

CASE REPORT

**SPONTANEOUS CORRECTION OF PATHOLOGIC TOOTH MIGRATION FOLLOWING
NONSURGICAL AND SURGICAL PERIODONTAL THERAPY: A CASE REPORT**

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ABSTRACT

Pathologic tooth migration (PTM) is defined as a change in tooth position that occurs when there is disruption of forces that maintain teeth in a normal relationship. Prevalence of PTM among periodontal patients has been reported to range from 30.03% to 55.8%. Correction of PTM usually required combined periodontal, orthodontic and restorative treatments. In this article we report a case with severe periodontal attachment loss and pathologic migration of teeth. Following periodontal therapy, we observed spontaneous closure of spaces, as well as, correction of crossbite in mandibular right canine.

Keywords: *pathologic tooth migration; crossbite; periodontal therapy*

INTRODUCTION:

Periodontal disease can lead to pathologic migration of involved teeth including anterior teeth and cause severe functional and esthetic problems especially in moderate to severe types of disease. Pathologic tooth migration (PTM) is defined as a change in tooth position that occurs when there is disruption of forces (Including forces from periodontal tissues, occlusal factors, soft tissue pressure of the cheek, tongue, and lips, and oral habits) that maintain teeth in a normal relationship. There is evidence-based information that destruction of periodontal tissues plays a significant role in the etiology of PTM and the transseptal fibers may play an especially important role in PTM. Prevalence of PTM among periodontal patients has been reported to range from 30.03% to 55.8 %.(1)

Although combined periodontal and orthodontic treatments have been indicated to re-establish a well-functioning dentition, several case reports indicate that in some patients, periodontal therapy may cause spontaneous correction of PTM. (2)The aim of this article is to present a case with spontaneous correction of PTM including closure of spaces and correction of crossbite following periodontal therapy.

CASE REPORT:

A 37-year-old non-smoking male with no remarkable medical history or medication usage referred to the department of Periodontology, primarily with a chief complaint of gum disease. Clinical and radiographic examinations revealed presence of a generalized severe chronic periodontitis. There was 1 mm space between teeth # 21 and # 22, teeth #43 and #42, and more than 1 mm space between teeth #22 and #23. The patient reported that these spaces appeared about 5 years ago. Tooth # 43 had a reverse over jet and an overbite of about 1mm (Figure 1, 2).



Figure 1- Clinical view at baseline. Note the spaces between teeth #21 and #22 and #23, and between teeth #43 and #42, and the crossbite of tooth #43.

Comprehensive periodontal treatment was initiated with phase I periodontal therapy including oral hygiene instructions, scaling and root planning, and selective grinding of teeth (where needed). Four weeks after initial therapy the patient was re-evaluated.

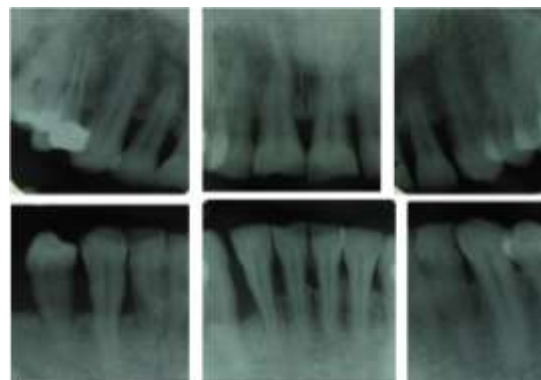


Figure 2- Intraoral periapical radiograph of maxillary and mandibular anterior teeth at baseline.

There were still spaces between teeth # 21, #22 and #23; but in the lower jaw, the right lateral incisor tilted distally and therefore, the space between teeth # 43 and # 42 was almost closed (Figure 3).



Figure 3- Clinical aspect 4 weeks after non-surgical periodontal therapy.

At this time, open flap debridement surgery was done in sites with the remained pocket depth of more than 5 mm including upper and lower anterior teeth and the hopeless teeth were extracted. The patient was reevaluated 1 month after periodontal surgeries. We observed that the spaces between teeth (except between teeth #22 and #23, were closed but the tooth #43 was still in crossbite with teeth #13 and #12 (Figure 4a). 6 months after the flap debridement surgery in the mandibular right quadrant, a free gingival graft (FGG) procedure was done at the site of tooth # 43 to augment attached gingival height. Patient was assigned to attend recall visits every 2 months in the first year. Strikingly 2 months after the FGG surgery, we observed that the reverse over jet of mandibular right canine was completely corrected (Figure 4b). At one year-later maintenance visit no change was occurred in the position of teeth.



Figure 4-a) 1 month after periodontal flap debridement surgeries. b) 8 months after periodontal flap debridement surgery, the crossbite of right mandibular canine was completely corrected without any orthodontic treatment.

DISCUSSION:

The clinical results in this case showed that spontaneous correction of pathologic tooth migration (including spaces and crossbite) can occur after nonsurgical and surgical periodontal therapies. Some previous case reports indicated that, in some patients, periodontal therapy may cause spontaneous correction of the PTM. (2-5) Gaumet et al. studied 16 patients with 33 diastema sites of anterior teeth that had developed in the last 5 years. These investigators concluded that if a recently formed diastema of anterior teeth associated with periodontal disease is ≤ 1 mm in dimension, closure is predictable after periodontal therapy. (3) This is in accordance with the results of our study. However, some studies indicated closure of even wider spaces. Sato et al. reported a case in which spontaneous correction of pathologic tooth migration including 3 mm diastema occurred following nonsurgical periodontal therapy. Kumar et al. reported a case with periodontal disease and distolabial pathologic migration of maxillary incisors with a midline diastema of 3 mm. surgical therapy performed after nonsurgical therapy. The patient reported 2 months postoperatively with complete closure of the maxillary midline diastema. (4)

Brunsvold et al. reported a case with 2 mm diastema between maxillary right lateral and central incisors, occurred during the course of severe periodontitis, which was corrected without orthodontic appliances following nonsurgical and surgical periodontal therapy. However, the diastema persisted 4 weeks postoperative. At a 4-month recall visit, they noticed that the diastema had been closed. (5) The term reactive positioning has been used to describe tooth movement that occurs without the use of appliances after periodontal treatment. (6)

In the present study, 1 month after periodontal surgeries, we observed that the spaces between teeth (except between teeth #22 and #23), were closed but the tooth #43 was still in crossbite with its opposing teeth. The causes of these corrections can be explained as follows: elimination of destructive effects of bacterial infection leading to reduction of inflammatory tissue pressure, reestablishment of the "periodontal force" through healing of the supracrestal gingival tissues especially transseptal fibers, (6) and reformation of collagen fibers in gingival fiber apparatus due to elimination of abnormal occlusal forces. (5)

8 months after flap debridement surgery, we noticed the correction of crossbite of tooth # 43 which was attributed to lingual displacement of it. It was assumed to be a premature contact applying a constant force to tooth # 43 and its antagonists, resulting in lingual displacement of canine. It can possibly be discussed by "differential anchorage" phenomenon which refers to the more movements of the tooth with the less periodontal support. (7)

In this case, similar to many other case reports, spontaneous correction of pathologic tooth migration was occurred following nonsurgical and surgical periodontal treatments. However, it was reported that treatment of severe PTM often required orthodontic therapy preceded by periodontal therapy. (8, 9)

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