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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