

DIFFERENT TECHNIQUES OF BAND STABILISATION IN THE IMPRESSION FOR SPACE MAINTAINERS: CLINICAL AID IN PEDIATRIC DENTISTRY

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ABSTRACT

Space maintainers have been used in pediatric dentistry since many years. Orthodontic bands are adapted around the tooth and impression is taken to pour the cast on which the appliance is fabricated. The fitting of these bands at chair side and their indirect transfer to the impression influences the fit and function of the preventive or interceptive orthodontic appliance being fabricated, thus accurate band placement plays an important role. This article describes various techniques of securing bands in the alginate impressions, besides discussing their merits and demerits.

KEYWORDS: bands; impression; techniques, sticky wax, stabilizing, space maintainer, pediatric dentistry.

INTRODUCTION

Space maintainers have been a mainstay in pediatric dentistry. They employ bands and wires in their construction, wherein orthodontic bands are adapted around the tooth and after making impression, casts are poured. The appliance is fabricated using wires and soldered to bands. Nevertheless, stabilization of bands on impression still remains a challenging task.^[1] Many techniques have been employed to stabilize orthodontic bands in their precise positions to ensure proper indirect construction of an appliance on the working cast. Even though, sticky wax has traditionally been used to lute the bands in the impression, it did have a few limitations.^[2,3] In the search of an alternative to sticky wax, this paper discusses different modes of band stabilization in the impression.

Techniques of band stabilization using different materials**1) Sticky wax**

Sticky wax is the commonly practiced method to reinforce the position of the band. Here the sticky wax is heated over the flame and dripped over the mesial and distal surfaces of the molar bands seated in the alginate impression. This hot sticky wax is known to capture and hold the band without displacement, while pouring the stone.^[4,5]

2) Orthodontic wires

During the fabrication of a space maintainer, bands will be adapted to the molars and impressions will be made. These bands will be transferred to the impression and secured in the impression tray using short sections of stainless steel wires (0.020). After which, dental stone will be poured, on the retrieved cast the protruding wires at the base of the band has to be trimmed before appliance fabrication.^[2]

3) L-shape wire

L-shape 0.032" wires can be inserted from buccal to lingual across the banded molars, to secure the band in the impression. Instead of pouring the stone it should be painted over the impression with a brush and the final fill has to be done with a spatula. A disc can be used to cut the protruding ends of the wires to flush with the model in the set cast.^[3]

4) Pinning Bands with Wires^[6]**a) Stapler pins**

This is an excellent technique for securing bands in an impression. Stapler wires are inserted into the alginate impression just over the exposed edges of the bands. Two stapler wires per band can be inserted into the alginate impression bucco lingually with the help of tweezers, to secure the bands. After casting the exposed ends of stapler pin can be trimmed. (Fig 1 a,b,c).^[4]

b) Bobby pins

Two bobby pins can be placed diagonally to stabilize the band. The pins should pass through the perforations in the tray running through the set alginate impression material, bisecting the band to form an 'X'. The pin should pass from buccal to lingual side through the perforations in the impression tray. These bobby pins should be removed before the final set of the stone (Fig 2 a,b).

5) Cyanoacrylate

A simple and more reliable method, as it adheres well to both the band and the alginate. A drop of cyanoacrylate (Fevikwik, Pidilite company, India) can be added at the mesial and distal margins of the orthodontic band where it contacts the impression material. But Misrahi recommends placing a drop of super glue (cyanoacrylate) on the lingual aspect of the band in contact with the impression material. This cyanoacrylate glue is known to

set rapidly, when it comes in contact with moisture inturn stabilizing the band. (Fig 3a, b).^[3,4,7]

6) Green stick compound

The impression is dabbed with dry cotton in the area of band placement such that it is devoid of moisture. Green stick compound is softened and flown over the circumference of the band. Wax spatula is heated over the flame and is used to spread the compound over the flanges of the impression (buccal and lingual); the heated spatula is run through the inner surface of the band to merge the compound with the band. Blow torch is used to glisten the surface of the compound. The impression is then washed in running tap water so that the compound hardens, dental stone is poured once the cast has set it is then immersed in hot water such that the green stick compound surrounding the band softens and is easily pried away with a lecron carver(Fig 4a,b,c, d).

