Composite Tissue Correction in Teenagers with Severe Hemifacial Microsomia: Use of a Sequential Multistage Approach

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Abstract

Background & Purpose: Teenagers with severe hemifacial microsomia can present with complex deformities of skin, adipose layer, mandible, and occlusion. Various individual techniques have been described to treat specific aspects of the deformity, including orthognathic surgery, distraction, bone grafting (vascularized/nonvascularized), and autologous fat transfer.[1,2,3] Total correction of composite deficiencies, including creation of a proper skeletal foundation and soft tissue envelope, without relapse, is challenging in a single stage. We present our approach to teenagers with severe hemifacial microsomia incorporating orthognathic surgery, a rigid external distractor (RED) device, free osteoseptocutaneous fibular transfer, and fat grafting, to achieve stable skeletal and soft tissue correction.

Methods: 3 teenage patients with severe hemifacial microsomia (Pruzansky 3) were treated at Dell Children's Medical Center with a sequential multi-staged approach for both skeletal and soft tissue correction. Treatment protocol was as follows: Stage I: conventional orthognathic surgery, application of RED device and traction on the corrected mandible. Stage II: Mandible and facial soft tissue reconstruction with free fibula osteoseptocutaneous flap, removal RED device. Stage III: fibular skin paddle excision, autologous fat transfer, osseous genioplasty.

Results: All patients successfully underwent the multi-stage protocol. At conclusion of the protocol the patients maintained a class I occlusion without cant, a stable and symmetric mandibular opening, and more symmetric facial structure/profile (Figures 1, 2). None of the patients showed signs of relapse at one year following correction.

Conclusions: Teenagers with severe hemifacial microsomia present reconstructive challenges, possessing a composite soft tissue and bone defect. The bony deficiencies underlying a tight soft tissue envelope can be prone to relapse. Stage I of our protocol addresses the occlusal cant and jaw malposition with orthognathic surgery. The RED device with anchorage in the mandible stabilizes the orthognathic jaw position, and prevents relapse that may occur without a mandibular ramus. Stage II establishes mandibular continuity, and adds soft tissue with a free fibular flap, the RED device is removed without fear of relapse. Later stages allow soft tissue contouring, creation of normal chin position, and autologous fat transfer. Using this sequential multi-staged approach for the patient with a complex composite defect from hemifacial microsomia, allows for a stable and normalized skeletal anatomy with adequate overlying soft tissue.

References:

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