Management of Bolton Discrepancy in Peg-shaped Tooth

N V Hantodkar¹, Amol A Verulkar², Anand Tripathi³, Anukool Pateria³, Swapnil B Wankhade³, Rinku Advani³

Contributors:
¹Professor and Head, Department of Orthodontics and Dentofacial Orthopedics, VYWS Dental College, Amravati, Maharashtra, India;
²Associate Professor, Department of Orthodontics and Dentofacial Orthopedics, VYWS Dental College, Amravati, Maharashtra, India;
³Senior Lecturer, Department of Orthodontics and Dentofacial Orthopedics, VYWS Dental College, Amravati, Maharashtra, India.

Correspondence:
Dr. Hantodkar NV. Department of Orthodontics and Dentofacial Orthopedics, VYWS Dental College, Tapovan, Wadali Road Camp, Amravati, Maharashtra, India. Email: hantodkar@rediffmail.com

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Abstract:
Orthodontic treatment comprises different phases with unique characteristics and challenges. Tooth size discrepancies are considered an important variable, especially in the anterior segment. Orthodontic treatment of a patient with peg-shaped lateral incisor becomes difficult due to problem encounter during bonding of orthodontic bracket on the malformed tooth. Maintaining midline and space for final restoration on peg-shaped lateral incisor during orthodontic treatment is mostly done using coil spring which is less efficient, tedious, and uncomfortable to the patient. This article presents a new method of management of Bolton discrepancy due to peg-shaped lateral in conjunction with temporary prosthetic pontic by orthodontic method.

Key Words: Bolton discrepancy, peg-shaped lateral incisor, pontic

Introduction
Cooperation, coordination, and interaction between different specialties in dentistry are extremely important in establishing diagnosis and treatment planning. The interaction between the different disciplines is necessary, and in some cases, it is crucial in facilitating coordinated dental therapy. The interrelationship between orthodontics and prosthodontics often resembles symbiosis. Andrew¹ gives six keys of normal occlusion, and the Bolton² ratio is one of the important factors for normal occlusion. In peg-shaped tooth, there is a Bolton discrepancy. This article presents a new method of management of Bolton discrepancy in conjunction with temporary prosthetic pontic by orthodontic method.

Case Report
This paper reports a case of 23-year-old man, who reported with a chief complaint of spacing in the anterior maxillary region (Figure 1). An intraoral examination showed spacing in anterior teeth with deep bite and peg-shaped right lateral incisor. The treatment of the patient began with the good working model impression of the patient. On working model, actual Bolton discrepancy was calculated using Bolton’s Formula.³ Wax pattern was prepared for temporary prosthetic pontic of the peg-shaped tooth by adding calculated Bolton discrepancy (by Bolton’s formula) (Figure 2a and b) and temporary prepare prosthetic pontic was prepared (Figure 3a and b). Bonding in the maxillary arch was done with 0.018 MBT except on peg-shaped right maxillary lateral incisor (Figure 4a and b). A good working model impression was taken after bonding orthodontic brackets and a good second working model was prepared. Temporary pontic was placed on the peg-shaped tooth,³ and bracket was bonded on temporary pontic on the second working model (according to other brackets of arch). Temporary pontic with bonded bracket was cement on peg-shaped tooth in patient’s oral cavity (Figure 5a-c). Orthodontic treatment was continued for period of 6 months (Figure 6a-c), and final ceramic restoration was given after complete orthodontic treatment (Figure 7).¹⁻⁷

Figure 1: Patient with peg-shaped upper right lateral.
Figure 2: (a) Wax pattern for temporary prosthetic pontic by adding calculated Bolton discrepancy (by Bolton’s formulae) (front view). (b) Wax pattern for temporary prosthetic pontic by adding calculated Bolton discrepancy (by Bolton’s formulae) (lateral view).
Discussion

This article presents a new method of management of Bolton’s discrepancy in conjunction with temporary prosthetic pontic by orthodontic method. Tooth size discrepancies are considered an important variable, especially in the anterior segment. There are several treatment options to consider for peg-shaped laterals. Counihan (2000) recommends that there are two basic approaches. First, the lateral incisor can be extracted and resultant space closed. However, this will often give a narrow unaesthetic smile. The second, preferred option is often to open the space mesial and distal to the peg lateral and create a proper space for a normal sized lateral incisor and restorative dentist has to build up. The peg-lateral to simulate a normal sized lateral incisor.

The position of the peg lateral within space is more important and that will depend on the actual size and shape of the peg lateral and amount of available space that can create for the lateral incisor tooth. The creation of space and management of malposition of the peg-shaped tooth is depending on orthodontic treatment. Orthodontic treatment of the patient with peg-shaped lateral incisor becomes difficult due to problem encounter during bonding of orthodontic bracket on the malformed tooth. Maintaining midline and space for final restoration on peg-shaped lateral incisor during orthodontic treatment is mostly done using coil spring which is less efficient, tedious, and uncomfortable to the patient. The present method is a comparatively good method for space maintaining than coil spring and for maintaining midline coinciding. This method is excellent regarding the esthetic point of view because it is possible to maintain exact space for the final restoration and patient get esthetic temporary prosthetic crown in between treatment. This method helps in correction of individual malocclusion of the peg-shaped tooth such as tipping, rotation, intrusion, and extrusion.
Conclusion
This is a comparatively good method for maintaining midline coinciding and space maintaining than coil spring. By this method exact space maintaining for the final restoration is possible, and it is possible to correct individual malocclusion of the peg-shaped tooth such as tipping, rotation, intrusion, and extrusion because it is easy to bond bracket on temporary pontic than normal peg-shaped tooth.

References