



A Detailed Comparative Clinical Analysis Evaluating the Effectiveness of Combined Orthodontic Correction and Orthognathic Surgery versus Orthodontic Treatment Alone in Patients Diagnosed with Skeletal Open Bite: An Original Research Study

Article History:

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Received: 22-11-2025

Revised: 06-12-2025

Accepted: 16-12-2025

Published: 31-12-2025

Abstract: **Aim:** This study compares the effectiveness of combined orthodontic correction and orthognathic surgery versus orthodontic treatment alone in patients diagnosed with skeletal open bite. **Materials and Methods:** A total of 30 patients experienced difficulty biting with their front teeth, raising concerns about facial aesthetics. Clinical assessments identified 20 motivated patients, equally divided by gender, diagnosed with skeletal open bite. Inclusion criteria required no vertical overlap between upper and lower incisors, while those with temporomandibular joint dysfunction or prior jaw fractures were excluded. Informed consent was obtained from all participants. The patients were divided into two groups: Group 1 (10 patients) received orthodontic correction using fixed appliances and adjunctive techniques, while Group 2 (10 patients) underwent both orthognathic surgery and orthodontic treatment, including Le Fort I osteotomy and bilateral sagittal split osteotomies for stabilisation. Efficacy was evaluated through cone-beam computed tomography (CBCT) and follow-up assessments at 6 months, 1 year, and 2 years postoperatively. **Statistical Analysis and Results:** This study involved 20 patients, 8 males and 12 females, who had difficulty biting food due to front teeth issues and sought replacements through orthognathic surgery and orthodontic correction. They were divided into two groups: Group 1 included 10 patients treated with orthodontics for skeletal open bites, while Group 2 consisted of 10 patients who underwent both surgery and orthodontic correction. Cone Beam Computed Tomography (CBCT) was used for three-dimensional analysis, with follow-ups at 6 months, 1 year, and 2 years. At the 6-month follow-up, 3 patients in Group 1 and 1 patient in Group 2 showed no changes in facial aesthetics. At one year, 2 patients in Group 1 and none in Group 2 remained unchanged. By two years, 1 patient in Group 1 and no patients in Group 2 were still unchanged. **Conclusion:** This study concluded that the combined approach outperforms traditional methods in function and aesthetics. It personalises treatment based on each patient's diagnostic data and goals, whether they focus on functional improvements or aesthetic aspects. The process also considers the patient's willingness to evaluate the risks and benefits of their options.

Keywords: Orthognathic Surgery, Orthodontic Treatment, Skeletal Open Bite, Malocclusions

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INTRODUCTION

An open bite is a complex dental condition characterised by a distinct vertical gap that becomes visible between the incisal edges of the maxillary and mandibular anterior teeth when the jaws are closed. This noticeable gap may also extend to the buccal segments, leading to a malocclusion that significantly hinders oral function and detracts from overall facial aesthetics. The origins of an open bite are intricate, stemming from a combination of structural (skeletal), dental, and functional factors. Dentists and orthodontists typically assess these malocclusions in relation to skeletal development and alignment, which allows them to categorise open bites into two primary types: skeletal open bites and dental open bites.^{1,2} A prominent contributor to the development of an open bite is excessive vertical growth of the jaw structures, which can result in a facial appearance that is often referred to as Long Face Syndrome. This condition is characterised by a noticeably elongated lower third of the face, frequently accompanied by specific cephalometric markers such as an upward inclination of the maxillary plane and a steep angulations of the mandibular plane. Individuals affected by this syndrome often exhibit a variety of notable symptoms, with perhaps the most striking being the pronounced gap between the upper and lower teeth when the mouth is closed. Additionally, these individuals may face challenges with chewing efficiency, struggle with speech impediments like lisps, and experience discomfort during everyday oral activities.^{3,4} Genetic predisposition plays a crucial role in the development of open bites, a condition that can be intensified by habitual behaviours such as thumb sucking or prolonged use of pacifiers during childhood. These habits can disrupt the normal growth and development patterns of the oral cavity and jaw, potentially leading to the onset of an open bite malocclusion. In many instances, a skeletal pattern characterised by an upward growth trajectory of the jaw bones complicates the alignment and positioning of the teeth even further.^{5,6} The treatment of open bites is multi-faceted and often requires a coordinated approach, drawing on the expertise of orthodontic specialists, speech therapists, and, when necessary, orthognathic surgeons. In mild cases of open bite, isolated orthodontic interventions such as the

