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INTRODUCTION: Orthognathic surgery can have significant effects on the nasolabial envelope, which may or may not be desirable.1-3 While orthognathic surgery is sometimes the definitive procedure, it can also be performed with adjunctive rhinoplasty, either concurrently or in a staged fashion. The purpose of this study is to evaluate and develop an algorithm for the use of adjunctive rhinoplasty in patients undergoing orthognathic surgery.

METHODS: A retrospective chart review of cases from 2012–2015 was completed. Demographic, diagnostic, and operative details were compiled. Use, timing, and type of rhinoplasty was also recorded. Three-dimensional photographs were assessed using the Vectra 3D Imaging system (Canfield Scientific, Parsippany, NJ).

RESULTS: 163 cases of orthognathic surgery were included in the study. The mean patient age was 23.3 years. Of the patients who had no rhinoplasty, there was either no intrinsic deformity or results were improved with orthognathic surgery alone. In total, 41.7% (68/163) of orthognathic cases received an adjunctive rhinoplasty. Of these, 56 were staged rhinoplasties (82.4%), and 12 were simultaneous (17.6%). The average time between staged procedures was 208.11 days. When performed simultaneously, 83.3% of the orthognathic procedures had little to no maxillary movement (advancement <4-5mm, impaction <2mm, no alar base excisions). Only 16.7% of simultaneous procedures involved significant maxillary movements.

CONCLUSION: Nasal deformity can occur concurrently with maxillofacial dysmorphology, or as a consequence of orthognathic surgery. We propose the following algorithm in determining the use of adjunctive rhinoplasty with orthognathic surgery: (1) For no nasal deformity or intrinsic nasal deformity improved by orthognathic surgery: no rhinoplasty needed; (2) For nasal deformity created by orthognathic surgery: staged rhinoplasty; (3) For intrinsic deformity that is maintained or worsened by orthognathic surgery: either simultaneous or staged rhinoplasty using the following considerations. A simultaneous rhinoplasty can be successfully performed for symmetric and mild nasal deformity, and for procedures that involve little to no maxillary movement, as defined above. Common maneuvers that can be performed in a simultaneous rhinoplasty target the tip, septum, and turbinates. The staged rhinoplasty, on the other hand, is ideal for surgery-induced nasal deformity or for orthognathic procedures involving significant maxillary movements. In these cases, a staged procedure allows for the nasal form to stabilize and for better prediction of the final outcome.

Reference Citations:
1. Schendel SA, Carlotti AE, Jr. Nasal considerations in orthognathic surgery. Am J Orthod Dentofacial Orthop. 1991;100(3):197–208.
2. Altman JL, Oeltjen JC. Nasal deformities associated with orthognathic surgery: analysis, prevention, and correction. J Craniofac Surg. 2007;18(4):734–739.
3. Metzler P, Geiger EF, Chang CC, Sirisoontorn I, Steinbacher DM. Assessment of three-dimensional nasolabial response to Le Fort I advancement. J Plast Reconstr Aesthet Surg. 2014;67(6):756–763.

Interpositional Arthroplasty by Temporalis Fascia Flap and Galea Aponeurotica Combined with Distraction Osteogenesis: A Modified Method in Treatment of Adult Patients with TMJ Ankylosis and Mandibular Dysplasia

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INTRODUCTION: Temporomandibular joint (TMJ) ankylosis is a daunting disease. Patients suffer mouth-opening difficulty and facial deformity.1 As the TMJ is fused, mandibular growth restriction leads to mandibular dysplasia and malocclusion. Interpositional arthroplasty (IPA) with temporalis fascia flap has been one of the most frequently performed procedure to treat TMJ ankyloses.2-3 However, recurrence often occurs when temporalis fascia flap lacks bulk or atrophies. In TMJ

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ankylosis patients presenting in combination with mandibular dysplasia, whether to perform IPA or distraction osteogenesis (DO) first has long been a controversial issue. This study aims to provide IPA with a new graft material sufficient to prevent recurrence, to modify the protocol of performing DO 6 months after IPA, and to evaluate its efficacy in treating TMJ ankylosis patients with mandibular dysplasia.

