

STABILITY OF MAXILLO-FACIAL CHANGES ACCOMPANYING SURGICALLY ASSISTED RAPID MAXILLARY EXPANSION IN ADULTS

Emad T. Daif* and Farouk A. Mohamed#

Abstract

This study was designed to evaluate the maxillo-facial changes accompanying surgically assisted rapid maxillary expansion (SA-RME) in adults diagnosed as having transverse maxillary deficiency. Eight adults (5 females and 3 males) with a mean age of 24 years were treated by surgically assisted rapid maxillary expansion. Successful maxillary expansion was achieved in all cases. The results showed that, maxillo-facial changes, as judged from frontal, lateral and submentovertex cephalometric measurements, are mostly restricted to the maxillary region. The most important orthopedic change was a mean increase of 6.0 mm in maxillary width. Follow up 6 months after completion of orthodontic treatment revealed a mean relapse of 8.5%. A slight bite opening was observed during expansion phase of treatment however, it decreased at the end of the follow up period. The study recommended a retention period of 6 months to allow consolidation of the expanded maxillary halves with new bone formation.

Introduction

The number of adult patients seeking correction of their dentofacial disharmonies is increasing. Some of these patients require correction of a transverse maxillary deficiency as part of their treatment plan^(16,23). As reported by Koblan et al.⁽¹⁴⁾, there is a multifactorial etiology for this discrepancy. The main objectives for treating a transverse maxillary deficiency are to correct the posterior cross bite, to reduce crowding and to form a stable occlusion⁽¹⁴⁾.

Maxillary expansion, rapid or slow, utilizing an orthodontic appliance alone is an effective treatment modality for maxillary width deficiency in children and adolescents younger than age 15 years^(1,3,9,12,15,23,25). However, in adults these methods are frequently associated with significant problems such as, lateral tipping of the teeth, alveolar bending, periodontal membrane compression, inability to open the midpalatal suture and pressure necrosis of the palatal mucosa^(2,5,10). Furthermore, relapse following the conventional, non-surgical, maxillary expansion in adults is a major problem^(8,10). Wertz⁽²⁶⁾, reported a 63% relapse following rapid maxillary expansion in patients older than the age of 18 years. This relapse may cause cusp to cusp occlusion, anterior open bite or cross bite and asymmetry⁽²³⁾.

As reported by many authors^(3,19,20,22), the main reason for failure of conventional maxillary

expansion in adults is the increased rigidity of the facial skeleton. The mid-palatal suture and adjacent circummaxillary articulations become more rigid and begin to fuse by the mid-twenties. So, in recent years various techniques of maxillary osteotomies have been described to assist expansion of the maxilla by orthodontic expansion devices. These techniques included buccal corticotomy^(19,21), lateral maxillary osteotomy^(16,23,26), mid-palatal osteotomy⁽²⁵⁾, segmentalized Le-Fort I maxillary osteotomy⁽¹¹⁾ and combinations of different techniques^(1,10,11,15,24,25).

In reviewing the literature, only few studies have been carried out to evaluate the maxillo-facial changes accompanying surgically assisted rapid maxillary expansion (SA-RME) in adult patients. So, the purpose of this study is to delineate these changes and to ascertain their stability.

Patients and Methods

Eight adult patients attending the Oral and Maxillofacial Surgery Department, Faculty of Oral and Dental Medicine, Cairo University, for correction of their bilateral transverse maxillary deficiencies were included in this study. They were five females and three males. Their ages ranged from 19 to 33 years with a mean age of 24 years. Patients with systemic diseases were excluded from this study. Prior to surgery a rigid maxillary

* Lecturer, Oral Surgery Department, Faculty of Oral and Dental Medicine, Cairo University.

Ass. Professor, Oral-Surgery Department, Faculty of Oral and Dental Medicine, Cairo University.