



Orthognathic Surgery: A Case Report

Eda Naifoğlu¹, Mehmet Emre Yurttutan¹, Dt. Can Arslan², Ayşe Tuba Altuğ² and Ayşegül Mine Tüzüner Öncül^{1*}

¹Department of Dentistry Oral and Maxillofacial Surgery, Ankara University, Turkey

²Department of Dentistry Orthodontics, Ankara University, Turkey

Abstract

Orthognathic surgery is a procedure that combines orthodontia and maxillofacial surgery to align skeletal problems of the jaws. Though there are different methods of osteotomy, now a day's Lefort I and bilateral Sagittal split ramus osteotomy are the common ones.

A 16 years old male patient referred to our clinic complaint of anterior open bite. Clinical examination revealed an Angle Class III malocclusion and 7 mm open bite. According to Steiner's lateral cephalometric norms the patient had a high angle profile. Orthognathic surgery was preferred as the treatment choice. Our treatment started with fixed orthodontic appliance. 13 months later he underwent bimaxillary orthognathic surgery. Jaws remained in intermaxillary fixation for 2 weeks with intermaxillary elastics. 7 months after surgery fixed orthodontic appliance was removed.

Introduction

Orthognathic comes from Greek terms. Ortho means "straight, in order" [1] and gnatho means jaw [2]. Orthognathic surgery is a procedure that combines orthodontia and maxillofacial surgery to align the maxilla and the mandible to correct dental and skeletal position of maxilla and mandible, improve Temporomandibular joint function and oropharyngeal airway [3,4]. Speaking and masticatory difficulties, dental crowding with skeletal class II or III malocclusion, open bite, congenital defects, retrognathia, prognathia, difficulty in closing lips effortlessly and sleep apnea are frequent indications for orthognathic surgery [4]. Le Fort I and bilateral sagittal split ramus osteotomy are the most common methods to correct this Dentofacial deformities.

Case Presentation

A 16 years old male patient who was referred to Ankara University Faculty of Dentistry Department of Orthodontics had a main complaint of anterior open bite. Due to this problem the patient had problems with chewing and articulation. Clinical examination revealed an Angle Class III malocclusion with 7 mm open bite. Pre-treatment radiological evaluation according to Steiner's lateral cephalometric norms showed SNA angle 75°, SNB 75°, ANB 0°, GoGn/SN 41°, which indicated that the patient had a high angle profile. Skeletal maturation level of the patient was Ru according to the hand-wrist radiograph; therefore orthognathic surgery was preferred as the treatment choice. Prior to surgery the patient undergone orthodontic treatment including teeth levelling, alignment and decompensation phases done with fixed orthodontic appliances. (Edgewise prescription – slot 0,018") He was ready for surgery 13 months later.

Surgical Procedure

The operation performed under general anesthesia. Nasal endotracheal intubation is applied to check occlusion during surgery. Local anesthesia also injected (%4 articaine and 1/100.000 epinephrine.) A vertical incision on midline and a circum vestibular incision were made with no. 15 lancet. The circum vestibular incision must be between mesial sides of upper first molars. Mucoperiosteal flap was removed to expose anterior and lateral walls of maxilla, infraorbital nerve and nasal cavity. Nasal floor was dissected. Osteotomy was carried out with reciprocating saw from pterygomaxillary junction tonasal incisure. The osteotomy must be 5 mm away from apices of the teeth. Straight, lateral nasal, pterygoid and septum osteotomys was used in order. Down fracture was carried out with tessier spreaders at left and right anterior buttresses. To avoid nasal septum deviation, inferior bone of the nasal cavity was skived and 2 mm nasal septum cartilage was cut out. The first acrylic plaque, prepared by orthodontists before surgery, guided to intermaxillary fixation for maxilla's new position. The maxilla fixed with 1.2 mm titanium miniplates and 2 mm diameter monocortical screws. Musculus levator labii superior alaeque nasi sutured with 2.0 prolene. The alar

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*Correspondence:

Aysegul Mine Tuzuner Oncul,
Department of Dentistry Oral and
Maxillofacial Surgery, Ankara University,
Turkey;

E-mail: ayltuzuner@yahoo.com

Received Date: 01 Nov 2017

Accepted Date: 15 Jan 2018

Published Date: 24 Jan 2018

Citation:

Naifoğlu E, Yurttutan ME, Arslan Dt.C,
Altuğ AT, Öncül AMT. Orthognathic
Surgery: A Case Report: A Case
Report. Clin Surg. 2018; 3: 1883.

