effect of this delay in treatment is unknown. This study compares speech and surgical outcomes of adopted to non-adopted patients and examines the influence of age at initial palatoplasty.

METHODS: Speech and surgical outcomes were compared for non-syndromic international adoptees and non-adoptees with Veau type 3 or 4 clefts initially repaired at our institution since 2007. Speech evaluations completed at or near 5 years of age were gathered from a prospectively collected institutional database. Linear regression was used to examine the relationship of adoption status and age at palatoplasty with speech outcomes, oronasal fistulization, and secondary speech surgery.

RESULTS: 70 adoptees and 211 non-adoptees met inclusion criteria. Average clinical follow-up was 4.8 years, and speech outcomes data was available for 56% of this group. Adoptees underwent initial palatoplasty 5.2 months after arrival in the US, and a mean of 10.4 month later than non-adoptees. Adoptees were significantly more likely to develop moderate/severe velopharyngeal insufficiency (VPI), and trended towards more frequent need for secondary speech surgery. Oronasal fistulas occurred at similar rates in both populations. Older age at initial palatoplasty was a significant predictor of moderate/severe VPI, and secondary speech surgery.

CONCLUSIONS: International adoptees undergo initial palatoplasty 10.4 months later than their non-adopted counterparts, and are significantly more likely to develop moderate/severe VPI, with a trend towards increased secondary speech surgery. The relationship between treatment delay and an increased likelihood of VPI and secondary speech surgery has been re-demonstrated. While a causal relationship between delayed repair and inferior outcomes in international adoptees has not been proven, this data is quite suggestive that surgical intervention upon unrepaired cleft palates soon after adoption might be beneficial. Given that half of the 10.4 month relative delay in palate repair occurs post-adoption, the opportunity for a meaningful change in practice exists.

Arguments against early post-adoption palatoplasty include that this might disrupt child adjustment, feeding, and family bonding, or that lingering malnutrition might predispose recent adoptees to fistulae. In the absence of conclusive data, international adoptees and their families should be considered individually. While accelerated palate repair should be favored, malnutrition or circumstances affecting adoptee adjustment and family bonding may reasonably override this concern.

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Computer-Assisted Orthognathic Surgery for Patients with Cleft Lip/Palate: From Traditional Planning to Three-Dimensional Surgical Simulation

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INTRODUCTION: While traditional two-dimensional (2D) planning is still widely used for orthognathic surgery, three-dimensional (3D) simulation has constantly gained popularity in recent years. Planning accuracy is increased due to the expanded information yield of 3D simulation, and can subsequently improve the surgical outcome in patients with craniofacial deformities. We therefore examined the most commonly changed parameters after the treatment plan data transfer. Furthermore, we analyzed which planning aspects profit from the transfer in terms of more precise evaluation.

MATERIALS AND METHODS: Thirty consecutive patients with cleft lip and/or cleft palate planned for two-jaw single-splint orthognathic surgery were enrolled. After the transfer of the 2D orthodontic surgery plan, the maxillo-mandibular complex position was assessed in the 3D simulation and possibly changed to improve function and aesthetic appearance and correct severe bony collisions in the ramus area. Pitch, roll, yaw, midline and genioplasty repositioning after 3D assessment was documented as well as the prevalence of such changes within the total patient group, bilateral, unilateral cleft lip/palate and isolated cleft palate subgroups.

RESULTS: While the majority of 2D plans were modified, yaw and midline adjustments were the most common in the overall patient group. The highest mean values in the total patient group and all subgroups were also reached by yaw alternations. The problems of severe bony collisions and residual facial asymmetry after 2D treatment planning were
successfully addressed using the additional information of the 3D simulation to modify the initial assessment.

**CONCLUSION:** Our data strongly suggests that 3D simulation improves the planning process for orthognathic surgery in cleft lip/palate cases. Important details like severe bony collisions in the ramus area can be highlighted which are otherwise underrepresented in traditional 2D treatment planning. Especially yaw and midline discrepancies are reliably detected so that residual facial asymmetry can be more effectively uncovered. Altering the 2D treatment plan in the 3D simulation is therefore more the rule than the exception in our patient group.

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The Change of Posterior Pharyngeal Space after Counter Clock-wise Rotational Orthognathic Surgery Based on Cephalometry

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**INTRODUCTION:** Maxillomandibular advancement (MMA) is an orthognathic surgical procedure that has been used to manage OSA in individuals who are noncompliant with CPAP therapy.\(^1\) MMA is a site-specific procedure, performed for the purpose of creating an enlarged posterior airway space at multiple anatomic levels, including the nasopharynx, oropharynx, and hypopharynx.\(^2\) MMA has been shown to significantly improve OSA, with reported short term success rates ranging from 75% to 100%.\(^3-5\) This prospective investigation describes the functional and aesthetic outcomes after the counter clock wise rotational orthognathic surgery in skeletal class II patients with the obstructive sleep apnea based on pre and postoperative polysomnography and cephalometry.

**MATERIALS AND METHODS:** This retrospective study investigated the surgical outcome of 12 patients who suffered from obstructive sleep apnea following the counter clock wise rotational orthognathic surgery in terms of functional and aesthetic outcomes. The patients included in this study were skeletal class II patients who underwent orthognathic surgery between March, 2013 and December, 2014 at the Seoul Asan Medical Center, University Medical Center for tertiary care. The pharyngeal airway assessment was done through polysomnography and cephalometric posterior airway analysis using PRL–PSP, PRL–PTO and PRL–E distances.

**RESULTS:** The follow-up period ranged from 10 to 36 months (average, 20.5 months). The average age of the patients was 28.5 years, with 9 male and 11 female patients. Compared to preoperative results (mean preop distance of PRL–PSP: 19.97, PRL–PTO: 18.68, PRL–E: 16.2), PRL–PSP, PRL–PTO and PRL–E distances were increased statistically significant in immediate postoperative cephalometry. (p<0.005) (mean immediate postop distance of PRL–PSP: 23.1, PRL–PTO: 22.9, PRL–E: 18.6). The results were maintained 6 months after the surgery(mean distant postop distance of PRL–PSP: 22.2, PRL–PTO: 22.5, PRL–E: 18.0). There was no significant change in PRL–PSP, PRL–PTO and PRL–E distances.(p>0.05).

**CONCLUSION:** The change of the posterior pharyngeal space in counter clock-wise rotational orthognathic surgery without maxilla advancement for the correction of obstructive sleep apnea is presented. Our findings indicate that this approach can lengthen the posterior pharyngeal space effectively. With considered application, this novel approach could be an alternative to standard approaches in the correction of obstructive sleep apnea using orthognathic surgery.

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