Short Communication

Begg’s Mechanotherapy: Revisited!!!!!!!!!!

Abstract
The Begg’s light wire technique is a simple technique that is capable of producing good results with minimum efforts. It is an easy technique requiring a simplistic diagnosis and stereotype treatment. However, it lost popularity due to its projection as a “cook book” treatment and an overemphasis on extractions, based on theory of attritional occlusion. Here, a review is presented on various cases treated with Begg’s mechanotherapy encompassing its advantages and disadvantages.

Keywords: Begg’s mechanotherapy, Class II elastics, Differential force technique

Introduction
The Begg’s technique was originated by P. Raymond Begg in 1956. The goal of treatment is overcorrection of teeth that helps for natural tendency of relapse which occurs after completion of treatment. Differential force technique is used to close spaces at any location in arch with light continuous force without excessive strain on anchorage. Class II intermaxillary force is perhaps the most commonly used adjunct in fixed mechanotherapy to reposition the mandible anteriorly and thereby improve the dentoalveolar and skeletal relationships.[1] There is evidence of remodeling changes in the glenoid fossa and the head of the condyle, but are of inadequate magnitude to correct the skeletal discrepancy.[2‑3] He has collaborated in producing an arch wire material that combines the properties of low stiffness, high resiliency distributing force at optimum levels for lengthy periods. The method has been very popular being cost-effective and less anchorage taxing. However, the overuse of Class II elastics, lack of rotation and precision control has put a big question mark in this treatment methodology.

Case Evaluation and Treatment Strategy
There are various extraction and nonextraction cases treated with Begg’s mechanotherapy. Figure 1 describes a case treated by nonextraction: concave profile, anteriorly divergent face, midline diastema, left lateral peg-shaped incisor with lower anterior spacing, crossbite of 11 in relation to 41,42; 12 in relation to 42,43; 13 in relation to 43,44; 22 in relation to 32,33 and 23 in relation to 33 and 34. Stage I took 11 months followed by pre-Stage III and completion of treatment in a span of 1 year and 8 months [Figure 2]. Class III elastics were used during treatment. In lower arch, udder arch was given to control labial root torque.

The finishing stage/third stage in Begg is very critical as per detailing, maintenance of tip, torque and other functional needs. The changes evident is attributed to dental changes with no soft-tissue alteration. The use of elastics has increased the GoGn-SN angle.

Figure 3 describes a 12-year-old girl who presented with a complaint of forwardly placed upper front teeth having Class I skeletal pattern with A point to B point Angle of 22°; convex profile with posterior divergence, potentially incompetent lips and acute nasolabial angle. All four premolars were extracted. The treatment lasted for 1 year and 10 months. Class I molar and Class I canine relation was successfully achieved. There was retraction of maxillary anteriors with no loss of anchorage. Anchorage demands were met by the use of anchor bends.

The Class II elastics played a significant role in mesializing the lower molars and finishing in Class I molar and Class I canine relation [Figure 4].

A bimaxillary protrusion case with lower anterior crowding was treated

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with extraction of all first premolars [Figure 5]. There is correction in canine relation on the left side. The proper canine torque was not established and proper settling not achieved [Figure 6].

A vertical grower’s treatment with such mechanotherapy needs careful monitoring, wide precision, and of course patient’s cooperation.

Several cases are treated with Begg’s mechanotherapy. The various limitations of conventional therapy includes

- Achieving precise control and torque
- Rotational control
- Minimal intrusion of upper incisors during bite opening
- Overuse of Class II elastics: can lead to lack of incisor intrusion, undesirable proclination of lower incisors and unfavorable tipping of mandibular and occlusal planes.

However, in refined Begg’s mechanotherapy, there are various problems encountered in Stage III such as.

**Undesired sagittal movements**

- Class II malocclusion – interarch relation reverts back from corrected Class I to Class II
- Reversal of bimaxillary protrusion correction, i.e., mesial movement of both the arches
- Individual crown movements in a mesial direction can lead to crowding of incisors and affect rotational correction
- Mesial and distal crown moving tendencies in teeth
adjacent to extraction sites can open extraction spacing which is closed earlier at the end of the second stage.

**Undesired vertical movements**

- Can cause anterior deep bite to return partially or fully.
- In second premolar and first molar extraction cases, an open bite may develop in molar area.

**Undesired transverse movements**

- Can cause the molars (especially uppers) to roll out buccally and rotate leading to serious functional disturbances.
- Root resorption possibilities are substantial during third stage.

**Discussion**

It has been observed by Barrer, Swain, and Cadman that this technique can also be used successfully for nonextraction treatment in borderline cases and in patients having only minimal tooth size or no arch length discrepancies. The major contributors to overjet correction are a decrease in maxillary incisor proclination and an increase in incisor mandibular plane angle (IMPA), with a small forward shift of the mandible caused by Class II elastics.

Placing Class II elastics at the posterior ends of arch wires, using long buccal tubes, and angulating all tubes mesiogingivally are important factors in efficient reduction of overbite. “Check elastics” can provide a powerful mechanism for overbite reduction, causing extrusion of maxillary and mandibular molars, and counteracting the tendency of the anchor bends to tip the molars distally, thus aiding incisor intrusion. Cervical headgear to maxillary molars or anterior high-pull headgear may be preferable in a few situations. However, success depends on the cooperation of the patient. Technical refinements are and will always remain a prime requisite in successful completion of cases.

**Conclusions**

It was concluded that:

1. Begg’s mechanotherapy can be successfully employed in correction of overjet, overbite, and achieve sagittal molar relationship in nonextraction treatment cases. Overjet correction was achieved primarily by significant decrease in maxillary incisor proclination and increase in IMPA. Overbite correction was achieved by mandibular incisor intrusion primarily and some mandibular molar extrusion.
2. The mild Class II elastic forces caused significant retraction of the maxillary incisors. There was an increase in IMPA and correction of the sagittal molar relationship.

Every appliance system has its own benefits and drawbacks. A thorough understanding of the basic biomechanics of the appliance system is necessary to make full use of the advantages and minimize the drawbacks. Begg’s mechanotherapy is not easy. It requires exacting standards of thinking and skill levels to achieve best results.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.
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Conflicts of interest
There are no conflicts of interest.

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