

Metal Free space maintainer for special needs patients



Matteo Beretta* and Nunzio Cirulli

Digital Dentistry Society, Italy

Submission: November 06, 2017; Published: November 15, 2017

*Corresponding author: Matteo Beretta, DDS, MS, Master in Digital Dentistry, Casale Monferrato (AL), Italy,
Email: info@matteoberetta.pro

Introduction

In interceptive orthodontics it is common to apply a fixed space maintainer to guide the eruption of the permanent teeth. At the upper arch this space maintainer is often a Nance bar built on molar bands. In our daily practice may happen that some young patients are allergic to metals, some kind of dental resins or should periodically undergo to MRI in the head district to monitor specific disease as epilepsy or vascular problems. In this cases we may be obligated to remove the space maintainer before this diagnostic exam because of the magnetism generated by metallic devices, sometimes in emergency situations, difficult to manage.

Design of the appliance



Figure 1

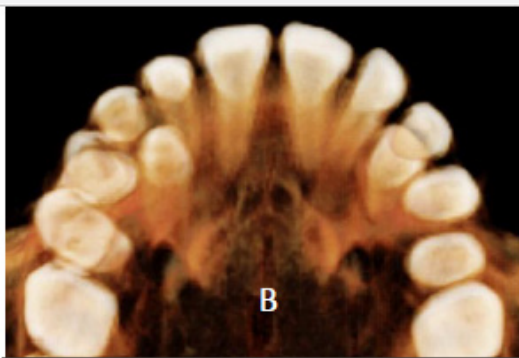


Figure 2

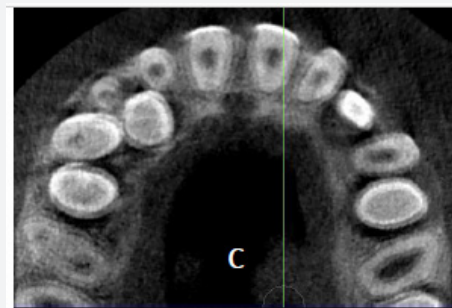


Figure 3

Using digital technology we developed a line of custom made metal free cad-cam devices, that allow us to produce safe appliances for special needs. In the case example we planned the extraction of 5.3, necessary to guide the eruption of 1.3 (Figure 1-3). Starting from an intra oral scan we obtain a 1:1 stl file of both dental arches. On the maxillary one, imported in a free cad software*, we designed the custom space maintainer (Figure 4 & 5), in order to achieve the best comfortable fit for the patient. The stl file from the CAD phase is used to produce the custom made appliance (Figure 6 & 7) by milling** a machinable fiber reinforced composite material (FDA certified), named Trilor™ (Cam phase). This new Nance bar is directly bonded only on the palatal surface of the first molars, without etching and using a specific dual curing cement (URC***) with fluoride release and without Bisfenol A (Figure 8 & 9) [1-5].