application of braces or the use of clear aligners are frequently sufficient, especially in situations where the anterior teeth tend to procline, or tilt forward towards the lips. However, for those with more severe cases where the skeletal structure significantly contributes to the malocclusion, orthognathic surgery becomes essential. This surgical procedure carefully involves the repositioning of the jaw bones, intending to achieve a more functional and aesthetically pleasing alignment.^{7,8} Post-treatment retention strategies are vital to minimise the risk of relapse, as individuals who have experienced open bites are often more susceptible to recurrence. In cases of skeletal open bites, treatment typically combines orthodontic procedures with surgical interventions, which may include maxillary impaction (elevating the upper jaw) and possibly mandibular rotation (adjusting the lower jaw).⁹ This integrated approach strives for both functional and aesthetic improvements. Advances in contemporary surgical techniques have significantly enhanced the efficacy of such treatments, facilitating shorter overall treatment durations through meticulous planning and synchronised coordination with orthodontic preparations, all aimed at achieving stable and enduring results.^{10,11} During the orthodontic phase, a variety of tools may be employed, including traditional braces and auxiliary devices like mini-screws for enhanced anchorage. Innovative methodologies, such as tooth extrusion (which elevates the position of teeth) or retraction, are also utilised to effectively address and rectify any skeletal discrepancies.^{12,13} This research study is designed to evaluate and compare the effectiveness of a dual approach that integrates both orthodontic correction and orthognathic surgery against traditional orthodontic treatment alone for patients diagnosed with a skeletal open bite. By analysing patient outcomes, this study seeks to determine whether the amalgamation of surgical intervention alongside orthodontic techniques yields superior results in enhancing dental alignment and overall facial aesthetics within this specific population.

MATERIALS AND METHODS

A total of 30 patients initially presented with a

primary complaint of difficulty biting into food using their front teeth. This functional issue was often accompanied by significant concerns regarding facial aesthetics and the overall appearance of their teeth, highlighting the interplay between dental function and psychological well-being. After conducting a comprehensive clinical assessment, it was determined that 20 of these patients expressed a strong desire for orthodontic correction and were seeking orthognathic surgical intervention to address their functional challenges and aesthetic concerns simultaneously. This study specifically focuses on these 20 motivated patients, comprised of an equal representation of males and females. All participants were driven by the need to resolve issues related to biting and chewing effectively, improve lip sealing during rest, and enhance their overall facial aesthetics. The inclusion criteria were meticulously defined to establish a homogenous sample: all participants exhibited a skeletal open bite, confirmed through exhaustive clinical evaluations and detailed cephalometric analysis. Additionally, every subject demonstrated a complete lack of vertical overlap between the upper and lower incisors, which are a definitive indicator of an open bite. To ensure the reliability and integrity of the research findings, several exclusion criteria were implemented. Patients with temporomandibular joint (TMJ) dysfunction, any pathological conditions or diseases affecting the jaw structures, prior history of jaw fractures, or those who exhibited a dentoalveolar open bite without accompanying skeletal issues were excluded from the study. Prior to their inclusion, informed consent was obtained from all participants, underscoring the commitment to ethical practices throughout the research process. The study participants were divided into two distinct and well-defined groups for comparative analysis. Group 1 consisted of 10 patients who underwent orthodontic correction aimed exclusively at addressing their skeletal open bite. This treatment protocol incorporated the use of fixed orthodontic appliances, which consisted of custom-designed brackets and arch wires, including 0.016-inch nickel-titanium arch wires for initial alignment followed by 0.019 x 0.025-inch stainless steel arch wires for detailed adjustments in the later stages of treatment. To optimize treatment outcomes, various adjunctive orthodontic techniques were employed in this group, such as Temporary Anchorage Devices (TADs) to enhance tooth movement control, intermaxillary elastics to improve occlusal relationships, lingual spurs to mitigate tongue thrusting, tongue cribs aimed at retraining oral

