

“Split Cast Mounting: Review and New Technique”

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Abstract For the fabrication of a prosthesis, the Prosthodontist meticulously performs all the steps. The laboratory technician then make every effort/strives to perform the remaining lab procedures. However when the processed dentures are remounted on the articulator, some changes are seen. These changes may be divided into two categories: Pre-insertion and post-insertion changes, which deal with the physical properties of the materials involved (Parker, *J Prosthet Dent* 31:335–342, 1974). Split cast mounting is the method of mounting casts on the articulator. It is essentially a maxillary cast constructed in two parts with a horizontal division. The procedure allows for the verification of the accuracy of the initial mounting and the ease of removal and replacement of the cast. This provides a precise means of correcting the changes in occlusion occurring as a result of the processing technique (Nogueira et al., *J Prosthet Dent* 91:386–388, 2004). Instability of the split mounting has always been a problem to the Prosthodontist thereby limiting its use. There are various materials mentioned in the literature. The new technique by using Dowel pins and twill thread is very easy, cheaper and simple way to stabilize the split mounting. It is useful and easy in day to day laboratory procedures. The article presents different methods of split cast mounting and the new procedure using easily available materials in prosthetic laboratory.

Keywords Split mounting · Stability · Technical procedure

Introduction

The first mention of “split casts” was by J.W. Needles in 1923. Properly constructed split casts provide a simple and reliable means of obtaining a high degree of accuracy in articulator mounting and verification of articulator settings from occlusal records.

The “split cast” is essentially a maxillary cast constructed in two parts with a horizontal division. The first part of the split maxillary master cast with index grooves, is known as primary base. The design, number, and position of the index grooves are determined on the basis of the height of the palatal vault depth of the sulcus the personal preference of the clinician. The second part, which is fitted to the master cast and is attached to the upper member of the articulator is referred to as secondary base or sandwich. The perfect fit of the master cast, sandwich and upper member of the articulator verifies the correct centric relation record. If gap is present between the master cast and sandwich or sandwich and upper member of the articulator that determines the previous recording of centric relation is incorrect [3].

The sandwich should have a contrasting color for easy detection and should also have index grooves. The split-cast mounting procedure allows for:

- (i) Ease of removal and replacement of the casts.
- (ii) To program the articulator by means of eccentric records.
- (iii) Verification of centric jaw relation records.
- (iv) For correcting occlusal errors as a result of the processing technique.

The literature shows [4–6], use of following materials for split cast mounting: plaster, sticky wax, masking tape and elastic adhesive bandage (Figs. 1, 2, 3, 4).

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Fig. 1 Split mounting using plaster

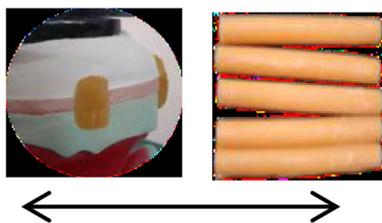


Fig. 2 Split mounting using sticky wax

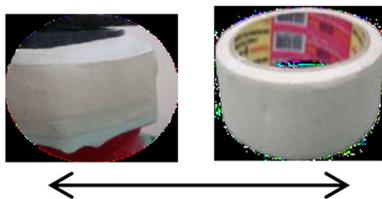


Fig. 3 Split mounting using masking tape

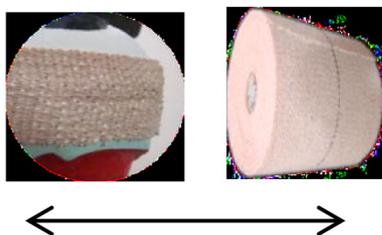


Fig. 4 Split mounting using elastic adhesive bandage

Another new technique is described here using metal plates, dowel pins and ligature wire assembly.

Technique

- (i) After completion of the final impression, beading and boxing is completed, for pouring the base of the cast.
- (ii) Two dowel pins with plastic/metal sleeves, are then inserted in the boxing wax, with a gap of 2–3 mm on right and left side.