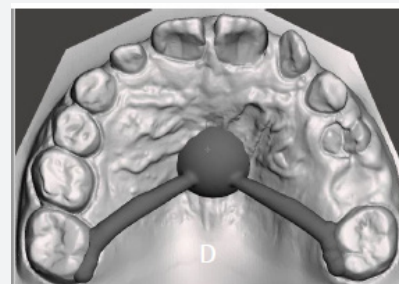


Figure 4

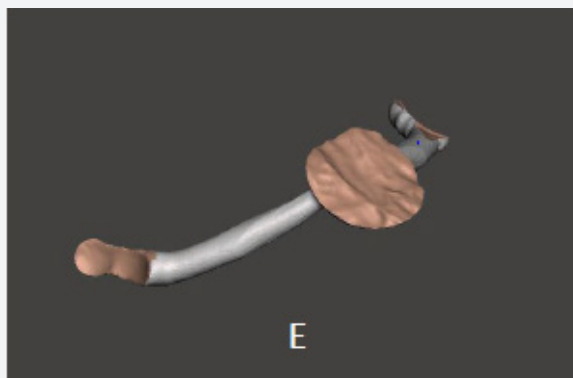


Figure 5

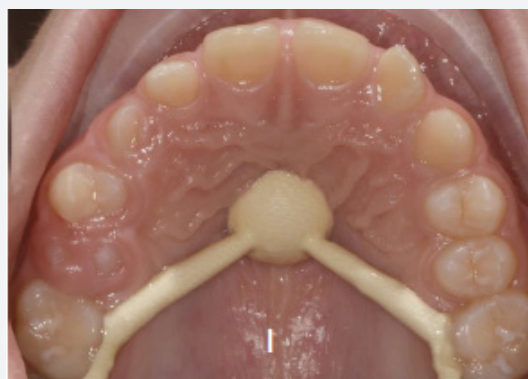


Figure 9



Figure 6

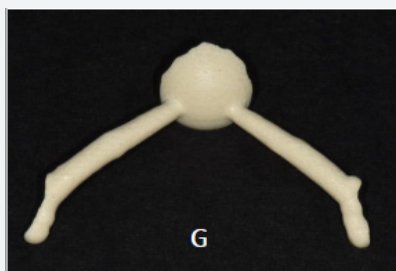


Figure 7

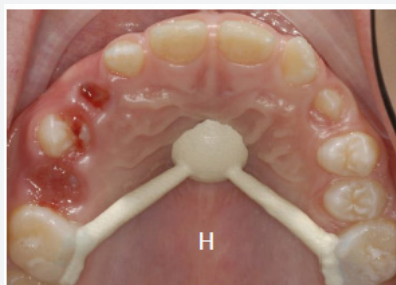


Figure 8

Discussion

This Nance modified space maintainer is totally metal free, esthetic, easy to clean, light, comfortable and really safe, particularly for some categories of patients. This kind of appliance is obtained by a full digital work flow, starting from an intra oral scan till to a milling process, without using a stone or proto typed model and could represent a first step for a new tailor made orthodontics.

*Autodesk Meshmixer, www.meshmixer.com

** i-3D Professional, Bari, Italy www.i3d-professional.it

***Bioloren, Saronno (VA), Italy www.bioloren.com

References

1. Chaushu S, Kaczor-Urbanowicz K, Zadurska M, Becker A (2015) Pre disposing factors for severe incisor root resorption associated with impacted maxillary canines. *Am J Orthod Dentofacial Orthop* 147(1): 52-60.
2. Lanteri C, Beretta M, Lanteri V, Gianolio G, Cherchi C, et al. (2016) The Leaf Expander for Non-compliance Treatment in the mixed Dentition. *J Clin Orthod* 50(9): 552-60.
3. Sigler LM, Baccetti T, McNamara JA (2011) Effect of rapid maxillary expansion and transpalatal arch treatment associated with deciduous canine extraction on the eruption of palatally displaced canines: A 2-center prospective study. *Am J Orthod Dentofacial Orthop* 139(3): 235-244.
4. Bonetti A, Zanarini M, Incerti PS, Marini I, Gatto MR (2011) Preventive treatment of ectopically erupting maxillary permanent canines by extraction of deciduous canines and first molars: A randomized clinical trial. *Am J Orthod Dentofacial Orthop* 139(3): 316-323.
5. Beau A, Bossard D, Gebeile-Chauty S (2015) Magnetic resonance imaging arte facts and fixed orthodontic attachments. *Eur J Orthod* 37(1): 105-110.



This work is licensed under Creative Commons Attribution 4.0 License
DOI: [10.19080/ADOH.2017.06.555683](https://doi.org/10.19080/ADOH.2017.06.555683)

**Your next submission with Juniper Publishers
will reach you the below assets**

- Quality Editorial service
- Swift Peer Review
- Reprints availability
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats
(Pdf, E-pub, Full Text, Audio)
- Unceasing customer service

Track the below URL for one-step submission

<https://juniperpublishers.com/online-submission.php>