

## INTRODUCTION

Cleft lip and palate (CLP) is a congenital malformation that develops between 4<sup>th</sup> and 8<sup>th</sup> week of intrauterine life and consists in the lack of union of the palatal processes.<sup>1</sup> The aims of cleft palate treatment are to obliterate any communication between the mouth, nose and sinus; improve speech and deglutition; create bone for orthodontic movement into the newly created edentulous ridge.<sup>2,3</sup> An important factor for successful osteoplasty is complete soft tissue closure over the bone graft. A large

alveolar cleft with a large oronasal opening is difficult to close by the conventional method of mucoperiosteal flap and bone graft closure. Distraction osteogenesis offers a solution: alveolar bone transportation towards the defect reducing the alveolar cleft to a minimum, followed by closure of the residual small defect by bone grafting three months later.<sup>3,4,5</sup>

## CLINICAL CASES

Three patients were subjected to distraction osteogenesis, before secondary bone grafting surgery, due to wide alveolar cleft. In the first and second case, patients present right cleft lip and palate. The first case is a female patient, 18 years-old and the second is a male patient, 13 years-old. The third patient is female, 18 years-old and has a left cleft lip and palate. All patients are followed at the Institute of Orthodontics and Maxillo-Facial Surgery Service of Hospital Center of University of Coimbra (CHUC).

### CASE 1

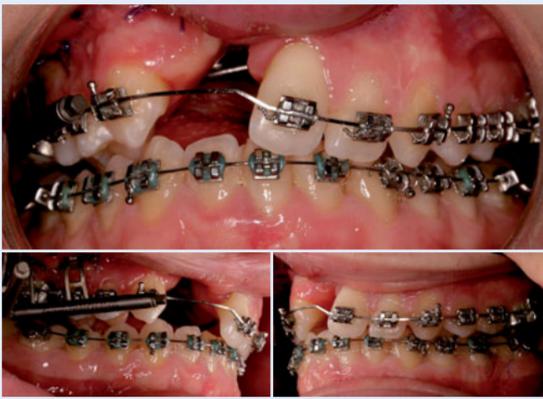


Fig. 1 - Intraoral images before distraction: frontal, left and right lateral and occlusal views.

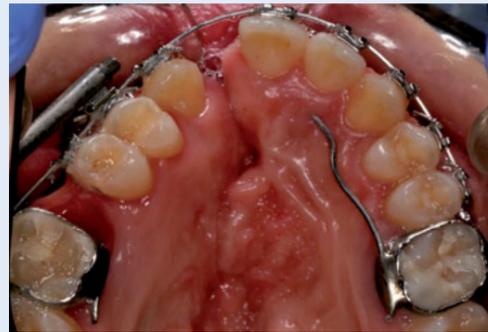


Fig. 2 - Intraoral images after distraction: frontal, left and right lateral and occlusal views.



### CASE 2



Fig. 3 - Intraoral images before distraction: frontal, left and right lateral and occlusal views.



Fig. 4 - Intraoral images after distraction: frontal, left and right lateral and occlusal views.



### CASE 3

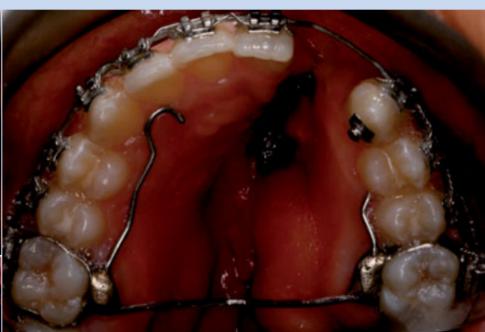


Fig. 5 - Intraoral images before distraction: frontal, left and right lateral and occlusal views.



Fig. 6 - Intraoral images after distraction: frontal, left and right lateral and occlusal views.



## DISCUSSION

The secondary autogenous bone graft allows closure of the cleft, giving continuity to the alveolar arch. However, bone dehiscence often occurs in cases of large orofacial cleft.<sup>6</sup> The introduction of distraction osteogenesis (DO) in orthopaedic surgery in the 80's showed good results, since it has allowed to treat the most severe cases of cleft lip and palate. The DO during the bone transport towards the defect, allows to reduce the initial dimension of the cleft and to improve the survival and the stability

of the secondary graft.<sup>5,7</sup> The DO should be performed along the curvature of the dental arch so as not to alter the architecture of the maxilla. The simplest and most predictable way to do this is to use the orthodontic arch as a guide using sliding mechanics on the dento-alveolar fragment.<sup>3</sup>

This, and considering the low recurrence rate after bone callus formation, it is possible to affirm that this surgical technique is the ideal procedure to decrease the size of the cleft lip and palate.<sup>5</sup>

## CONCLUSION

Distraction osteogenesis is a safe method and reduces the size of large cleft lip and palate, which improves the predictability of alveolar secondary bone graft surgery.