function, myofunctional therapy to address muscle imbalances, and removable appliances for supplementary support during treatment. In contrast, Group 2 comprised 10 patients diagnosed with skeletal open bite who underwent a comprehensive treatment strategy that combined both orthognathic surgery and orthodontic correction. The surgical interventions in this group were considerably more complex and involved advanced techniques. Maxillary superior repositioning was achieved through Le Fort I osteotomy, often necessitating multi segment approaches for precise anatomical realignments to improve functional outcomes. Additionally, bilateral sagittal split osteotomies (BSSO) were performed on the mandible to enable counterclockwise rotation and repositioning of the jaw. Post-surgery, rigid internal fixation strategies, which included the application of plates and screws, were utilized to stabilize the mandible and maxilla in their newly adjusted positions, ensuring optimal alignment, healing, and functional recovery. To assess the efficacy of the treatments provided, a thorough evaluation was conducted utilizing cone beam computed tomography (CBCT) imaging, allowing for detailed three-dimensional reconstruction of the dental and skeletal structures. Follow-up assessments were systematically scheduled at 6 months, 1 year, and 2 years post-operatively for all patients involved in the study, facilitating comprehensive monitoring of treatment outcomes over time. This study aims to juxtapose the effectiveness of combined orthodontic correction and orthognathic surgery against orthodontic treatment alone in patients diagnosed with skeletal open bite. By doing so, it seeks to provide valuable insights into comparative treatment efficacy, potential long-term benefits, and guidance for future clinical practice in managing similar cases.

Statistical Analysis and Results

In this study, we performed all statistical analyses using SPSS software version 28.0, a robust tool specifically tailored for statistical computing and data analysis in the social sciences. To assess the significance of our findings, we adopted the chi-square test, which is particularly effective for examining variations in proportions among different groups. This method facilitated a comprehensive and rigorous comparison of categorical data, ensuring that our results accurately represent the underlying trends and relationships within the dataset.

RESULTS

This study encompasses a total of 20 patients, comprising both male and female participants, who presented with the primary complaint of difficulty in biting food, specifically involving their front teeth. These patients sought

replacement of their front teeth through orthognathic surgery accompanied by orthodontic correction. The demographic characteristics of the patients, including age and gender, are outlined in Table 1, while Graph 1 illustrates the distribution of patient demographics along with additional relevant details, revealing a composition of 8 male and 12 female patients. The patient cohort is divided into two distinct groups. Group 1 consists of 10 patients diagnosed with a skeletal open bite who opted for orthodontic treatment as the sole intervention. Conversely, Group 2 includes 10 patients suffering from a skeletal open bite who underwent a comprehensive treatment approach, involving both orthognathic surgery and orthodontic correction. To assess the efficacy of the treatments, we utilized Cone Beam Computed Tomography (CBCT) for three-dimensional reconstruction of both dental and skeletal structures. This advanced imaging technique allows for detailed examination of outcomes. Follow-up assessments were systematically scheduled at intervals of 6 months, 1 year, and 2 years post-operation for all patients, ensuring thorough monitoring of treatment outcomes over time. Table 2 presents the findings for Group 1 (n=10), where patients with a skeletal open bite received orthodontic correction. Their postoperative results were evaluated through CBCT analysis six months after treatment. To determine the significance of the observed changes, the Pearson Chi-Square test was utilised, facilitating a comprehensive evaluation of the relationships among categorical variables. Notably, no changes in facial aesthetics were reported in 3 patients during this follow-up period. Table 3 details the outcomes for Group 2 (n=10), where patients underwent a combination of orthognathic surgery and orthodontic correction. Their postoperative follow-up, also accessed via CBCT after six months, showed that no changes in facial aesthetics were observed in 1 patient. Table 4 revisits Group 1, focusing on postoperative evaluations at the one-year mark. Again, CBCT was employed to assess changes after orthodontic correction. Statistical analysis through the Pearson Chi-Square test revealed that 2 patients exhibited no change in facial aesthetics throughout this period. Table 5 illustrates the outcomes for Group 2 at the one-year follow-up. Postoperative evaluations indicated that no patients experienced changes in facial aesthetics, reinforcing the effectiveness of the combined treatment approach. Table 6 provides insights into Group 1 at the two-year follow-up stage. The statistical evaluations conducted through the Pearson Chi-Square test indicated that 1 patient demonstrated no changes in facial aesthetics after undergoing orthodontic correction. Table 7 discusses the results for Group 2 at the two-year check-up. Here, the analysis confirmed that no patients experienced changes in facial aesthetics after their combined treatment. Finally, Table 8 presents an estimation of the overall outcomes across all studied groups using one-way Analysis of Variance (ANOVA), allowing for a comparative analysis of treatment effects and patient outcomes across the different intervention strategies. This study thus aims to contribute valuable insights into the effectiveness of the treatment modalities applied for skeletal open bite correction.

