Clinical evaluation of a single plate for sagittal split ramus osteotomy fixation

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Background: An stable fixation is critical in orthognathic surgery. The change for 3 bi-cortical screws to only mini-plates is being more commom.

Objectives: The aim of this retrospective study was to evaluate the clinical performance of a SSRO osteosynthesis method using only with a single specific bone plate. It is a 6-hole plate with 3 non-linear holes on each side, as horizontal double "Y" semi-curve with variable extension, called Sagittal Plates (SP).

Methods: This study evaluated clinical data and medical records data of 71 consecutive patients, who underwent SSRO using the Sagittal Plate for bone fixation.

Findings: One hundred and forty two SP were used: fifty eight (40.84%) 9.5 mm plates, thirty four (23.94%) 12.5 mm plates, thirty six (25.35%) 15.5 mm plates and fourteen (9.85%) to 18.5 mm plates. Only intra oral accesses were used without transcutaneous approach. All patients have used a light maxillomandibular fixation with elastics. Four (5.6%) complications were reported: one 1.4% oclusal relapse due to condyle resorption, and three (4.2%) problems related to osteosynthesis. One of them (0.7%) needs performed other fixation. Other Two complications were treated postoperatively with minor ambulatory surgery done after 75 and 90 days post surgery. A major complication, one patient, was related to a large mandibular advancement case, in which 18.5 mm plates were used, and only 2 screws could be used in distal segments. Statistical analysis showed no correlation between postoperative complications and the size of the plate ($p = 0,286$) or the type of orthognathic surgery performed ($p = 0,518$).

Conclusion: The results of this investigation showed that a SSRO fixation using a single plate with a new design SP provided good stabilization of the mandibular bone segments.

Overview of systematic reviews in orthognathic surgery – hierarchy of surgical stability

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Background: Some factors may influence the stability of orthognathic surgery, a series of systematic reviews – each with a specific objective for a particular variable - were published in recent years. These reviews summarized and analyzed the methodology of the primary studies, but the peculiarities of each surgical intervention precluded a more educational and understandable analysis of the multiple factors that generate bone instability.

Objectives: The purpose is to establish an overview of systematic reviews in order to create a hierarchical scale with the aid of the highest level of scientific evidence.

Methods: The systematic search was carried out in PubMed, EMBASE and Cochrane Library databases. The gray literature was investigated in Google Scholar and a manual search was made in the references of included studies. The studies were selected for two independents authors by means of strict inclusion and exclusion criteria.

Findings: Fifteen studies were included in the final sample, of which 8 were systematic reviews and 7 were meta-analyzes. Secondary studies were considered to be of medium to high methodological quality by the researchers based on the AMSTAR 2 tool and the primary studies included in the secondary studies were classified by them with the potential for risk of bias as moderate to high.

Conclusion: The hierarchical pyramid of stability in orthognathic surgery was established with two surgical procedures considered highly unstable, the maxillary expansion with semi-rigid internal fixation evaluated at the dental level in the posterior region and the mandible clockwise rotation with rigid internal fixation of bicorticals screws in the sagittal direction.

Three-dimensional cephalometric analysis of the maxilla - analysis of new landmarks

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Background: Clinical evaluation of the midface is complex. Cephalometrics were not developed with the clinical appearance of the midface in mind and are therefore inappropriate as aids in diagnosing dentofacial deformities. This study aimed to evaluate traditional and newly-defined cephalometric measurements and their correlation with clinical appearance of the midface.

Objectives: To evaluate traditional and newly-defined cephalometric measurements and their correlation with clinical appearance of the midface.

Methods: The paranasal and upper lip regions of 52 subjects who underwent a full-field CBCT were examined by a single examiner, and a second examiner obtained traditional and newly defined cephalometric measurements for each subject. Both examiners were blinded to each other's data. Statistical analysis assessed the correlations of the cephalometric measurements to clinical midfacial findings. Soft tissue thickness was also analyzed.

Findings: All cephalometric measurements had no statistically significant correlation to clinical paranasal diagnosis. However, in the absence of upper lip procumbency/protrusion, SNNP and SNh had statistically significant correlations with clinical paranasal diagnosis ($P = 0.047, 0.003$). For upper lip analysis, traditional (SNA) and new measurements (SNCEJ) had strong correlations with clinical upper lip diagnosis ($P < 0.001$). While fitted models showed low precision/recall, further analyses suggest improved performance of the model when properly trained with a larger sample.

Conclusion: New measurements SNh and SNNP correlated with clinical paranasal diagnosis, only in the absence of upper lip procumbency/protrusion. SNA and SNCEJ strongly correlated with clinical upper lip diagnosis. However, fitted models based on this sample are currently only suitable for clinical correlation, warranting further investigation with larger samples.