

2. Esthetic pre-prosthetic treatment opportunities by using orthodontic mini-implants

Lecture Synopsis:

The intrusion of overerupted upper molars is a difficult orthodontic treatment objective. When conventional appliances are used, the extrusion of adjacent teeth may occur. In recent years, temporary anchorage devices have been used to avoid these unwanted side effects. For this purpose, mini-implants have been primarily inserted in the alveolar process. However, due to many disadvantages of mini-implant placement between the roots of the upper molars, it is now preferred to insert mini-implants in the anterior palate ensuring a low risk of failure or mini-implant fracture. As a less bulky alternative to the “Mousetrap” appliance (with TPA) the “Mini-Mousetrap” (without TPA) was designed and comprised two mini-implants in the anterior palate and lever arms for molar intrusion. If a TPA is not used, molar movement must be monitored and the direction of the force adjusted to avoid unwanted molar tipping.

Unless a prosthetic replacement is inserted soon after extraction or loss of a first molar, the second molar may tip mesially into the edentulous space. Not only will the first-molar space contract mesiodistally, but eccentric occlusal loading will reduce the biomechanical loading capacity of the second molar. Such a situation requires preprosthetic uprighting of the second molar using appropriate mechanics. Simply tipping the molar distally will lead to extrusion and likely cause occlusal interference. Stable anchorage is critical, since simultaneous intrusion and uprighting forces create a high moment load on the anchorage unit. Otherwise, unwanted mesial tipping and extrusion of the anchorage teeth may occur. The use of an orthodontic mini-implant for direct anchorage can help avoid such dental side effects. This lecture describes a technique using mini-implants in an edentulous first-molar site as anchorage for uprighting mesially tipped molars.

Learning Objectives:

Clinical problems, recent advances and research pertaining to the use of skeletal anchorage will be presented for pre-prosthetic use of orthodontic mini-implants such as molar intrusion of overerupted molars or uprighting of mesially tipped molars:

- Understand Pros and Cons of different insertion sites for mini-implants.
- Recognize the hard and soft tissue conditions to insert a mini-implant in the palate.