Table 1: Age & gender based statistical description of contributing patients

Age Group (Yrs)	Male	Female	Total	P value
18-20	1	3	4	0.02
21-23	2	2	4	0.50
24-26	1	4	5	0.01*
27-29	3	2	5	0.60
29-30	1	1	2	0.40
Total	8	12	20	*Significant
*p<0.05 significant				

Graph 1: Patients demographic distribution and associated details

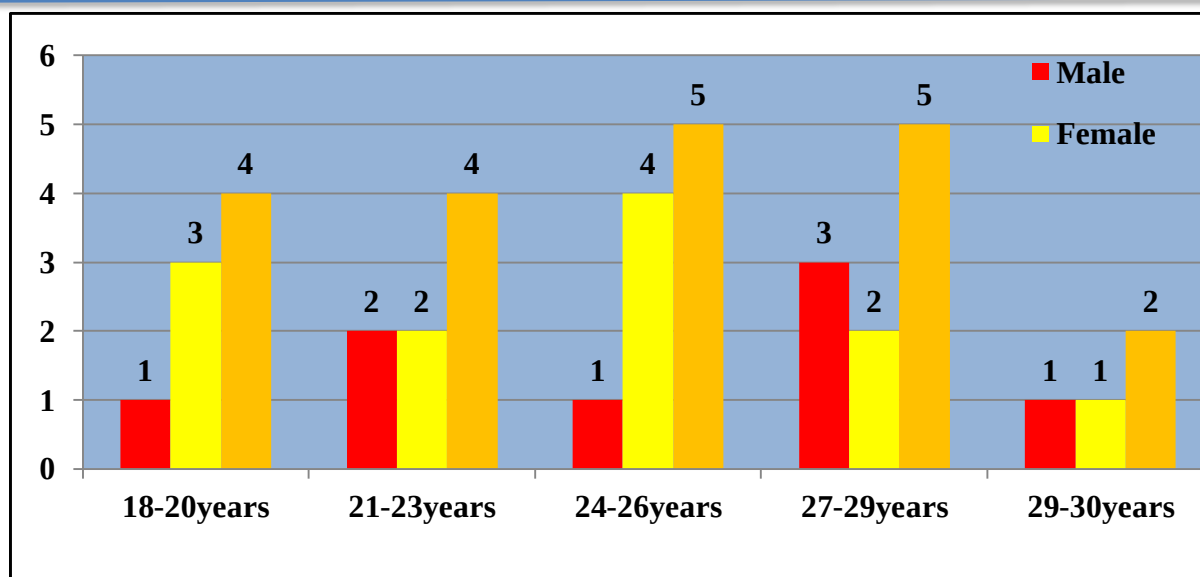


Table 2: Group 1 (n=10) Patients with a skeletal open bite underwent orthodontic correction, and their postoperative follow-up was evaluated using CBCT after six months. To assess the significance of the observed findings, a statistical analysis was conducted using the Pearson Chi-Square test. This method provided a thorough assessment of the relationships between categorical variables within the study group

Evaluating factors	N	Mean	Std. Dev.	Std. Error	95% CI	Pearson Chi-Square Value	df	p value
Stability	2	1.09	1.06	1.04	1.05	1.07	1.08	1.0
Overbite correction	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Functional outcomes	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Aesthetics	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Procedure and recovery	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Quality of life	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
No change in facial aesthetics	3	1.10	1.09	1.07	1.04	1.06	1.07	0.02*

*p<0.05 significant

Table 3: Group 2 (n=10) Patients with a skeletal open bite underwent combined orthognathic surgery and orthodontic correction, and their postoperative follow-up was evaluated using CBCT after six months. To assess the significance of the observed findings, a statistical analysis was conducted using the Pearson Chi-Square test. This method provided a thorough assessment of the relationships between categorical variables within the study group

Evaluating factors	N	Mean	Std. Dev.	Std. Error	95% CI	Pearson Chi-Square Value	df	p value
Stability	2	1.09	1.06	1.04	1.05	1.07	1.08	1.0
Overbite correction	2	1.09	1.06	1.04	1.05	1.07	1.08	1.0
Functional outcomes	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Aesthetics	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Procedure and recovery	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Quality of life	2	1.09	1.06	1.04	1.05	1.07	1.08	1.0

No change in facial aesthetics	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
*p<0.05 significant								

Table 4: Group 1 (n=10) Patients with a skeletal open bite underwent orthodontic correction, and their postoperative follow-up was evaluated using CBCT after one year. To assess the significance of the observed findings, a statistical analysis was conducted using the Pearson Chi-Square test. This method provided a thorough assessment of the relationships between categorical variables within the study group

