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Review Article

Role of Orthodontic Elastics in the Oral & Maxillofacial Surgical Procedures

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***ABSTRACT*:**
There is enough evidence in the literature which emphasizes on the fact that orthodontic elastics can be used for correction of minor occlusal discrepancies in the postoperative phase. This review is intended to throw light on the versatile role of orthodontic elastics in the postoperative phase of oral and maxillofacial surgical procedures.
Key words: orthodontic elastics, occlusal discrepancies.

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Introduction:
Since a long time elastics are being routinely used as an active component in orthodontic treatment. Henry A. Baker first advocated the use of elastics in clinical practice to correct the position of teeth with the rubber bands, called as Baker anchorage.[1,2] When coupled with a good patient cooperation it aids in the correction of both antero-posterior and vertical discrepancies. Literature shows that orthodontic elastics can be used for correction of minor malocclusion in the postoperative phase following jaw fractures.[3] Orthodontic elastic chain can be used for establishing intermaxillary fixation (IMF) in the treatment of fractures of the facial skeleton in addition to achieving temporary IMF at the intermediate stage of bimaxillary orthognathic procedures.[4] This review is intended to throw light on the versatile role of orthodontic elastics in the postoperative phase of oral and maxillofacial surgical procedures.

Types of elastics
Orthodontic elastics are available in natural and synthetic forms. The natural forms of latex elastics swell as well as stain due to the filling of the voids of the matrix by fluids and bacterial debris.[5] Synthetic materials swell less than the latex material. The most important of elastomeric materials is its ability to exert a useful force over a period.[6] Latex elastics generally show a greater amount of loss in strength than synthetic elastomers when stretched over 3 weeks of time. The

synthetic elastomers when stretched over a specific length and time exhibit a great loss in force.[5] Class I elastics are used for the space closure. It is placed from the molar tube to the intramaxillary hook of the same side of the same arch and can be also called as intra arch elastics.[7] Class II elastics extend from the lower teeth to upper molar teeth to upper cuspid which is placed from lower molar tube to the upper intermaxillary hook of the same side. They are primarily used to cause Antero-posterior tooth changes.[8] Class III elastics extend from upper molar to the lower cuspid. They promote extrusion of upper posterior teeth and upper anteriors, along with lingual tipping of the lower anteriors.[9] Extrusion of anterior and posterior teeth and the associated rotation of the occlusal plane can unfavorably affect treatment outcome. It is a well known fact that rotation of the occlusal plane can result in an unstable occlusion resulting in relapse to the initially existing more stable malocclusion. Elastics as such do not affect mandibular position, but they do affect tooth position which consequently affects the location of the mandible.[10]

Clinical aspects:

Restoration of an ideal occlusion in addition to achieving an esthetic facial profile is a pre-requisite in orthognathic surgery. The application of orthodontic elastics in the management of interarch discrepancies dates back to the 1890s. Elastics offer adequate traction even in unique clinical scenarios where the degree of control afforded by wire loops may be limited or unstable.[3] In clinical scenarios where there is a tendency to displacement of occlusion, it is easier to remove and replace the elastics, if necessary with a different angle of pull. This can be taxing and time consuming with wire ties, particularly as wires tend to work-harden and break.[4] ploacement and removal of elastics is easy and atruamatic and also avoids glove punctures noticed with wires.[11] A recent study revealed that 31% force decay after 24 hour stretching and 39% force decay after 2 weeks stretching occurs in elastics. Hence, longer time elastic IMF application in trauma patients has scientific basis and recommended to continue elastic wearing after the first day as the force decay is not much significant.[12,13] So, it is proven that elastics used for traction can be placed between the hooks to partially immobilize the jaws as well as to approximate the jaws in good occlusion.[2] A study showed that elastic traction do not provide any beneficial effects in the correction of major occlusal irregularities and that minor apparent malocclusions resolve rapidly with or without elastic traction. It stated that this technique only overcomes the reflex muscle contraction that results from the discomfort associated with the fracture and its treatment.[14]However, another study stated that elastic traction is a reliable technique to treat simple facial fractures as well as multiple fractures providing the reduction of the fracture and the temporary fixation of the bone fragments before rigid internal fixation.[15] There is existing literature pertaining to elastic properties of 3/16 inch heavy latex elastics by manufactures and researchers in wet, dry, and simulated oral conditions.[12,13,16] In the Class II case, heavier elastics might be used during the day when opening predominates. Lighter elastics would be worn at night to maintain the arch in its progress and upright any abnormally inclined teeth. Conversely, in treating the Class III maloeclusion, heavier elastics would be applied at night when the severity of the dysplasia is least. Lighter elastics would be worn during the day.[17]

Complications:

Allergy to latex is the biggest complication with latex elastics. There are documented cases of stomatitis with acute swellings and erythematous buccal lesions due to the use of orthodontic elastics.[5] It is believed that the residual rubber protein of the latex has the antigen. There is a risk of anaphylactic shock due to this allergic reaction. Since the incidence of latex allergic reactions are increasing, the use of non-elastic products as well as assessment of material properties of non-latex elastics are increasingly important clinically.[18,19]

Conclusion:

Orthodontic elastics can be considered as one of the most versatile material that can be employed in the management of interarch discrepancies. However, it is very essential for the clinician to educate the patient pertaining to the correct use of elastics since the outcome is dependent on the patient cooperation.

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