

DISCUSSION

Enamel is a unique tissue in vertebrates, acellular, formed on a labile and hypermineralized matrix scaffolding. The epithelial cells responsible for its formation are the ameloblasts. These secrete matrix proteins, secondarily destroyed during mineralization. This orderly sequence implies that any genetic or environmental disturbance will produce an indelible and recognizable email abnormality, the specificity of which will identify the affected cellular process (Lignon, G. *et al.*, 2015).

Amelogenesis imperfecta is a hereditary condition which manifests itself as amelar defects in temporary and permanent dentition with an incidence of 1: 700 to 1: 14,000 depending on the population studied and the diagnostic criteria used (Lignon, G. *et al.*, 2015 ; Patrick, R. 2005 ; Sàndor, G. K *et al.*, 2001 ; & Jemâa, M. *et al.*, 2012). We report the clinical case of an imperfect amelogenesis of the hypomineralized type.

Our patient was a student born and raised in Djenné, a circle in the Mopti region with her parents in service in the said circle, then she stayed in Ghana from where she made two crowns on the upper central incisors. The interrogations did not make it possible to support a possible hereditary presence in the family, which constitutes a limit of our study; Since dentistry in all its forms is unknown in the general population, the history of imperfect amelogenesis was difficult to verify.

Imperfect amelogenesis is a genetic disease that can occur in isolation or be associated with other symptoms in rare syndromes or diseases.

All modes of transmission are possible (autosomal dominant, recessive or X-linked) (Lignon, G. *et al.,* 2015). In the case of imperfect amelogenesis of the genetic type, the hereditary impairment affects the enamel only (it is due to mutations in different genes coding for amelar proteins) and results in a modification in the hue, the shape and volume of the teeth by early attrition of the enamel (Jemâa, M. *et al.*, 2012). Our patient had no associated pathology or syndrome. Imperfect amenogenesis can be subdivided into 3 forms according to several authors: hypoplastic, hypomineralized and Hypomature (Chafaie, A. 2010 ; & Millet, C. *et al.,* 2017). In our case we have the hypomineralized form with a strong discoloration especially at the level of the upper maxilla.

Dental consultations generally take place late in Mali, hence the delay in taking charge of certain conditions.

Early diagnosis is important for a number of reasons. The first is to be able to exclude the existence of a systemic pathology which can result in hypoplasia of the enamel. The second is to be able to implement preventive measures. Indeed, the absence of early treatment will have consequences:

- Direct related to the amélaire deficiency: pains, sensitivities, unaesthetic aspect, and
- Indirect: attrition, loss of the vertical dimension of occlusion, reduction of the arch length, dental migrations, compensation phenomena (lingual interposition, anterior open bite, bi-proalveoli) (Millet, C. *et al.,* 2009). Our patient was treated late, which largely explains the esthetic consequences and the symptomatology of sensitivity that she presented during the consultation. The patient's age, aesthetic and functional urgency, technical constraints, constitute the factors which determine the therapy. The current concepts of prosthetic rehabilitation in dentistry evolve, new techniques and the use of modern materials impose on the practitioner a natural restitution of the aspect of the teeth to be rehabilitated. Several authors in recent studies report the management of imperfect amelogenesis by facets and or VICs. The least invasive technique is always preferred with preservation of pulp vitality of the teeth concerned. However the place of the laboratory whose technicality and skills, the availability of materials and also the clinical conditions are necessary to respect the most recent techniques. Our patient had clinically an increased sensitivity on several teeth, in addition being limited by the technicality in the laboratory the choice of TLC on pulped teeth seemed the technique of choice. The result was very satisfactory, given that the patient's esthetics and smile were the objective of the treatment.

CONCLUSION

Imperfect amelogenesis are hereditary defects with repercussions on both the aesthetic and the functional. It can be disabling in the most severe forms. The earliness of care is a guarantee of less impact on life. The diagnosis is often complicated in our context with the absence of family information. New techniques allow efficient management with rehabilitation of functions and aesthetics. We had a satisfactory result, however the hindsight will allow us to really assess and evolve our care towards new techniques.

BIBLIOGRAPHY

1. Chafaie, A. (2010). Les amélogenèses Imparfaites. *Réponse D'expert Clinic – Octobre, 31* p 512-516.
2. Coley-Smith, A., & Brown, C. J. (1996). Case report: radical management of an adolescent with amelogenesis imperfecta. *Dental update*, *23*(10), 434-435.
3. Jemâa, M., Zokkar, N., Zouiten, S., Bhouri, L., Douki, N. Z., & Belkhir, M. S. (2012). Prise en charge Esthétique de l'Amélogenèse Imparfaite: A propos de deux cas cliniques Actualités Tunisiennes d'Odontologie (2), 49-54.
4. Lignon, G., de la Dure-Molla, M., Dessombz, A., Berdal, A., & Babajko, S. (2015). L'émail-Un autoassemblage unique dans le monde du minéral. *médecine/sciences*, *31*(5), 515-521.
5. Millet, C., Bittar, E., Noharet, R., Pfeffer, F., & Duprez, J.P. (2009). Protocole de traitement de l'amélogenèse imparfaite. *Clinic - Novembre 30*, 1-6.
6. Millet, C., Campillo, V., Morrier, J., & Duprez, J. (2017). Prise en charge « sociale » de l'amélogenèse imparfaite. *Stratégie prothétique novembre - décembre 17* (5), p 333-342.
7. Patrick, R. (2005). Schmidlin Structure et composition de l'émail en cas d'amélogenèse imparfaite Rev *Mens Suisse Odontostomatol, 115* (11), 1047-1051.
8. Robinson, F. G., & Haubenreich, J. E. (2006). Oral rehabilitation of a young adult with hypoplastic amelogenesis imperfecta: a clinical report. *The Journal of prosthetic dentistry*, *95*(1), 10-13.
9. Sàndor, G. K., Carmichael, R. P., Coraza, L., Clokie, C. M., & Jordan, R. C. (2001). Mutations génétiques dans certaines affections de la tête et du cou présentant un intérêt pour le dentiste. *J Can Dent Assoc*, *67*(10), 594-9.
10. Walter, B., Baumann, B., & Barthélémy, H. (2009). Traitement esthétique et fonctionnel d'une forme hypomature d'amélogenèse imparfaite totale. *Strat Proth, 9*, 107-120.
11. Witkop, C. J. (1957). Hereditary defects in enamel and dentin. *Acta genetica et statistica medica*, *7*(1), 236-239.