Fixed Functional Appliance and Trauma of Soft Tissue in Growing Patient

Dr. Davender Kumar¹, Dr. Sachin², Dr. Meet Verma³, Dr. Shakti Kumar⁴

¹Associate, Professor Deptt. of Orthodontics And Dentofacial Orthopedics PGIDS Rohtak Haryana.
²PG, Student, Deptt. of Orthodontics And Dentofacial Orthopedics PGIDS Rohtak Haryana
³PG Student, Department of Orthodontics, Post Graduate Institute of Dental Sciences, Rohtak, Haryana.

ABSTRACT

Patient undergoing orthodontic treatment are given suggestion to avoid problems. For patient who are undergoing with orthodontic treatment may have Ulcers, discomfort as lips and cheek irritation are common problem during orthodontic treatment. Sometimes swallowing of orthodontic appliance may be there in some patients. Most severe problems like swallowing or aspiration of appliances or its parts. A new type of fixed functional orthodontic appliances (power scope class II corrector) by American orthodontics had been innovated that have caused problems in a severe horizontal growing patient of class 2 div I malocclusion and its clinical management are discussed. Medical emergency management courses which provide guidelines regarding ingestion of orthodontic appliance in orthodontic patient should be attended by orthodontist and team members.

Key words: Pain, Soft tissue, injury, appliance, treatment

INTRODUCTION

Children with facial injuries are more common than adults as they met an accident like car accident, fight, intentional assaults and sports activities. However severities of the patients depends upon strength and direction of force. They may be affected by mentally and physically trauma. There can be potential hazards of orthodontic appliances like tissue damage, enamel damage, enamel fractures, periodontium, root damage, pulp damage, soft-tissue damage, the use of headgear, damage from orthodontic materials treatment failure, relapse. The risk of orthodontic treatment should be explained to the patient and after taking a consent we should go ahead for treatment. Hence this case presents a case of an adolescent female with a severe cheek injury during orthodontic treatment when fixed functional appliance was inserted to patient who underwent trauma from treatment by orthodontist. Sometimes you may be not aware of this type of trauma. Maintenance of oral hygiene and appliance is the challenge to the orthodontist. For a particular patient appliance selection in terms of material, outcome and design should be primary consideration for dentist to attain the best result and for patient satisfaction⁵,⁶,⁷,⁸.

CASE REPORT

A 17-year-old female patient visit to department of orthodontics and dentofacial orthopedics with mandibular retrusion with skeletal class 2 division 1 malocclusion. On intra oral examination patient had, increased over jet, overbite, crowding in upper lower arches. Bonding of upper and lower arches were done using 022x028” M.B.T slot. Leveling and aligning of arches was done using ni- ti wires. Treatment objectives were to correct mandibular retrusion, correction of cross bite, overjet and overbite. It was decide to use fixed functional appliance (power scope class II corrector). A new appliance has been generated in market by AO (American orthodontics). Power scope was inserted on 019x025” stainless steel wires. Unfortunately the patient could not correct her skeletal correction by this appliance. After 2 weeks appointment, patient had evident swelling on her face with trauma by superior end of power scope. It was found on clinical examination [Figure - 2]. She had injuries on intra orally on cheeks bilaterally and a reduced ability to perform voluntary movements of the oral musculature. Medical history was not significant⁷. Appliance was removed at the six-week follow-up appointment, as the
patient had pain and pus discharge. After removal of power scope and administration of some antibiotics, systemic hydrocortisone the cheek injuries was recovered\textsuperscript{8,9}. A picture shown by American orthodontist claiming the advantage of power scope class II corrector (Fig-1,2)

**Patient-Friendly Design**

PowerScope’s low profile means a more aesthetic appearance, and its smooth, rounded design provides better patient comfort. There’s no piston extending distally from the upper molars, which helps reduce ulceration.

![Patient-Friendly Design](image)

**Fig 1: Class II corrector**

![Fig 2: (a, b, c) traumatic lesion on left and right side.](image)

**DISCUSSION**

Only orthodontist is the right person who can tell you the right direction regarding pain and trauma when we use fixed orthodontic appliance. Regular visits should be arranged to follow up orthodontic treatment. Life goes usually smooth after insertion of fixed functional appliances. Patients can eat, can play games and can enjoy life during treatment. The fixed functional appliance can make injuries on teeth, soft tissue and surrounding tissue\textsuperscript{2,3,4}.

Common injuries are found on lip and cheeks when wearing of power scope. The cheeks cut or smashed during the insertion of the appliances when patient bite or chewing force. If cheeks are caught on the rod on the superior end on the power scope, the first step is to remove the appliance immediately. Patient will be very uncomfortable then some pain killer and antibiotics may be prescribed. As pus may be there so drain may be requirement by oral surgeon or a plastic surgeon. Depending upon situation on face or outside of face, a cold pack should be given if injuries is fresh or to reduce the swelling after next few hours. There are lots of blood vessels in mouth due to which bleeds more when injuries occurs. On the other hand, this vascularity allows accelerated healing compared to other areas of the body. Most mild to moderate trauma to the lips, cheek, and tongue do not require stitches\textsuperscript{1,3,4}.

Mouth guards should be designed so that they should be fitted to protect your hard and soft tissue as well. As position of tooth is changed in orthodontic tooth movement so it is important to make the mouth guards so that they should not hamper the tooth movement however all mouth injuries cannot be prevented by mouth guards. It is the orthodontist who will instruct the use of mouth guard in various activities. Hansen et al\textsuperscript{7} explained how the appliance should be fabricated. Here some guidelines are given for emergency management of orthodontic treatment.

**Initial management**

If patient inhaled appliance and restrict his/her air ways refer patient to emergency early as possible.
Some attachments like brackets pass through the bowel if swallowed by patients. For fixed appliances: Remove all loose component of all fixed orthodontic appliances. A white malleable wax, or sugar free chewing gum is given to patient to apply onto sharp edge appliances which causing injuries to cheeks and lips.

Advise the patient to seek non-urgent orthodontic care with their orthodontic provider.

Ask to patient do not use fractured removable appliances:

For patients with headgear- use of head gear after making orthodontist appointment

Subsequent Care: Consider removing or trimming loose or displaced arch wire of a fixed appliance.

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