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ORIGINAL ARTICLE

Evaluation of the nasal shape after orthognathic surgery☆,☆☆

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KEYWORDS
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Abstract
Introduction: Patients with dentofacial deformities may benefit from orthognathic surgery in the maxilla. Maxillary osteotomy may include procedures in the bone, cartilaginous, and soft tissues of the nose, leading to shape alterations.
Objective: To evaluate the anatomic alterations of the nasal region in patients undergoing a Le Fort I osteotomy for advancement or superior impaction.
Methods: This is a clinical prospective study. Twenty-one patients were evaluated during the pre- and postoperative periods. The positioning of the nasal tip and the modification of the nasal base were evaluated.
Results: The results showed that the nasal tip was superiorly positioned in 85% of the cases, advanced in 80%, rotated in 80%, and there was a wide nasal base in 95%, resulting in esthetic improvement.
Conclusions: Surgeries of maxillary advancement and superior reposition tend to cause elevation and advancement of the nasal tip, as well as enlargement of the nasal base.

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PALAVRAS-CHAVE
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Ortodontia

Avaliação da forma nasal após cirurgia de avanço e impacção maxilar

Resumo
Introdução: Pacientes com deformidades dento-faciais podem ser beneficiados pela cirurgia ortognática na maxila. A técnica cirúrgica da osteotomia da maxila inclui também procedimentos realizados na parte óssea e cartilaginosa e tecidos moles do nariz o que pode provocar mudanças na forma.
Objetivo: Este trabalho teve como proposta avaliar as mudanças anatômicas da região nasal, decorrentes de cirurgias maxilares pela osteotomia Le Fort I para avanço e/ou impacção.
Método: Trata-se de um estudo clínico prospectivo. Foram incluídos 21 pacientes, submetidos à cirurgia e avaliados antes e 6 meses após o ato cirúrgico em relação aos movimentos da ponta nasal e modificações da base do nariz.
Resultados: Os resultados mostraram mudanças da ponta nasal para cima em 85% dos casos, para anterior em 80%, rotação em 80% e alargamento da base nasal em 95%, promovendo melhorias estéticas.
Conclusão: Cirurgias de avanço e reposicionamento superior da maxila tendem a causar elevação e avanço da ponta do nariz, assim como, um alargamento da base nasal.

Introduction

Dentofacial deformity can be defined as any condition where the facial skeleton differs from the accepted normal, with malocclusion and altered facial appearance. Orthognathic surgery is indicated for the correction of these deformities, aiming to achieve functional and esthetic recovery. The surgery, when associated with orthodontic procedures, improves masticatory function and facial appearance, with a stable result from the occlusal point of view, and is the best form of treatment for patients with dental and skeletal problems.[1]

Patients with dentofacial deformities represent approximately 20% of the population and may exhibit varying degrees of functional or esthetic impairment.[2] These malformations can occur in only one maxilla, extend to multiple craniofacial structures, or appear unilaterally or bilaterally, as well as occurring at different degrees in the vertical, horizontal, or transverse head planes.

According to the extent of the problem, surgery varies from small mobilization of groups of teeth to full mobilization of the mandible and maxilla. Orthognathic surgery is indicated when all growth factors are finished and orthodontic treatment is no longer sufficient to maintain a balance between teeth and bone.[2] The goal of these treatments, surgical and orthodontic, is the correction of dentofacial deformities and the balance of teeth, bone structure, and soft tissue for improved function and better facial appearance.

Le Fort I-type osteotomy of the maxilla includes procedures performed in bone, cartilage, and soft tissues of the nose that can cause changes in nasal shape and function, which sometimes are unpredictable.[3]

Therefore, the aim of this study was to evaluate the nasal shape by cephalometric study in patients undergoing orthognathic surgery for maxillary advancement and/or impaction through Le Fort I osteotomy.

Methods

All patients underwent maxilla advancement and/or impaction surgery through Le Fort I technique under general anesthesia, without segmentation, for correction of horizontal and vertical deformities. Before surgery the patients underwent a pre-operative planning phase and pre-surgical orthodontic treatment, which continued after the surgery. They were assessed pre- and postoperatively (six months). Patients with syndromes or cleft palate were excluded. All participants who agreed to participate signed an informed consent.

The surgical technique consisted of a standard maxillary vestibular incision, from the midline to the 2nd molar, performed bilaterally, followed by tissue dissection and subperiosteal detachment to expose the lower orbital ridges and malar prominence with infraorbital nerve preservation. The osteotomy was initiated with a surgical reciprocating saw in the greatest concavity of the piriform recess, horizontally, past the zygomatic pillar. Thin chisels were used to complete the osteotomies of the lateral nasal wall and nasal septum, and a strong curved chisel was used to perform the palatal-pterygoid disjunction.

Mobilization of the maxilla was then performed caudally with manual manipulation to verify its mobility. Rowe forceps were employed to complete maxillary repositioning. The maxilla was positioned according to the surgical guide or, in Class I occlusion of patients, with maxillo-mandibular fixation using steel wire. The osteosynthesis of the maxilla was performed using four 1.5-mm ''L'' plates with five orifices, pre-shaped to the desired advancement and positioned on the canine and zygomatic pillars.[4,5] The measurement of the maxillary impaction extent was performed from the incisal border of incisor teeth to a fixed point on the glabella.

Measurements of the nasal width and displacement of the nasal tip were used to evaluate nasal shape in the pre and