TECHNICAL NOTE

SIMPLE AND PRECISE DOWEL PIN POSITIONING TECHNIQUE

Sumant Kumar Singh, Saumyendra Vikram Singh, Habib Ahmad Alvi, Pooran Chand, Raghuwar Dayal Singh

ABSTRACT

The dowel pins are used as a means of orienting dies to the master cast. This technical note describes simple and precise method of positioning dowel pins which provides enough stability to facilitate comfortable cast pouring.

Keywords: Dowel pins; Dies; Cast; Die location and stabilisation

Introduction

Dies that can be removed from the working cast are convenient to use because a wax pattern or coping need not be removed from the respective die when transferred to the working cast. This is even more crucial in case of ceramic restorations, as the unfired material is quite fragile. There are several such die systems available like Brass dowel pins, Pindex (Whaledent), Di-Lok (DentiFax/Di-Equi), DVA Model system and Zeiser (Girrbach). Precise relocation of the die in the definitive cast is crucial to the removable die system success and is most commonly accomplished with brass pin or dowels for reasons of availability, economy and ease of use.1

The die pins are used as a means of orienting dies to the master cast.2 It is evident that these dowel pins must be positioned and stabilized before pouring the die material. The dowel pin must be held in position with the head inside the preparation portion of the impression. Many methods have been used for securing this position. These include use of positioners such as needles and pins, paper clips, bobby pins, wax wafers, and matches.3 However, these techniques have disadvantages: the position of dowel pin is more difficult to stabilize with relation to facial and lingual margins of the preparation, gauging the depth of the dowel pin in the die stone is difficult; as is ensuring parallelism when the preparations are adjacent to each other. Stabilisation of such positioners during pouring of the cast is also a challenge. If positioned inaccurately, the dowel pins may impinge on the margins, weaken the die, or prevent it from being easily removed from the cast.4 The following method of positioning dowel pins is simple, precise and provides enough stability to facilitate comfortable cast pouring. This technical note describes simple and precise method of positioning dowel pins which provides enough stability to facilitate comfortable cast pouring.

Technical Note

Take two 19 gauge straight orthodontic stainless steel wires approximately 6-7 cm long. With the help of orthodontic pliers make a pin head on one end of each wire. Now bend both the wires from the pin heads in the same plane at 45\(^\circ\) to 60\(^\circ\) angle (Figure 1). Take a 4-5 cm piece of an empty and clear used ball point pen plastic refill (dia 1.0-0.8mm). Insert the pin heads of both wires in one end of the ball pen refill in one plane (Figure 2). Ensure that both pin heads are well engaged and not easily removed from the refill. Now insert the tail end of dowel pin (Brass dowel pins 2#:3.0×22) in the other end of refill (Figure 3). Insert the free wire ends of dowel pin positioner assembly into non strategic zones of the impression. Make required adjustments to achieve desired position of dowel pin in the prepared tooth impression by cutting or bending the wires or altering their penetration depth (Figure 4,5). Ensure that the assembly is stable to prevent movement of dowel pin during tapping or pouring the cast on vibrator. Now make the first pour with a thin mix of die stone. The knurled end of the dowel pin should be covered completely within this pour (Figure 6). After the first pour has set adequately, remove the positioner assembly from the dowel pin. Pour the second part of the cast conventionally (Figure 7,8).

Discussion

Pindex, DVA Model system, Di Lok and Zeiser techniques require special equipments, are technique sensitive and time consuming. Individual dowel pin placement accomplished with bobby pins, match sticks, paper clips and sticky wax are arbitrary methods and difficult to master.5 A dowel pin stabiliser described in this technique, is extremely fast, economical and simple to make, utilising universally available materials in the dental office-orthodontic wire and used ball point pen refills. This method of die positioning may be more precise and stable at the time of pouring the cast. The assembly is easy to make and master, requires no specialised equipments, economical and time saving.

Conclusion

In conclusion the dowel pin stabiliser is described which is extremely fast, economical and simple to make, utilising universally available materials in the dental office-orthodontic wire and used ball point pen refills and provides enough stability to facilitate comfortable cast pouring.

Authors Affiliations

1. Sumant Kumar Singh BDS, Junior Resident, Department of Prosthodontics, Faculty of Dental Sciences, Chhatrapati Shahaji Maharaj Medical University, Lucknow, Uttar Pradesh, India, 2. Saumyendra V. Singh MDS, Assistant Professor, Department of Prosthodontics, Faculty of Dental Sciences, Chhatrapati Shahaji Maharaj Medical University, Lucknow, Uttar Pradesh, India, 3. Habib Ahmad Alvi MDS, Professor and Head, Department of Prosthodontics, Faculty of Dental Sciences, Chhatrapati Shahaji Maharaj Medical University, Lucknow, Uttar Pradesh, India, 4. Pooran Chand MDS, Associate Professor,
Department of Prosthodontics, Faculty of Dental Sciences, Chhatrapati Shahuji Maharaj Medical University, Lucknow, Uttar Pradesh, India. S. Raghuwar Dayal Sing, MDS, Assistant Professor, Department of Prosthodontics, Faculty of Dental Sciences, Chhatrapati Shahuji Maharaj Medical University, Lucknow, Uttar Pradesh, India.

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Address for Correspondence
Dr. Saumyendra Vikram Singh MDS, Assistant Professor, Department of Prosthodontics, Faculty of Dental Sciences, Chhatrapati Shahuji Maharaj Medical University, Lucknow, Uttar Pradesh, India.
Email: saumyendravsingh@rediffmail.com

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