

Case study

Reconstruction of nongrowing hemifacial microsomia patient with custom-made unilateral temporomandibular joint total joint prosthesis and orthognathic surgery



Payam Farzad *

Department of Oral & Maxillofacial Surgery, Karolinska University Hospital, Stockholm, Sweden

ARTICLE INFO

Article history:

Received 3 July 2016

Accepted 1 November 2016

Available online 20 November 2016

Keywords:

Computer-aided design

Facial asymmetry

Goldenhar syndrome

Temporomandibular joint

Orthognathic surgery

ABSTRACT

A case of hemifacial microsomia in a young male is presented. The ascending ramus and condyle was reconstructed utilizing virtual 3D planning with a custom-made total TMJ device (TMJ Concepts, USA) in combination with conventional orthognathic surgery. The alternative available reconstructive options are discussed and the advantages and disadvantages of the technique selected.

© 2016 Craniofacial Research Foundation. All rights reserved.

1. Introduction

Hemifacial microsomia (HFM) is a complex congenital disorder, meaning it typically begins at birth or in the first months of life. HFM is essentially an abnormality of development of the embryonic first and second branchial arches and is the second most common craniofacial birth defect after cleft lip and palate. It occurs in approximately in 1:5000 or 1:6000 live births and displays a wide spectrum of abnormalities.¹ The disorder primarily affects the development of the lower part of the face, including the ears, mouth, and jaw area. It is usually unilateral and always asymmetrical. Synonyms, which are also in common usage, are craniofacial microsomia, oculo-auriculo-vertebral-dysplasia or facial-oculo-auriculo vertebral dysplasia. Goldenhar syndrome is a term liked by pediatricians but only really refers to a small sub group of HFM patients.

HFM occurs sporadically in most cases and can be considered a nonspecific symptom complex that is etiologically and pathogenically heterogeneous. Extreme variability of the expression is characteristic for the disorder.² The classification of HFM by Kaban identifies type I as a small mandible with normal temporomandibular joint (TMJ) morphology; type IIa as a ramus with abnormal

size and shape; type IIb as a ramus and TMJ with abnormal size, shape, and function; and type III as an absent condyle, absent ramus, and absent TMJ.³ This classification system may be the most useful to the surgeon in the preoperative evaluation because of its simplicity and inclusion of the TMJ anatomy and function.

A case of hemifacial microsomia is presented in a young male where a custom-made TMJ prosthesis was used along with orthognathic surgery to correct the facial asymmetry.

2. Case report

A 19-year old male suffering from left sided hemifacial microsomia was referred to the author's clinic, in 2014 for evaluation and treatment of his condition (Fig. 1a–c). Clinical and radiographical investigation revealed multiple skin tags, a HFM type IIb mandibular defect on the left side, deviated chin to the left and occlusal cant. The seventh cranial nerve was intact.

Treatment included orthodontic and surgical intervention. In order to reconstruct the mandibular defect on the left side a custom made TMJ prosthesis was planned along with conventional orthognathic surgery to correct the occlusal cant.

Orthodontic treatment was accomplished by means of bimaxillary fixed appliances for a period of 1.5 years. Once the presurgical orthodontic treatment was finished, a new CT scan with 0.625 mm slice thickness was obtained and sent to medical modeling (Colorado, USA) along with final dental casts set in to best possible occlusion. CT scan was segmented, and a 3D virtual skull model

* Correspondence to: Karolinska University Hospital, SE-17176 Stockholm, Sweden.