Evaluating factors	N	Mean	Std. Dev.	Std. Error	95% CI	Pearson Chi-Square Value	df	p value
Stability	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Overbite correction	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Functional outcomes	2	1.09	1.06	1.04	1.05	1.07	1.08	1.0
Aesthetics	2	1.09	1.06	1.04	1.05	1.07	1.08	1.0
Procedure and recovery	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Quality of life	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
No change in fascial aesthetics	2	1.09	1.06	1.04	1.05	1.07	1.08	1.0
*p<0.05 significant								

Table 5: Group 2 (n=10) Patients with a skeletal open bite underwent combined orthognathic surgery and orthodontic correction, and their postoperative follow-up was evaluated using CBCT after one year. To assess the significance of the observed findings, a statistical analysis was conducted using the Pearson Chi-Square test. This method provided a thorough assessment of the relationships between categorical variables within the study group

Evaluating factors	N	Mean	Std. Dev.	Std. Error	95% CI	Pearson Chi-Square Value	df	p value
Stability	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Overbite correction	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Functional outcomes	3	1.10	1.09	1.07	1.04	1.06	1.07	0.02*
Aesthetics	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Procedure and recovery	2	1.09	1.06	1.04	1.05	1.07	1.08	1.0
Quality of life	2	1.09	1.06	1.04	1.05	1.07	1.08	1.0
No change in fascial aesthetics	0	-	-	-	-	-	-	-
*p<0.05 significant								

Table 6: Group 1 (n=10) Patients with a skeletal open bite underwent orthodontic correction, and their postoperative follow-up was evaluated using CBCT after two years. To assess the significance of the observed findings, a statistical analysis was conducted using the Pearson Chi-Square test. This method provided a thorough assessment of the relationships between categorical variables within the study group

Evaluating factors	N	Mean	Std. Dev.	Std. Error	95% CI	Pearson Chi-Square Value	df	p value
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Stability	2	1.09	1.06	1.04	1.05	1.07	1.08	1.0
Overbite correction	2	1.09	1.06	1.04	1.05	1.07	1.08	1.0
Functional outcomes	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Aesthetics	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Procedure and recovery	2	1.09	1.06	1.04	1.05	1.07	1.08	1.0
Quality of life	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
No change in fascial aesthetics	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
*p<0.05 significant								

Table 7: Group 2 (n=10) Patients with a skeletal open bite underwent combined orthognathic surgery and orthodontic correction, and their postoperative follow-up was evaluated using CBCT after two years. To assess the significance of the observed findings, a statistical analysis was conducted using the Pearson Chi-Square test. This method provided a thorough assessment of the relationships between categorical variables within the study group

Evaluating factors	N	Mean	Std. Dev.	Std. Error	95% CI	Pearson Chi-Square Value	df	p value
Stability	3	1.10	1.09	1.07	1.04	1.06	1.07	0.02*
Overbite correction	2	1.09	1.06	1.04	1.05	1.07	1.08	1.0
Functional outcomes	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Aesthetics	2	1.09	1.06	1.04	1.05	1.07	1.08	1.0
Procedure and recovery	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
Quality of life	1	1.07	1.02	1.03	1.01	1.03	1.09	0.01*
No change in fascial aesthetics	0	-	-	-	-	-	-	-
*p<0.05 significant								

Table 8: Estimation amongst all studied groups using one-way ANOVA

Variables	Degree of Freedom	Sum of Squares Σ	Mean Sum of Squares $m\Sigma$	F	Level of Sig. (p)
Between Groups	4	2.458	2.314	1.4	0.01*
Within Groups	20	4.214	2.213		—
Cumulative	19.09	12.401	*p<0.05 significant		

DISCUSSION

Matsumoto et al reviewed in their study that a skeletal open bite, frequently referred to as Long Face

Syndrome, is a complex jaw growth disorder characterised by abnormal vertical growth patterns of the jaw structures. This condition results in a notable gap between the anterior (front) teeth, while the