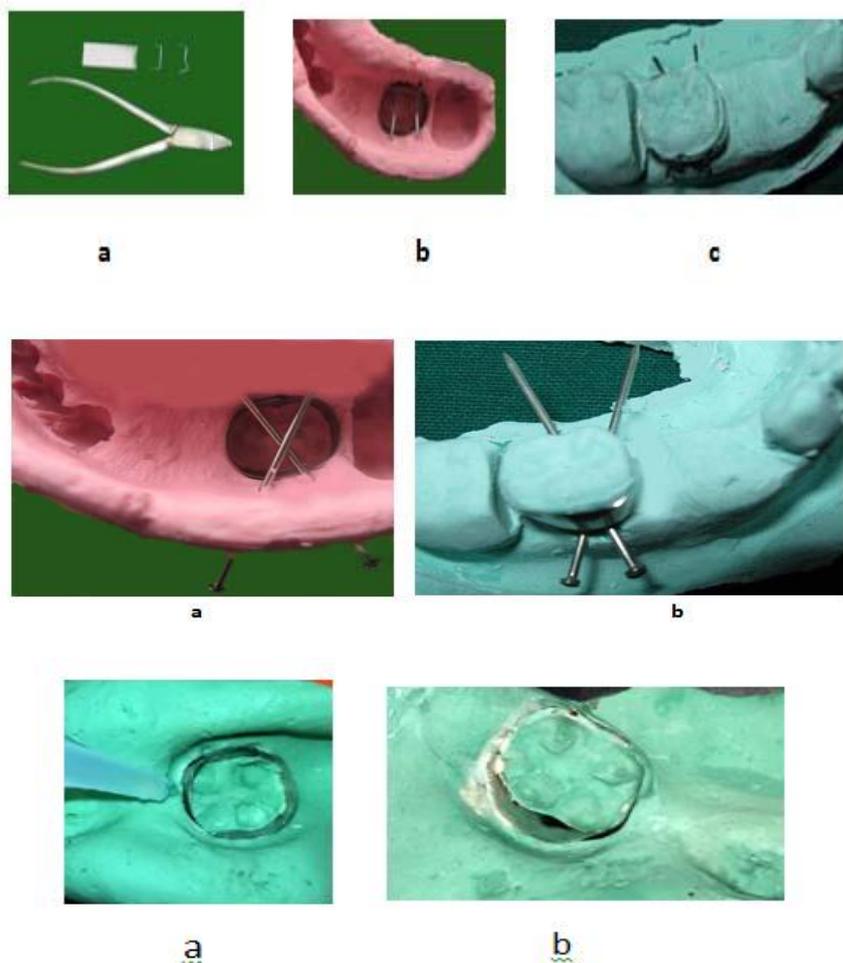
Legends for illustrations

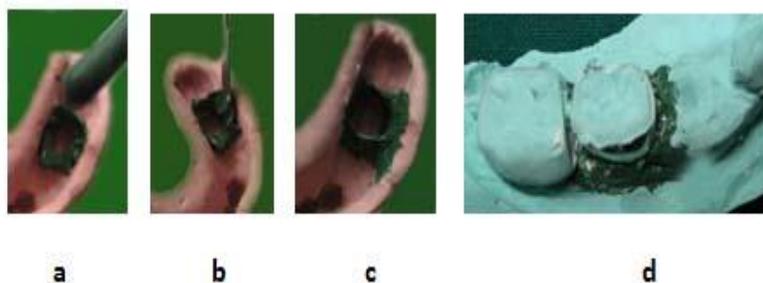
Figure 1: a) Staper pin b) band stabilized in impression using stapler pins c) after cast poured

Figure 2: a) Bobby pin inserted in impression to stabilize band b) after pouring cast

Figure 3: a) Super glue being added to stabilize band b) after cast poured

Figure 4: a) b) c) pouring of Green stick compound to stabilize band d) after pouring cast





DISCUSSION

A fundamental pre-requisite for the construction of satisfactory indirect restoration is the ability to record an accurate and detailed impression of the dental structures. Knowledge of the key properties of the available impression materials and their handling behaviour is necessary if they are to be used effectively.^[8] In the construction of certain appliances such as space maintainers, impressions are made over the bands fitted to the primary/permanent molar teeth. These bands are then transferred to the impression prior to casting. Unless the casting is done very carefully, it is possible that these bands might get displaced during the casting process.^[7] Various band stabilization techniques are being practised by pediatric dentists/ orthodontists with success.

Although sticky wax is more commonly used, the main problem with its use is that it does not really adhere well to alginate, besides any slight over vibration during pouring the stone, the bands tend to move out of position. Unfortunately, this is usually discovered after the stone has dried and more than likely the patient has left the dental operatory.^[4]

Lisenby and Bowen recommend stainless steel wires for band stabilization but if the wire segment is not positioned passively it can push the band deeper into the impression thereby affecting the fit of the finished appliance.^[2]

Kind preferred the use of L-shaped wire over sticky wax, as he found it to be more effective in stabilizing the band and fabricating a well- fitting appliance.^[3]

The use of cyanoacrylate is the easiest and lesser time consuming method. But if more of cyanoacrylate glue is added to stabilize band and not cleaned from the final model, it could contaminate the solder joint area as the metal is heated.^[4] Thus it is suggested to use only a small drop of this glue on each band.

Bobby pins are readily available, sturdy, and easier to place. A single bobby pin can also be used in a similar way to the sectional orthodontic wire but for added stability two bobby pins were placed diagonally to form an 'X'. Care should be taken to place them passively as it would tend to push the band gingivally if active. These pins have to be removed before the final set of the stone

for ease of separating the cast from the impression, failure to do so would result lead to fracture of the final cast as these pins are inserted through the perforations in the tray.

The green stick compound is very efficient, as it provides added retention to the band, thus minimizing the chances of its displacement. But, this is an elaborate and time consuming procedure when compared to other methods of securing bands to the impression.

The stapler pin is a good alternative to bobby pins. It is very easy to place them on the band which has to be secured. These non-sturdy pins are inserted into the alginate itself unlike the bobby pins, so there could be chances of its displacement due to the vibration produced during casting, resulting in an inaccurate model.

So these direct and indirect techniques of band placement could be employed depending on the convenience of the specialists.^[9]

CONCLUSION

Most of these techniques are successful, only if attention is paid to the details of their execution and awareness regarding their individual limitations and pitfalls. Where imperfections occur, an appreciation of how they have been caused, and the strategies taken to prevent them will lead to greater success. A knowledge regarding these stabilization methods could help specialists fabricate appliances with an accurate model.

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