



A RARE OCCURRENCE OF AN EMBEDDED TRANSPALATAL ARCH APPLIANCE- CASE REPORT

Periodontology

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ABSTRACT

The Transpalatal arch (TPA) is a stainless steel wire connecting the maxillary molars during fixed appliance orthodontic treatment to assist with anchorage reinforcement. This appliance is known to have poor patient tolerance in addition to difficulty in maintaining oral hygiene. The appliance also impinges on the palatal mucosa as the molars move mesially. However it is uncommon that the arch wire gets embedded in the palatal tissue. This case report describes a rare occurrence of an embedded TPA appliance in the palatal mucosa and management of the case by surgical removal.

KEYWORDS

Transpalatal arch, orthodontic appliance, U-loop, stabilization, soft- tissue trauma

INTRODUCTION

The maxillary first molars are often rotated with the mesiobuccal cusp displaced in a palatal direction. As a consequence of this malpositioning, the tooth occupies excessive space in the dental arch and due to this tendency to develop a Class II molar relationship is higher. One of the most efficient appliances for the de-rotation of molars is the transpalatal arch. This appliance is especially favourable when the need for de-rotation is the same on both sides of the dental arch.¹ The design of the contemporary transpalatal arch (TPA) follows the contour of the palatal mucosa, with its loop present in the middle of the palate. This facilitates correction of molar rotation, expansion, intrusion, distalization, stabilization, and anchorage.² The traditional TPA appliance is fabricated from a heavy gauge stainless wire. The original design consists of a straight bar across the palate therefore it is also called as a transpalatal bar. This design links the left and right buccal segments together.³ The intra-oral tissues are at risk of developing laceration and ulcers on the gingiva and oral mucosa during orthodontic treatment caused by various components of the appliances.⁴ The most common problem encountered with the use of transpalatal arch is soft tissue irritation. If the transpalatal arch comes in close contact to the palate, during an intrusion of maxillary posteriors or molars, the transpalatal arch may get embedded in the palatal tissue causing pain and discomfort to the individual.⁵ In this case report, we present an unusual case of a TPA appliance embedded in the palatal mucosa which was removed surgically using scalpel technique.

Case Presentation

A 21 year old female patient reported to the Department of Periodontics at AJ Institute of Dental Sciences, Mangalore, with a complaint of an embedded orthodontic wire in the palate. She was undergoing fixed orthodontic treatment since 1.5 year and TPA appliance was placed for stabilization, 8 months back after which it was not removed. She noticed the tissue growth and gave a history of pain and irritation in the region. On clinical examination, an apparent embedment of the U-shaped loop and wire of the TPA appliance in the palatal mucosa was seen with inflammation in the surrounding area (Fig 1). After the intended stabilization function of TPA appliance was complete, it was indicated for removal with the consent of the Orthodontist. Patient was educated regarding the treatment procedure and a written consent was taken from the patient. Surgical protocols and safety guidelines were followed prior to the surgery. Adequate amount of local anaesthetic agent (lignocaine hydrochloride and Adrenaline 1:2,00,000) was infiltrated in the palate, until blanching was seen. Using a 15 No scalpel blade an incision was given on the palatal mucosa over the area of the transpalatal wire and the U-loop. The wire was visualized from the incised area. Near the U-loop, the mucosa was slightly elevated for complete access to the wire component (Fig 2). The appliance was deactivated with orthodontic pliers and the wire component was completely mobilized and removed. A simple interrupted suture was given using 3-0 silk suture at the elevated mucosal area near the U-loop region (Fig 3).

Post-operative instructions were given and analgesics were prescribed to the patient. She was recalled after a week for evaluation. Patient was satisfied with the treatment, the healing was uneventful. Complete healing was seen after a month (Fig 4).



Fig 1



Fig 2



Fig 3



Fig 4

DISCUSSION

The patients undergoing orthodontic treatment are at a risk of developing iatrogenic damage of soft tissue. The transpalatal arch is usually well designed and ensures a good fit with only a distance of 1 mm from the palate.⁶ The appliance may get embedded in the palatal tissue causing pain and discomfort, if at all TPA appliance comes in close contact to the palate during an intrusion movement of maxillary molars.⁷ A simple modification of transpalatal arch as mentioned above. Furthermore, Dilip kumar *et al*,⁵ fabricated a modified transpalatal arch that consists of 2 "U" loops, one on either side of the arm to keep the transpalatal arch away from the palatal tissues. To avoid the indentations of the U loop on the soft tissue, a modification of TPA appliance was given by Gupta A *et al*,⁸ where an arch wire sleeve of sleeve of 1 inch length with 0.31" (internal diameter) was passed over the TPA arch wire before fabrication of TPA U-shaped loop. Falguni *et al*,⁹ modified the TPA in a way in which the middle loop was directed distally and two additional loops directed mesially and adapted along the palatal curvature approximately 2 mm away from the palatal tissues. These modifications serve the purpose of both minimal soft tissue trauma and good patient acceptance.

CONCLUSIONS

Transpalatal arch (TPA) has been widely used as an adjunct in clinical orthodontics. In the majority of cases, any soft tissue irritation caused

by a transpalatal arch disappears rapidly following removal of the appliance. Where severe ulceration of the soft tissue occurs, the lesions have to be monitored and when required its early removal is advocated. The success of the treatment ultimately depends on a good design and a well-fitting transpalatal arch causing the least soft tissue trauma to the patient.

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