METHODS: 6 patients with unilateral TMJ ankylosis and mandibular dysplasia were treated in our study. We applied the temporalis fascia flap and part of adjacent galea aponeurotica to fill the space after surgical release. Mouth-opening exercises were started immediately post-operation and lasted 3 months. DO was performed 6 months following IPA later and had 4 months’ consolidation after completion of distraction. Orthodontic therapy was done when necessary. Preoperative, immediately post-first-operative and the latest follow-up maximum inte-incisal distance (MIO) were recorded, as was the distraction length. The body mass index (BMI) was measured at each patient’s post-operative visit. The follow-up period was 3–4 years.

RESULTS: All patients had ideal outcomes with significant improvement in facial aesthetic, mouth-opening and occlusion. No major complication or recurrence was observed at follow-up. The mean MIO was 4.83 ± 2.79mm preoperative, 28.17 ± 4.92mm immediately post-first-operative, and 35.67 ± 3.39mm at the latest follow-up. The distraction distance mean value was 16.17 ± 5.98mm, ranged from 10 to 27mm. The BMI improved from 17.33 ± 0.64 kg/m² preoperative to 18.75 ± 0.60 kg/m² before DO.

CONCLUSION: In this article, a staged treatment protocol, recommendations for temporalis fascia flap and adjacent galea aponeurotica as graft material of IPA are discussed in treating patients with TMJ ankylosis with mandibular dysplasia. All patients achieved mouth opening after IPA, which contributes to not only improving nutrition, but also peri-operative airway management, better preparing the patient for DO. This modified method proved to be easy and effective to prevent recurrence, improve mandibular length and improve final dental occlusion.

Reference Citations:
1. Erol B, Tanrikulu R, Gorgun B. A clinical study on ankylosis of the temporomandibular joint. J Cranio-maxillofac Surg 2006; 34:100–6.
2. Loveless TP, Bjornland T, Dodson TB, Keith DA. Efficacy of temporomandibular joint ankylosis surgical treatment. J Oral Maxillofac Surg 2010; 68:1276–82.
3. Sawhney CP. Bony ankylosis of the temporomandibular joint: follow up of 70 patients treated with arthroplasty and acrylic spacer interposition. Plast Reconstr Surg 1986; 77(1): 29–40.
4. Yoon HJ, Kim HG. Intraroral mandibular distraction osteogenesis in facial asymmetry patients with unilateral temporomandibular joint bony ankylosis. Int J Oral Maxillofac Surg 2002; 31:544–8.

RECONSTRUCTIVE SESSION 3
Venous Thromboembolism Prevention Using Twice Daily Enoxaparin in Plastic Surgery Patients: A Prospective Clinical Trial

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INTRODUCTION: Low anti-Factor Xa (aFXa) levels, indicative of inadequate enoxaparin dosing, has a significant association with 90-day venous thromboembolism (VTE) events. We examined the pharmacodynamics of enoxaparin 40mg twice daily and its correlation with aFXa, post-operative VTE, and bleeding.

METHODS: Adult patients were admitted after plastic and reconstructive surgery procedures and received enoxaparin 40mg twice daily. Peak aFXa levels, which quantify enoxaparin’s anti-thrombotic effect, were drawn. Symptomatic VTE or clinically relevant bleeding at 90 days was identified. The comparison group included 94 patients who received enoxaparin 40mg once daily from a previous clinical trial, funded by the Plastic Surgery Foundation, at our institution.

RESULTS: 98 patients who received enoxaparin 40mg twice daily are enrolled in this ongoing study. 9.2% of patients had low peak aFXa levels and 60.2% of patients had in-range peak aFXa