

Spontaneous Repositioning of Pathologically Migrated Teeth Following Periodontal Therapy: A Case Report

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Abstract

One of the peculiar traits of moderate and severe periodontitis is pathological tooth migration, which, when occurring in anterior teeth can have an adverse influence on the self-esteem of patients. The etiology of pathological tooth migration is complex and multifactorial. Treatment of pathological migration requires a multidisciplinary approach that involves periodontal, orthodontic, and restorative treatment. But, in certain cases, spontaneous repositioning of the pathologically migrated teeth has been reported following a sole periodontal therapy. The present case report explained the spontaneous repositioning of pathologically migrated tooth with surgical periodontal therapy.

Keywords: pathologic tooth migration, periodontitis, spontaneous repositioning, surgical periodontal therapy

I. INTRODUCTION

Pathological tooth migration (PTM) has been defined as a tooth displacement that results when the balance among the factors which keep physiologic tooth position is disturbed by periodontal disease [1]. The prevalence of PTM is 55.8% [2]. The clinical feature of PTM varies from facial flaring, diastema, extrusion to rotation and tilting of affected tooth or a group of teeth while most patients may have a combination of the above features [3]. The etiologies for PTM are periodontal attachment loss, pressure from the inflamed tissue, occlusal factors like trauma from occlusion, habits (like bruxism, mouth breathing, tongue thrusting, lip habits, sucking habits, pipe smoking, and playing of wind instruments), abnormal labial frenum, non-replacement of missing teeth, gingival overgrowth and iatrogenic factors [3]. The mal-alignment of teeth resulting from the pathologic tooth migration prompts the patients to seek periodontal therapy [4]. The different treatment options [3] for the correction of pathologic tooth migration are: 1) Extraction and replacement of migrating teeth when migration is severe, 2) spontaneous correction of the early stages of PTM following periodontal therapy, 3) limited or adjunctive orthodontic therapy, and 4) conventional orthodontic treatment. In the present case report, a spontaneous repositioning of the

pathologically migrated tooth was observed with a periodontal therapy alone.

II. CASE REPORT

A 19-year-old female patient presented in the department of Periodontology and Oral Implantology with the chief complaint of increased spacing between her upper front teeth for one year. She denied a history of earlier dental treatment. Her family and medical history were noncontributory. According to the patient, the upper front teeth were well aligned with no spacing between the maxillary central incisors two years back. On Intraoral examination, bleeding on probing, and 5 to 8 mm deep periodontal pockets with 2 to 5 mm clinical attachment loss, were observed in maxillary incisors. The teeth #11 and #21 showed Degree 1 mobility with spacing about 2 mm between them. Besides, the maxillary right central incisor showed distal labial migration along with extrusion (Figure 1). An intraoral periapical radiograph displayed a horizontal bone loss in between #11 and #21 with a normal trabecular pattern of the bone in the interdental area. The final diagnosis of chronic localized periodontitis with respect to #12, #11, #21, and #22 was made.



Figure 1: Preoperative frontal view showing spacing between two maxillary central incisors

The treatment began with full mouth supragingival scaling and meticulous plaque control instructions. Two weeks later, subgingival scaling and root planing were performed with the curette. Supragingival ultrasonic scaling was performed monthly for further 3 months. Three months after initial scaling and root planing (Figure 2), an observable degree of midline diastema closure could be appreciated. However, the teeth #11, #12, #21

and #22 still showed an average residual pocket depth of 5 to 6 mm. Therefore, the patient was scheduled for periodontal surgery.



Figure 2: Three month after phase I therapy, some degree of midline diastema closure obtained (A), persistent periodontal pocket about 5mm #11 (B) and #21 (C)

Under local anesthesia, a papilla preservation flap was reflected. A thorough scaling and root planing followed by debridement of the osseous defect and irrigation of the surgical field with saline were performed. After that, the buccal and lingual flap was replaced back to its original position and sutured with (4-0) Black silk (Figure 3). The patient was prescribed with post-operative antibiotics and analgesics/anti-inflammatory drugs. The sutures were removed after a week.



Figure 3: Intraoperative views, sulcular incision shown (A), papilla preservation flap reflected (B), bony defect exposed (C) and simple interrupted loop suture (D)

Six months postoperatively, almost complete closure of the diastema was observed and both the teeth showed no sign of clinical mobility. The probing pocket depth measured about 2 mm to 3 mm (Figure 4). However, a slight degree of extrusion in #11 was still evident. The patient was suggested for an orthodontic intrusion of the tooth, but the patient was happy with the result achieved. The patient was kept in a regular followed up.

III. DISCUSSION

The position of teeth in the dental arch depends on the health and height of the periodontium, and on the forces exerted upon the tooth, mainly occlusion and pressure from oral

musculatures which include the lips, cheeks, and tongue. The alteration among any of these factors initiates a sequence of interrelated changes in the environment of a single tooth or a group of teeth which ultimately results in pathological migration [5].

Hirschfeld (1933) was the first person to describe pathologic drifting of teeth resulting from the pressure of inflammatory tissue in periodontal pockets [6]. During pathologic tooth migration, the tooth movement occurs in a direction opposite to the deepest part of the pockets [4]. The hydrodynamic and hydrostatic forces within the blood vessels and inflamed tissues in the periodontal pocket were considered as etiologic factors behind the abnormal tooth migration [7]. Both non-surgical and surgical periodontal therapies lead to a reduction in edema and inflammation of the soft tissues. With the healing of the tissue, the inflamed tissue is replaced with the healthy collagen fibers and establishes the normal equilibrium of forces which result in a reactive movement of a migrated tooth to its original position [8]. It was observed that the movement of spontaneously repositioning of teeth was consistently initiated after 7 to 10 days after the procedure and was completed by 3 to 4 weeks, in most cases [8].

Several case reports have demonstrated success in a spontaneous correction of PTM by reactive repositioning with periodontal therapy alone [8, 9, 4]. Gaumet et al observed a complete diastema closure in 52% of the teeth that had undergone surgical periodontal therapy. Therefore, it was also concluded that periodontal therapy can result in the complete closure of a recently formed diastema of anterior teeth measuring ≤ 1 mm in dimension [8]. The result of the present study was inconsistent with the study done by Gaumet et al [8] because, despite the presence of a wider diastema (2mm), complete diastema closure was achieved in the present case.



Figure 4: Six-months post-surgical view, almost closure of maxillary midline spacing (A), establishment of clinically healthy gingival sulcus depth in #11 (B) and #21 (C)

The result of the present case report was in agreement with ample of studies [9, 10] which reported closure of even wider spaces. In a case report by Sato et al, they observed a spontaneous correction of a pathological migrated tooth with 3 mm diastema following non-surgical periodontal therapy [9]. Similarly, Brunsvold et al also observed a complete closure of diastema measuring about 2 mm between maxillary right lateral and central incisors with severe periodontitis following nonsurgical and surgical periodontal therapy [10].

IV. CONCLUSION

PTM is a common finding in patients with periodontal disease. Early treatment is a key in achieving successful closure of diastema created by PTM.

COMPETING INTERESTS

The authors declare that they lack competing interests regarding the publication of this paper.

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