

AAO Foundation Final Report 2013- 2014

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Secondary Investigators
Award Type AAOF Faculty Development Award: <i>Albert P. Westfall Memorial Teaching Fellowship Award</i>
Project Title Correction of Facial Asymmetry in Patients with Unilateral Craniofacial Microsomia Using Computer-Aided Design (CAD) and Computer-Aided Manufacturing (CAM): An Evaluation of Post-Surgical Results
Project Year July 2013 to June 2014
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Summary/Abstract This is a retrospective pilot study of 5 patients with the diagnosis of unilateral craniofacial microsomia. For surgical planning, a CT scan, study models and photographs were obtained. Medical Modeling created a 3D virtual patient by integrating patient's CT data and dental study models. The craniofacial surgeon and the orthodontist completed the virtual surgical treatment plan with the help of engineer

via a web meeting. All patients were planned to undergo 2 jaw surgery with genioplasty. Four patients needed iliac crest bone graft to reconstruct the mandible. At the maxillary dental midline, planned mean advancement was 4mm, yaw correction to the unaffected side was 4.96 mm and impaction was 2.74 mm. Mean advancement measured at point B was 10.5 and yaw correction to unaffected side was 6.58 mm. Mean advancement following genioplasty was 8.43 mm and mean transverse correction was 6.33 mm. Intermediate surgical splint, final surgical splint, bone graft templates and cutting guides were constructed with the CAD/CAM technology. The surgeon executed the surgical treatment plan in the operating room using appropriate guides and splints. A postsurgical CBCT was obtained and superimposed on the surgical treatment plan using Simplant OMS 10.1 software. Cranial base was used as a reference for superimposition. 3D color coded displacement maps were generated to visually and quantitatively assess the surgical outcome. Maxillary anatomical structures, there was mean 0.88 mm (\pm 0.30) error from the planned position and the anterior mandibular anatomical structures there was 0.96 mm (\pm 0.26) error from the planned position.

Were the original, specific aims of the proposal realized?

Yes

Were the results published? If not, are there plans to publish? If not, why not?

Results are not yet published.

This paper will be published in the Journal of Reconstructive Plastic Surgery.

Have the results of this proposal been presented? If so, when and where? If not, are there plans to do so? If not, why not?

Yes, Presented at:

March 2014 Virtual Surgical Planning for Orthognathic Surgery
28th Annual FACES Conference, Park City, Utah

April 2014 Virtual Surgical Planning for Orthognathic Surgery
Washington University Orthodontic Study Group, St. Louis, MO

Nov 2014 Virtual Surgical Planning for Orthognathic Surgery- One Day Course
39th National conference of Association of Oral & Maxillofacial Surgeons of
India, Goa, India

Nov 2014 3D Virtual Surgical Planning
39th National conference of Association of Oral & Maxillofacial Surgeons of
India, Goa, India

And will be presented at:

16th International Congress of International Society of Craniofacial Surgery, Tokyo Bay Area, Japan, 14-18 September 2015

To what extent have you used, or how do you intend to use, AAOF funding to further your career?

I have used the AOOF funding for my research and publication in the area of Craniofacial Orthodontics. Publications are important criteria for my promotion as Tenure Track Associate Professor in Plastic Surgery (Craniofacial Orthodontics). I am thankful to AAOF for their generous support.