A Practical Alternative for Increasing the Capacity of a Maxillary Expansion Screw

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Patients with severe maxillary transverse growth deficiency sometimes require maxillary expansion beyond the capacity of a conventional expansion screw. This can involve a pause in active treatment before the expander is replaced.

Fig. 1 16-year-old female patient with maxillary transverse growth deficiency before treatment.

Procedures have been described for immediate reactivation of a Haas-type expander with acrylic flanges,[1] but no method for increasing the capacity of a jackscrew without such flanges has been reported.

The present article proposes a practical alternative that allows an immediate increase in the capacity of a maxillary expansion screw.

Procedure

A 16-year-old female presented with a Class I malocclusion, anterior open bite, and maxillary transverse growth deficiency marked by posterior crossbite (Fig. 1). A modified Hyrax- or Biederman-type appliance[2] with a 13mm screw was inserted for rapid maxillary expansion (Fig. 2).

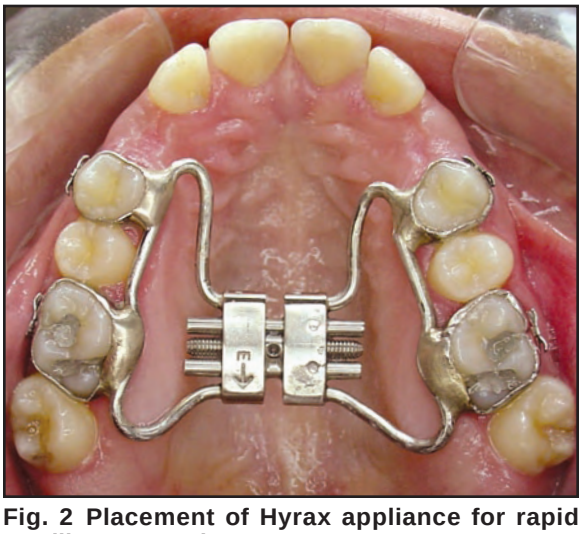

Fig. 2 Placement of Hyrax appliance for rapid maxillary expansion.

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One week after appliance placement, the screw was activated four quarter-turns (1mm) in our clinic. The patient's mother was instructed to activate the screw another quarter-turn (.25mm) twice a day. After two weeks of active treatment, the expansion achieved was not yet sufficient, so the activation was continued for five more days. When the patient returned to the clinic, the maxilla had still not been widened enough, but the screw had been expanded to its full capacity (Fig. 3).

We decided to add composite to the screw to allow further expansion. The appliance was cleaned with sodium bicarbonate in a prophylaxis handpiece, and light-cured composite was then applied in layers over the medial portion of the expansion screw and stabilizing bars, leaving only the central part of the screw mechanism uncovered (Fig. 4). This effectively increased the width of the expander. The composite was polished with diamond and abrasive drills.

Expansion was continued for five more days, allowing correction of the transverse deficiency


Fig. 3 After 19 days of expansion, more activation is needed, but screw is fully expanded.

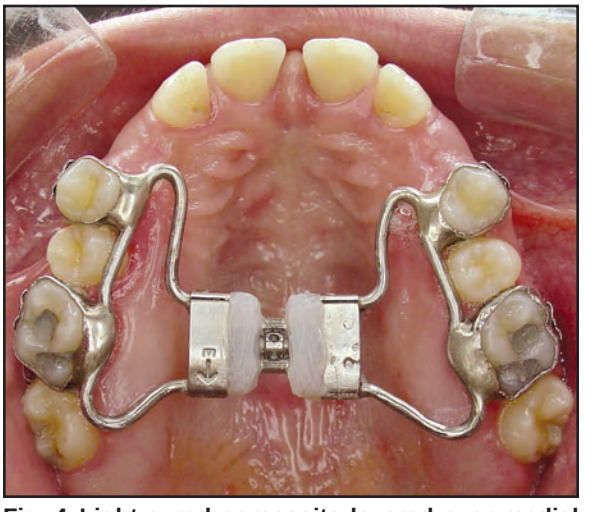
Fig. 4 Light-cured composite layered over medial portion of expansion screw and stabilizing bars.

Fig. 5 Patient after five additional days of expansion.

while maintaining the stability of the expander (Fig. 5).

Conclusion

The addition of light-cured composite to a maxillary expansion screw after its original capacity has been reached is a practical alternative to replacement of the expander. By allowing the expansion process to continue, it avoids any interruption of treatment. In addition, the procedure is faster, easier, and safer than appliance replacement.

REFERENCES

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