



CASE REPORT

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Myololysis in a Type 2 Diabetic Mellitus Patient : A Multidisciplinary Management

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ABSTRACT

Background: Myololysis is the loss of enamel and dentin at the cervical region of the tooth due to wear. It represents a challenging cervical lesion to treat.

Case Presentation: We report the clinical case of a 67-year-old man with type 2 diabetes mellitus who presented with bilateral bimaxillary myololysis. Management required the extraction of tooth 3.6, bimaxillary scaling and root planing, and twenty-eight restorative treatments using hybrid composite resin.

Conclusion: Clinicians should keep this wear lesion in mind and take all necessary precautions during the different phases of dental treatment.

Practical Implications: Clinicians should consider preoperative assessment, glycemic control, surgical precautions, and postoperative follow-up were essential elements to guarantee therapeutic success.

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Introduction

Myololysis is a wear lesion involving enamel and dentin located in the cervical region of the tooth. It encompasses all non-carious cervical lesions including attrition, abrasion, abfraction, and erosion. Dental hard tissues undergo a cyclic process of demineralization and remineralization induced by the oral environment. Myololysis begins with progressive resorption at the radicular level beneath the epithelial attachment and at the cervical portion of the dental crown, also affecting the cementum [1]. Endodontic and periodontal infections, and in severe cases tooth loss, constitute its main complications. Clinically, myololysis appears as a V-shaped lesion with a shiny surface, hard upon probing, and slightly brownish discoloration. Permanent maxillary incisors and canines are the most commonly affected teeth. However, the diagnosis of dental wear is complex because different wear mechanisms may coexist and interact [2]. Non-carious cervical lesions such as myololysis are classified according to location (cervical or interproximal) and depth (mild, moderate, or severe). Conventional dental radiographs do not provide sufficient information for an accurate diagnosis. Cone-beam computed tomography (CBCT) is preferred, as it offers superior visualization of lesion location, depth, and circumferential extension [3]. Generally, myololysis is treated using restorative composite materials without systematically evaluating the extent of exposed hard tissues, interproximal bone level, or patients' esthetic expectations [4]. Other therapeutic options include dental varnishes, veneers, crowns, endodontic treatment, and tooth extraction. When myololysis is associated with gingival recession of 0.5 mm or

greater, a mucogingival graft in conjunction with composite restoration is recommended [5].

Type 2 diabetes mellitus, also known as non-insulin-dependent diabetes mellitus, is a metabolic disorder characterized by chronic hyperglycemia in adults due to insulin resistance or insufficient insulin secretion by pancreatic beta cells in the islets of Langerhans [6]. Accurate biochemical diagnosis is established through fasting and oral glucose tolerance tests, as well as glycated hemoglobin (HbA1c) measurement. Other causes include genetic disorders, pancreatic diseases, excess growth hormone, and glucocorticoid use. Excessive dietary intake, certain medications, chemicals, or infections may also induce this form of diabetes [7]. The incidence and severity of oral diseases may increase in diabetic patients. Even in individuals with clinically healthy oral status, periodontal pathogens such as *Porphyromonas gingivalis* and *Prevotella melaninogenica*, along with their metabolites, may promote the development of periodontal disease [8]. Semiannual dental visits are recommended. Fluoride- and calcium phosphate-containing toothpastes, combined with stannous chloride-based mouthwashes, are effective in preventing demineralization [9].

Treatment of myololysis must always consider the patient's medical history. Direct restorations using hybrid composite resin are recommended for patients with type 2 diabetes mellitus who cannot afford expensive prosthetic restorations.

Case Presentation

A 67-year-old male patient presented to the Operative Dentistry

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Service at the University Clinics of Kinshasa with severe odontalgia in the lower left hemi-arch.

The patient had a several-year history of type 2 diabetes mellitus under medical treatment without other medical or dental history.

The pain had been present for more than six months, characterized by severe spontaneous pain sometimes triggered by mastication. One month prior, the patient had undergone unsuccessful dental treatment at a local hospital and therefore decided to seek care at our institution.

Clinical examination revealed fair oral hygiene, a fully dentate mouth with multiple abrasions, myololysis on twenty-nine teeth, dental tartar, and gingival recessions. The tooth 3.6 exhibited deep myololysis, a negative cavity test, positive axial and transverse percussion tests, bleeding on probing, gingival recession, a 5 mm distal periodontal pocket, and dental tartar accumulation.



Figure 1: Tooth 3.6 showing myololysis, abrasion, and gingival recession.



Figure 2 : Bilateral bimaxillary myololysis after extraction of tooth 3.6.

