

## A modified bonded RPE appliance

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### Abstract

In case of banded Rapid Palatal Expansion (RPE) appliance, it is very easy to assess the amount of expansion by viewing the cuspal relation of posterior teeth, as this type of design doesn't cover the tooth surface completely. But the design of bonded RPE appliance is such that it covers the complete posterior teeth surfaces. Hence, it becomes very difficult to assess the amount of expansion achieved clinically. To overcome this, an identification marking line is prepared on the palatal cusp region of maxillary posteriors, which when coincides with the buccal cusps of mandibular posterior teeth, suggests the optimum amount of expansion achieved.

**Keywords:** Rapid palatal expansion, Modified design, Identification marking line.

Rapid maxillary expansion or Split palate is a skeletal type of expansion that involves the separation of the mid-palatal suture and movement of the maxillary shelves away from each other.<sup>1</sup> It is a routine procedure carried out in orthodontics in narrow maxillary arches. Routinely there are 2 types of Rapid Palatal Expansion (RPE) appliances used and they are:

- 1) Banded RPE (Fig.1)
- 2) Bonded RPE (Fig. 2)

The bonded appliance (Fig. 2) has become increasingly popular because it can be easily cemented during the mixed dentition stage, when retention from other appliances can be poor.<sup>2</sup> The expansion of maxilla is achieved by opening of the screw. The amount of expansion required is assessed clinically by the following intraoral findings:

- a. Midline diastema
- b. The palatal cusp of maxillary posterior teeth should touch the buccal cusp of mandibular posterior teeth.

In case of banded RPE, it is very easy to assess the above findings clinically, as this type of design doesn't cover the teeth surface completely. But the design of bonded RPE appliance is such that it covers the complete posterior teeth surfaces.

Hence, it becomes very difficult to assess the amount of expansion achieved clinically. Many times a clinician has to remove the appliance, check the amount of expansion and re-cement the appliance. Removal and then cleaning of the appliance and teeth is a tedious job for the clinician. It is uncomfortable for the patient as well.

Here, we have modified the design of the bonded RPE appliance, in a simple way so as to assess the amount of expansion achieved without removing the appliance.

### Fabrication of modified bonded RPE

1. A standard Bonded RPE appliance is fabricated with clear self cure acrylic material.
2. As the self cure acrylic is clear, we can mark the location of underlying palatal cusps on the cast. Then a groove is prepared on the acrylic plate over the palatal cusps with a straight acrylic trimming bur.

3. The width of the groove is 1mm and the depth is also 1mm approximately.
4. Then the groove is filled-in with pink colored self-cure acrylic material.

Now, the appliance is ready with a pink coloured identification marking line passing on the palatal aspects on both the sides (Fig. 3).

This line is a demarcation to assess the amount of expansion achieved. The screwing is stopped when this identification marking line coincides with the buccal cusps of mandibular posterior teeth (Fig. 4). The amount of expansion achieved can be determined when demarcation line coincides with buccal cusps of mandibular posterior teeth.



**Fig. 1:** Banded RPE



**Fig. 2:** Bonded RPE



**Fig. 3:** Pink identification marking line



**Fig. 4:** Identification marking line coinciding with buccal cusps of mandibular posterior teeth

#### **Clinical Significance**

To check the amount of expansion of maxillary arch with BONDED RPE, its very difficult task to remove the appliance and check every time.

With this innovative modified bonded RPE appliance, clinician can easily check the amount of expansion achieved without removing the appliance every time. The amount of expansion achieved can be measured by measuring the distance between the identification marking line from its initial position to its final position.

This can save chair side time and can improve the patient's compliance as well.

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None.

#### **Conflict of Interest**

None.

#### **References**

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