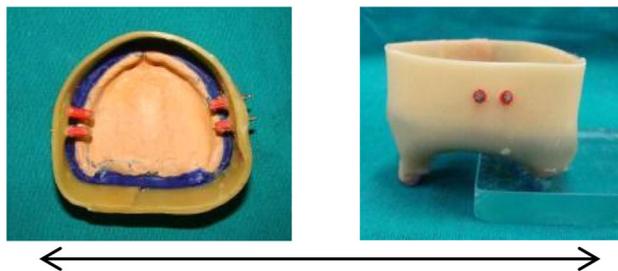


Fig. 5 Pouring of cast using dowel pins



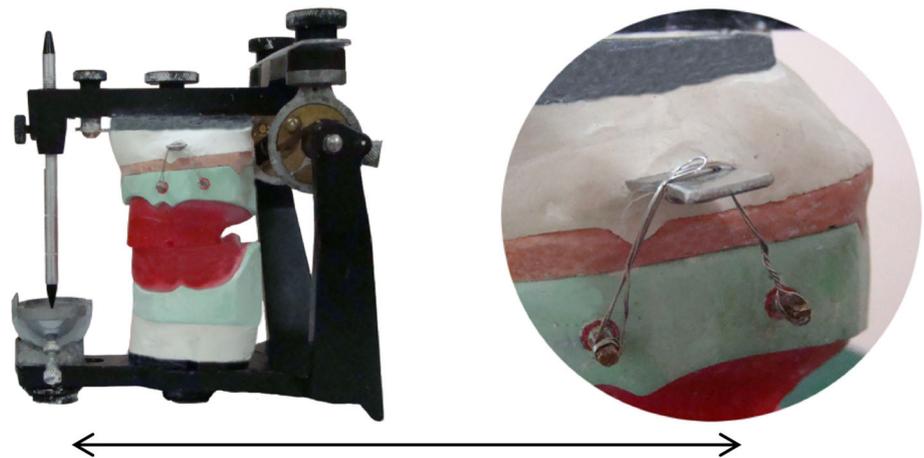
Fig. 6 Metal plates, dowel pins and ligature wire

- (iii) Dental stone is then poured in the boxed impression. Once the stone sets hard, finishing of the master cast is done on trimmer, by removing the dowel pins from their sleeves. After finishing of the cast, the dowel pins are reinserted in their sleeves (Fig. 5).
- (iv) Base of master cast is sharply grooved.
- (v) For this master cast, using die stone, sandwich or secondary base is made having thickness of 3–4 mm. On this base also index grooves are cut.
- (vi) Using face bow, the combined primary and secondary base cast are mounted on the upper member of the articulator.
- (vii) Two metal plates with serrations on one end (routinely available forks) are cut in required length. The other end is also slightly notched, for encircling the ligature wire. During mounting, before plaster sets hard, these plates with serrated end, are inserted into plaster on right and left side (Fig. 6).
- (viii) Once the plaster sets hard, the ligature wire is moved around the two dowel pins which is attached to the master cast. It is encircled over the notched surface of the metal plate, tightened to stabilize the upper mounting (Fig. 7).

Advantage: Damage to cast is minimum. Mounting is stable. Easy to use. Easy removal and reattachment of maxillary cast to the articulator.

Disadvantage: Extra time is required in attaching the dowel pins to the cast.

Fig. 7 Split mounting using metal plates, dowel pins and ligature wire



Summary

Instability of the split mounting has always been a problem to the Prosthodontist thereby limiting its use. Sticky wax is the most popularly used material, plaster is the second most popularly used material another method is the use of elastic adhesive bandage, which provides easier and hygienic method to secure the master cast to the sandwich and the upper member of the articulator. The use of routinely available dowel pins and serrated metal plates is new technique. This is also very easy, cheaper and simple technique to stabilize the split mounting. The technique is useful and easy in day to day laboratory procedures.

References

1. Parker HM (1974) Effective management of laboratory procedures and use of split-cast technique. *J Prosthet Dent* 31:335–342
2. Nogueira SS et al (2004) A variation on split-cast mounting for complete denture construction. *J Prosthet Dent* 91:386–388
3. Lauritzen AG, Wolford LW (1964) Occlusal relationships: the split-cast method for articulator techniques. *J Prosthet Dent* 14:256–265
4. Barrett GD (1985) Reproducible split-cast procedure for remounting the complete denture master cast. *J Prosthet Dent* 54:737–740
5. Liu F-C, Luk K-C, Suen P-C, Tsai T, Ku Y-C (2010) Modified split-cast technique: a new, time saving clinical remount technique. *J Prosthodont* 19:502–506
6. Gundawar SM, Radke UM (2013) Elastic adhesive bandage “In Prosthodontics”. *J Indian Prosthodont Soc Supplementary*:62–64