A periapical radiograph of tooth 3.6 allowed the diagnosis of secondary acute apical periodontitis. The dental panoramic X-ray revealed multiple demineralization lesions at the cervical regions of permanent maxillary and mandibular teeth bilaterally.



Figure 3: Dental panoramic X-ray.

The treatment plan established by three Services of the Department of Dental Medicine at the University Clinics of Kinshasa was thus organized:

1. **Pharmacotherapy:** The patient was initially placed on medication including antibiotics, non-steroidal anti-inflammatory drugs, and chlorhexidine mouthwash to reduce infection risks.
2. **Surgical phase:** Two days later, after controlling capillary glycemia, we proceeded with extraction of tooth 3.6 under local anesthesia using 2% lidocaine without epinephrine, without difficulty. The alveolar wound was not sutured.
3. **Periodontal Phase:** On the post-extraction control visit, bimaxillary scaling and root planing were performed using ultrasonics under local anesthesia by application of 2% lidocaine gel.
4. **Restorative phase:** Following alveolar healing, we subsequently restored the remaining twenty-eight teeth affected by myololysis with hybrid composite in two sessions.



Figure 4: Hybrid composite restorations in frontal view.



Figure 5: Hybrid composite restorations of right maxillary and mandibular hemi-arches.



Figure 6: Hybrid composite restorations of left maxillary and mandibular hemi-arches.

The patient was reviewed ten days later for evaluation of the composite restorations and dental sensitivity. No postoperative symptoms were reported. We recommended strengthening oral hygiene measures to ensure the longevity of the hybrid composite restorations.

This approach helped prevent further dental infections that could potentially complicate the patient's type 2 diabetes mellitus. Esthetic improvement was achieved and appreciated by the patient. However, the patient regretted the edentulous space created by the extraction. A removable prosthesis was subsequently fabricated to address this concern.

Discussion

Myololysis, which primarily affects maxillary permanent incisors and canines, can also affect the entire dentition as in the present case. It can lead to esthetic impairment, dental hypersensitivity, endodontic infections, periodontal disease, and may ultimately necessitate tooth extraction.

We report the case of a 67-year-old patient with type 2 diabetes mellitus whose treatment indications included extraction of tooth 3.6, bimaxillary scaling and root planing, and twenty-eight hybrid composite restorations.

The literature recommends various clinical approaches for managing myololysis. Dietschi (USA, 2018) recognized the multifactorial nature of dental wear and advocated precise diagnosis to adopt appropriate preventive and restorative measures focused on biomechanics and long-term tissue preservation [10]. In Kinshasa, Bolenge et al. (DRC, 2018) found that the progression of periodontal diseases toward severity was linked to aging, gender, diabetes, soda consumption, and arterial hypertension [11]. Dreweck et al. (Brazil, 2021) estimated that all adhesive strategies were valid and effective clinically for treating non-carious cervical lesions. For these authors, the effectiveness of the adhesive was not characterized by its bonding strategy [12]. The study by Battancs et al. (Switzerland, 2021) demonstrated fracture resistance and marginal leakage of cervical lesion restorations using four different materials: compressible resin composites, highly flowable resin composites, low-flow resin composites, and resin-modified

glass ionomer cements. Highly filled flowable composites obtained the best results among the tested groups [13]. Koc Vural et al. (Turkey, 2021) clinically observed the effectiveness, in terms of retention and marginal adaptation, of a micro-hybrid resin-based composite and a type II resin-modified glass ionomer cement in treating carious cervical lesions. However, the resin-modified glass ionomer cement restorations showed more discoloration [14].

We opted for hybrid composite resin restorations due to the patient's advanced age, diabetic condition, treatment convenience, immediate results, and affordability. This approach provided functional and esthetic rehabilitation while preserving pulpal vitality of all remaining teeth.

The hybrid composite treatment was approved by the patient and his family. Recommendations made by the three specialties of the Department of Dental Medicine must be strictly followed. Regular patient follow-up was judicious.

Conclusion

Myololysis is a dental lesion often neglected by patients. It promotes endodontic, periodontal, and systemic infectious complications, particularly in patients with type 2 diabetes mellitus. We opted for extraction of tooth 3.6, bimaxillary scaling and root planing, as well as twenty-eight hybrid composite restorative treatments due to the patient's advanced age and diabetic status. Treatment success relied on a good coordination between three various dental specialties. Preoperative assessment, glycemic control, surgical precautions, and postoperative follow-up were essential elements to guarantee therapeutic success and patient satisfaction.

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