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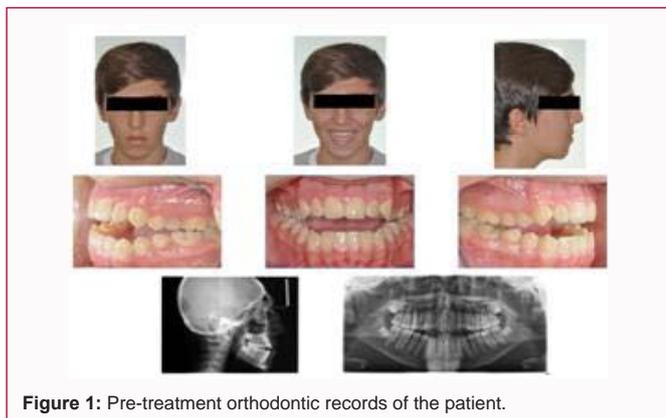


Figure 1: Pre-treatment orthodontic records of the patient.



Figure 2: Pre-surgical orthodontic records of the patient.

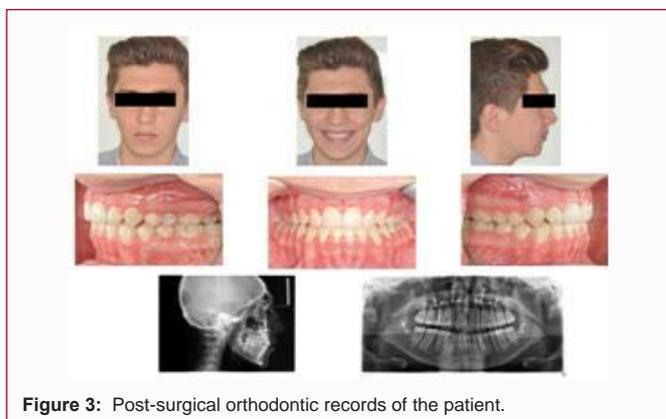


Figure 3: Post-surgical orthodontic records of the patient.

base cinch suture was used to avoid the unfavorable increase in nasal width. The mucosal wound was sutured with 3.0 vicryl [5,6].

Local anesthesia was injected for alveolar inferior nerve block in both sides. The incision was made with no. 15 lancet, starting from the half way of the ramus just lingual of the external oblique ridge to

mesial of 2nd molar inferiorly. Mucoperiosteal flap was removed to expose mandibular bone. After stripping the insertion of temporalis muscle soft tissues on the anterior ramus retracted with fork retractor. Obwegeser type channel retractor placed to buccal side. On medial mandible, flap carefully removed to identify foramen alveolar inferior. After the nerve is identified Heinnehen retractor is placed to retract and observe the nerve during osteotomy. A vertical osteotomy was carried out with lindemandrillon the lingual side of mandible, at the level of lingual close to the foramen and parallel with the occlusal plane. The osteotomy continued on superior side of mandible, only in cortical layer with a straight fissure burs. This osteotomy follows the external oblique ridge, smoothly turns to vertical and ends at mandibular inferior border [7,8]. Various osteotoms were used only on corners of osteotomy line. Then two straight osteotoms used to stretch the proximal and distal fragments of mandible. Spreader is placed and gently opened until the mandible splitted up while spongy bone is dissected and inferior alveolar nerve removed to distal segment with a thin periost elevator. Intermaxillary fixation carried out under the guidance of second acrylic plaque. The mandible fixed in new position with 2 mm diameter bicortical screws on both sides. The intermaxillary fixation removed and the mucosal wound was sutured with 3.0 vicryl. The day after surgery, intermaxillary fixation was applied for two weeks to protect the jaws new position against the muscle forces. 7 months later fixed orthodontic appliance was removed.

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