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XXXVI REUNIÃO ANUAL SPCODF LEIRIA 2025
15-17 MAIO
SOCIEDADE PORTUGUESA DE ORTODONTIA E ORTOPEDIA DENTO-FACIAL

Novel 3D digital workflow to enhance functionality and quality of life in cleft lip/palate patients.

OCULTADO PARA NÃO IDENTIFICAÇÃO DO AUTOR

INTRODUCTION

ORAL CLEFT DEFECTS

Prevalence 1/700

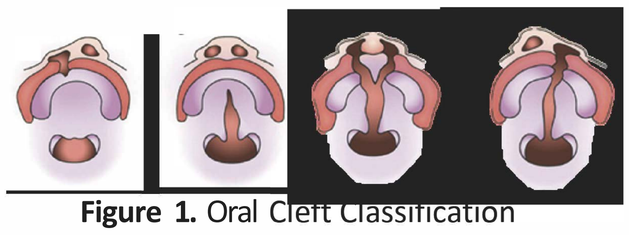

Figure 1. Oral Cleft Classification

Classification (Fig 1):
- Cleft lip
- Isolated cleft palate
- Cleft lip-palate (75% of the cases)
- Unilateral (twice more frequent than bilateral), left side more frequent

Conventional Nasoalveolar Molding Device procedure (Fig 2):
- Impression taking
- Manual manufacturing in the laboratory

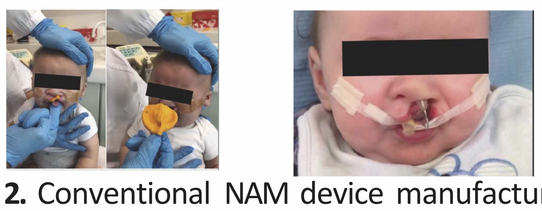

Figure 2. Conventional NAM device manufacturing

AIM:

To present an innovative protocol on the manufacturing process of the Nasoalveolar Molding (NAM) device by implementing a fully digitalized workflow and to assess its effectivity.

METHODS

Newborns with cleft lip/palate treated at the Orthodontic Unit [redacted] underwent orthopedic treatment using Nasoalveolar Molding appliances created through a full digital process (Fig 3):

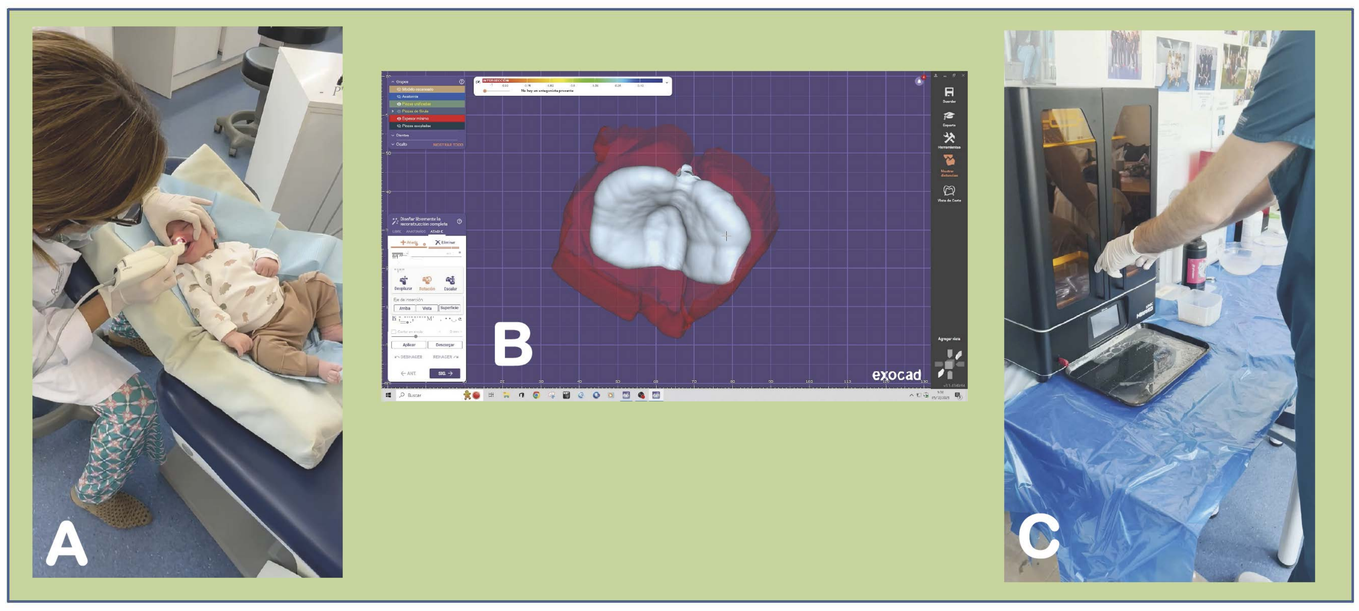

Figure 3. A: Intraoral scanning of newborn maxilla; B: NAM design using 3D dental design software; C: 3D printing of NAM device.

- Maxilla was measured and compared at different stages (Fig 4).
- Anxiety tests were filled out by parents (Fig 5).

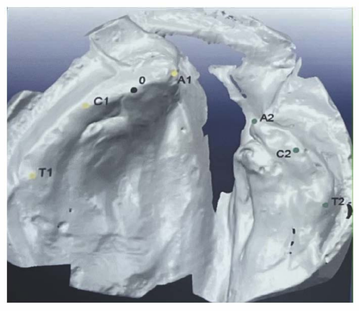

Figure 4. Measurements taken on cleft maxilla digital model.

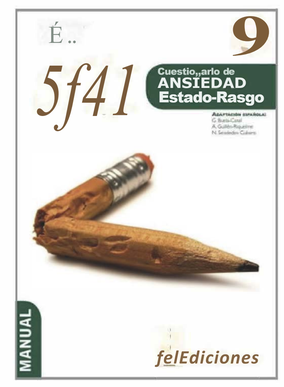

Figure 5. Anxiety test (STAI) for parents.

RESULTS

- IMPLEMENTATION OF NEW TREATMENT TECHNIQUE FOR CLEFT LIP-PALATE NEWBORNS

- Elimination of suffocation risk.

- Faster procedure.

- More accurate NAM device- greater treatment effectivity.

- Waste reduction.

- Better communication within the medical team.

- Reduction of parents' stress and anxiety levels during the procedure.

CONCLUSIONS

- **The new digital treatment protocol for cleft lip-palate newborns eliminates risks for the patient (suffocation) and it increases treatment effectivity.**
- **The fully digitalized NAM protocol contributes to protect the environment.**
- **The NAM digital impression technique using intraoral scanner reduces the stress and anxiety of parents during the procedure.**

1. Esenlik E, Gibson T, Kassam S, Sato Y, Garfinkle J, Figueroa AA et ai. NAM Therapy-Evidence-Based Results. Cleft Palate Craniofac J. 2020 Apr;57(4):529-531.

2. Abd EI-Ghafour M, Aboulhassan MA, Fayed MMS, EI-Beialy AR, Eid FHK, Hegab SE, EI-Gendi M, Emara D. Effectiveness of a Novel 3D-Printed Nasoalveolar Moldin Appliance (D-NAM) on Improving the Maxillary Arch Dimensions in Unilateral Cleft Lip and Palate Infants: A Randomized Controlled Triai. Cleft Palate CraniofacJ. 2020 Dec;57(12):1370-1381

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