E-mail address: payam.farzad@karolinska.se

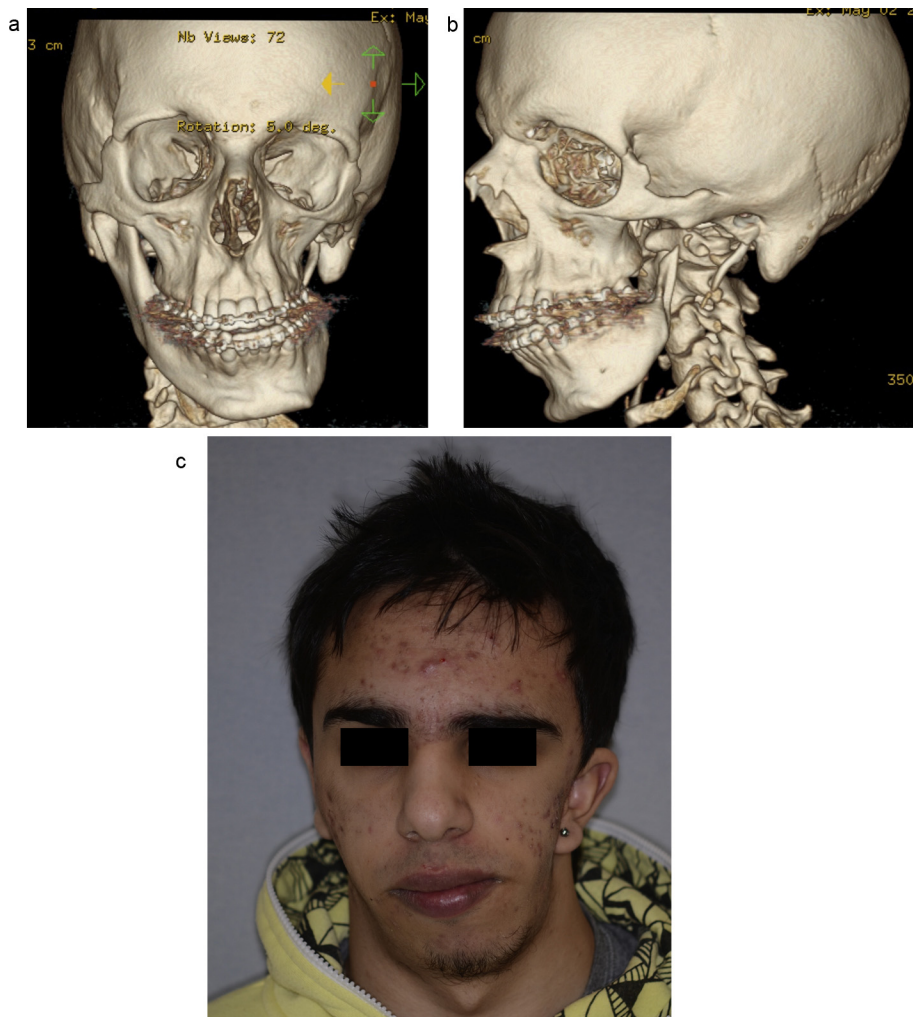


Fig. 1. (a) CT scan of the patient upon completion of orthodontic treatment and before surgery. (b) CT scan of the patient upon completion of orthodontic treatment and before surgery. (c) Clinical photo of the patient prior to surgery.

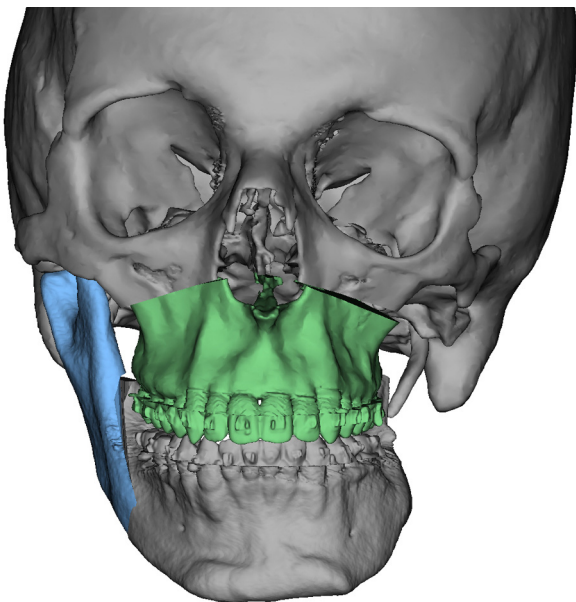


Fig. 2. Correction of the occlusal cant by means of Le Fort I osteotomy and contralateral sagittal split osteotomy.

was created. The occlusal cant was corrected by means of Le Fort I osteotomy and the mandible was advanced and set into final position by means of sagittal split osteotomy on the right side. Intermediate and final splints were fabricated based on the virtual planning (Fig. 2). These data were then sent to TMJ Concepts (Ventura, CA, USA) for planning of the custom made total TMJ prosthesis. Since the available bone stock in the ramus could not allow for any fixation because of the vicinity to the mandibular canal, an extended prosthesis was manufactured where the mentum was used for fixation of the prosthesis. A 3D steriolithographic model was created and sent to the surgeon for removal of any bony interference. Once the surgeon approved the 3D model, the prosthesis was waxed up on this model and manufactured subsequently. A hole was made in the condyle for a vertical suspension suture (Fig. 3).

In September 2015, the patient was taken to surgery. A right sagittal split ramus osteotomy was performed and the mandible mobilized and set into intermediate splint with IMF. Fixation on the right side was achieved by means of three bicortical screws which were instrumented transbuccally via a trocar. The incision was closed with 3/0 Vicryl running sutures. The oral cavity was sealed with Tegaderm (3M, Sweden). A different set of instruments was used to approach the left TMJ and submental area. A left preauricular and a submental incision was performed and a tunnel was created between the two incisions by blunt dissection. The fossa part was secured to the zygomatic arch by multiple 2.0 mm

Download English Version:

<https://daneshyari.com/en/article/5641374>

Download Persian Version:

<https://daneshyari.com/article/5641374>

[Daneshyari.com](https://daneshyari.com)