posterior (back) teeth usually maintain proper alignment during occlusion. The misalignment not only affects dental aesthetics but can also present a variety of functional challenges. These include difficulties with biting and chewing, speech issues such as lisping, and an elongated appearance of the lower face. Such challenges can significantly impact an individual's self-esteem and social interactions, emphasising the critical importance of early diagnosis and intervention for optimal outcomes.^{14,15} Pisani L et al included in their study that the development of a skeletal open bite primarily stems from structural anomalies related to jaw positioning, rather than being a mere consequence of dental habits. However, certain environmental factors can exacerbate the condition. For instance, prolonged thumb sucking or pacifier use during childhood, along with habitual mouth breathing, can aggravate the underlying structural issues. This interconnectedness of genetic and environmental influences highlights the necessity for a comprehensive management strategy that addresses both aspects effectively.^{16,17} González Espinosa D et al showed in their study that treatment of skeletal open bite typically involves a multidisciplinary approach. This may include various orthodontic interventions and, for more severe cases, surgical correction to achieve optimal functional and aesthetic outcomes. It is also vital to acknowledge the potential for relapse after treatment, necessitating ongoing follow-up care to monitor the long-term stability of results and ensure sustained improvement.¹⁸ Kwon TG et al included in their study that diagnosis of a skeletal open bite involves a thorough clinical examination, beginning with a detailed assessment of the gap between the anterior teeth. This is often supplemented by radiographic analysis, which uncovers underlying jaw discrepancies and structural irregularities. Evaluating an increased lower facial height and the abnormal vertical positioning of the maxilla (upper jaw) are crucial components of this diagnostic process. These comprehensive evaluations provide essential insights into growth patterns and deviations from typical occlusal relationships, which are fundamental in shaping the subsequent treatment approach.¹⁹ Waxler R et al reviewed in their study that when planning treatment, orthodontists consider several critical factors, including the patient's growth stage, the severity of the malocclusion, and the existence of any accompanying dental or skeletal issues. A range of treatment modalities is available, from non-surgical orthodontic options such as traditional braces or clear aligners designed to gradually shift the teeth into proper alignment to more invasive surgical-orthodontic approaches that are often employed in adult patients facing significant skeletal discrepancies. Orthognathic correction represents a highly specialised treatment approach that intricately

combines surgical intervention with orthodontic therapy to address various jaw alignment issues. The primary objective of this multifaceted treatment is to realign the jaws, thereby not only achieving a functional bite but also enhancing facial symmetry and aesthetics.^{20,21} Garnett BS et al included in their study that the process typically involves a series of complex surgical procedures. One common technique is repositioning the maxilla (upper jaw) upward and forward, while also advancing the mandible (lower jaw). This coordinated adjustment effectively closes any anterior gaps between the upper and lower teeth, creating a more harmonious occlusion. Importantly, successful orthognathic treatment often necessitates orthodontic preparation before surgery. This preparatory phase aims to align the teeth properly, which lays a solid foundation for accurate jaw realignment during surgery.^{22,23} Solano-Hernández B et al reviewed in their study that post-surgical care is meticulous and includes a precise finishing phase that focuses on fine-tuning the bite and optimising the aesthetic outcomes. This involves adjustments to ensure that not only are the functional needs addressed, but the final result is visually appealing, contributing to the patient's overall confidence and well-being.²⁴ Choi YJ et al showed in their study that in recent years, advancements in surgical techniques, particularly the introduction of innovative "surgery-first" methodologies, have revolutionised the field of orthognathic surgery. These approaches facilitate shorter treatment timelines and aim for faster recovery, allowing patients to experience significant improvements in both bite functionality and facial aesthetics much earlier in their treatment journey. By leveraging these contemporary advancements, practitioners can provide comprehensive and personalised care that adeptly addresses the complex nature of skeletal open bites. Ultimately, this holistic approach not only aims to correct functional deficiencies but also enhances the patient's overall quality of life.²⁵

CONCLUSION

In this study, the authors conducted a thorough clinical analysis assessing the effectiveness of combined orthodontic correction and orthognathic surgery compared to orthodontic treatment alone in patients with a diagnosed skeletal open bite. The findings revealed and concluded that the combined methodology of orthognathic surgery alongside orthodontic treatment significantly surpasses traditional approaches in delivering optimal results, both in terms of functional performance and aesthetic appeal. This comprehensive evaluation of treatment effectiveness is fundamentally personalised, as it hinges on a thorough analysis of each patient's diagnostic data. Crucially, it takes into account their

unique objectives, whether they place a higher emphasis on functional enhancements such as improved bite and overall oral health, or on aesthetic aspirations, such as facial symmetry and dental alignment. Additionally, the process also considers the patient's readiness to weigh the potential risks and rewards associated with the various treatment options available, ensuring a tailored approach that addresses both their needs and desires. This underscores the importance of a multidisciplinary team approach that includes both orthodontists and oral and maxillofacial surgeons. Collaborating closely, these specialists ensure comprehensive diagnosis and meticulous treatment planning, ultimately enhancing patient care and outcomes.

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