

A Cast-Metal Haas-Type Expander for the Deciduous Dentition

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Transverse discrepancies can be effectively corrected in the early mixed dentition by anchoring a rapid maxillary expander (RME) to deciduous teeth,¹ thus avoiding undesirable effects on the permanent teeth.²⁻⁴ Such an appliance is usually attached with bands cemented to the second deciduous molars and lingual wires bonded to the deciduous canines.⁵ The risk of appliance failure is increased, however, by the lack of retentive coronal anatomy of the second deciduous molars and the possibility of detachment of the lingual wires from the canines.

This article presents a cast-metal Haas-type RME that is bonded to six deciduous teeth,⁶ offering better stability and retention and reducing chairtime while still minimizing the need for compliance from young patients.

Procedure

1. Take an alginate impression of the upper arch and pour a plaster cast.



Fig. 1 Clear acrylic splint built up on deciduous teeth.

2. Build up a clear acrylic* splint for each side, carefully adapting the resin to the deciduous teeth from canine to second molar and including some of the occlusal surfaces (Fig. 1).

3. Using the lost-wax-fusion technique, replace the acrylic resin with metal castings (Fig. 2). After verifying the adaptation of the cast-metal splints to the plaster model, finish and polish the splints (Fig. 3).

4. If the use of elastics or a Delaire facemask is planned, carve grooves in the splints to accommodate hooks at the deciduous canines and/or 1.2mm-diameter buccal tubes at the deciduous second molars. Laser-weld the desired attachments to the splints (Fig. 4).

5. Laser-weld the cast-metal splints to a Hyrax expansion screw** using pure type I titanium connector bars (50mm × 1.2mm diameter). To enhance

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**Titan-hyrax, registered trademark of Dentaforum GmbH & Co., Turnstrasse 31, 75228 Ispringen, Germany; www.dentaforum.de.



Fig. 2 Metal splint cast from biomedical titanium using lost-wax-fusion technique.

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retention of the appliance, occlusal rests can be added in the second deciduous molar areas (Fig. 3) by laser-welding pure type IV titanium wire, which is more malleable than type I titanium.

6. Using the salt-and-pepper technique, build up two resin pads over the expansion screw, carefully adapting the acrylic to the palatal anatomy (Fig. 5).

7. Sandblast the inner surfaces of the cast-metal splints to enhance retention of the appliance. Titanium splints should be sandblasted with titanium dioxide.

8. Fill the inner surfaces of the splints with a small

quantity of glass-ionomer cement*** and bond the appliance in place (Fig. 6).

Discussion

Bonding a cast-metal Haas-type RME to the deciduous teeth requires only a single impression and no band fitting, thus saving considerable chair-time and making the appliance-delivery appointment much easier for young patients. Stability and retention are improved by the close adaptation of the custom-made splints to the coronal anatomy of the deciduous teeth and the use of glass-ionomer cement for bonding. The partial occlusal coverage of the splints provides some separation of the occlusion in case of a mandibular shift caused by dental interference.⁷ Inert biomedical titanium, hypoallergenic resin, and laser welding can be used to avoid allergic reactions in hypersensitive patients.⁸

***Fuji Ortho LC, trademark of GC America, 3737 W. 127th St., Alsip, IL 60803; www.gcamerica.com.



Fig. 3 Finished and polished cast-metal splint.



Fig. 4 Canine hook and molar tube laser-welded to splint.

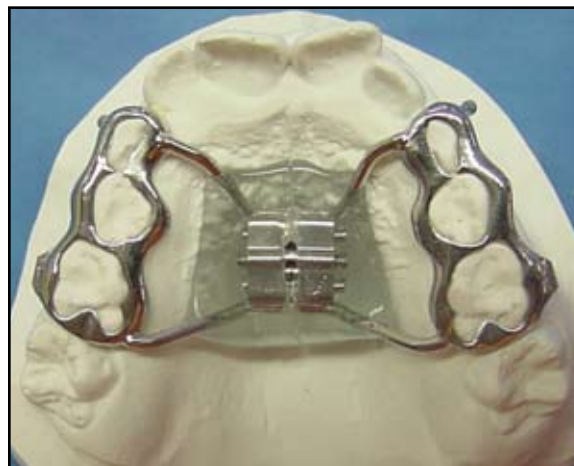


Fig. 5 Expansion appliance ready for bonding.

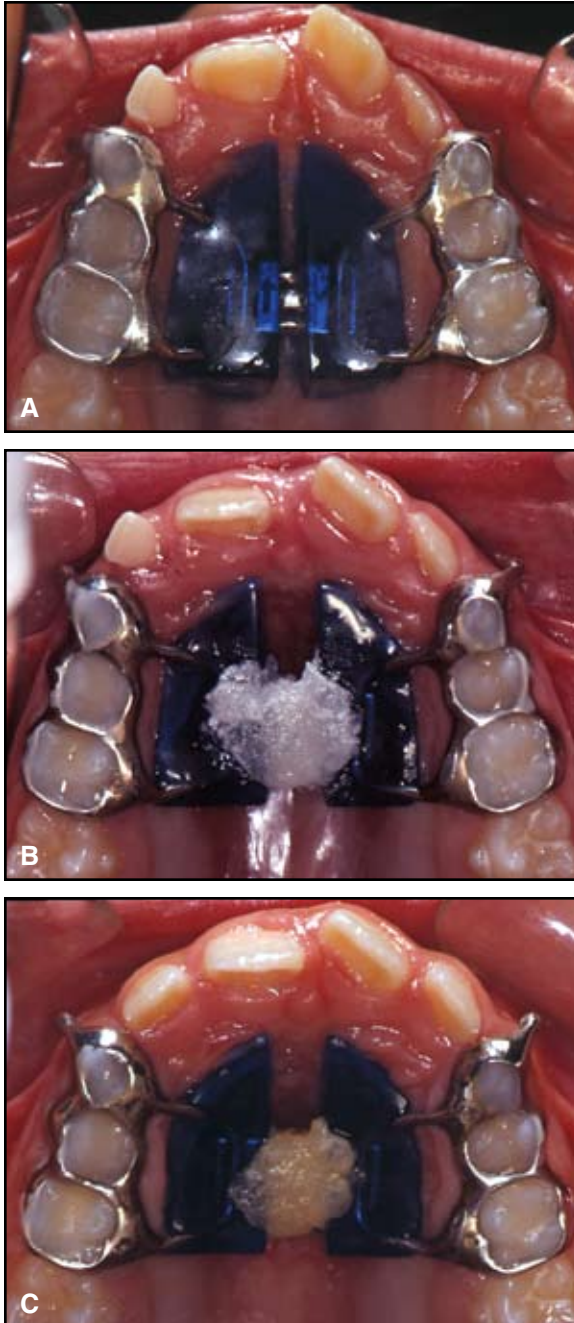


Fig. 6 A. 7-year-old patient after bonding of cast-metal-splint expander. B. After 38 days of expansion, screw blocked with acrylic resin. C. Expander left passively in place for six months.

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