Original Article

CLINICIANS' PERSPECTIVES ON THE SURGERY-FIRST APPROACH IN ORTHOGNATHIC TREATMENT: A QUALITATIVE STUDY

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Abstract

Background: The surgery-first approach (SFA) is increasingly used in orthognathic treatment to reduce total treatment time and improve early facial aesthetics. However, its acceptance among clinicians varies, and limited research explores professional perspectives on its practical challenges and clinical reasoning.

Aim: To explore clinicians' perspectives on the surgery-first approach in orthognathic treatment, focusing on perceived advantages, limitations, and factors influencing adoption.

Methods: A qualitative, phenomenological design was used. Fifteen maxillofacial surgeons were selected through purposive sampling. Data were collected using a written semi-structured questionnaire without audio recording. Responses were analyzed using thematic analysis to identify common viewpoints, planning patterns, and adoption barriers.

Results: Clinicians perceived surgery-first as beneficial for faster visible change, improved patient motivation, and shorter total treatment time. Case selection was considered crucial, and interdisciplinary coordination was viewed as essential. Digital planning tools increased confidence in execution. Barriers included lack of training exposure, concerns about postsurgical occlusion, and limited infrastructure in smaller centers.

Conclusion: Clinicians support surgery-first as a selective strategy rather than a full replacement for the conventional sequence. Wider adoption requires structured training, digital planning support, and collaborative planning models.

Key words- Surgery-first approach; Orthognathic treatment; Clinician perception; Qualitative study; Case selection; Interdisciplinary planning.

Received date: 19/07/2025
Accepted date: 1/09/2025
Published date: 03/11/2025

INTRODUCTION

Orthognathic surgery is performed to correct dentofacial deformities that affect chewing, speech, facial balance, and quality of life. Traditionally, treatment follows a "orthodontics-first" approach, in which pre-surgical orthodontic decompensation is carried out before the jaw surgery. This conventional method

can take many months, and sometimes even over a year, before the patient reaches the stage of surgery. During this waiting period, some patients experience greater aesthetic dissatisfaction and functional problems because their appearance may worsen temporarily when dental compensations are removed [1]. To address these limitations, a Surgery-First Approach (SFA) was introduced as an alternative treatment model.

The surgery-first approach reverses the treatment sequence by performing orthognathic jaw correction before orthodontic alignment. After skeletal correction, orthodontics is done mainly for finishing and detailing. This approach reduces the psychosocial burden associated with long pre-surgical orthodontics, and many patients report faster visible improvement in facial appearance, which increases motivation for treatment completion [2]. The method is also attractive to clinicians for its potential to shorten the total treatment time.

The idea behind SFA is supported by the concept of the regional acceleratory phenomenon (RAP). After surgery, bone metabolism becomes faster for a limited period, which may allow tooth movement to occur more quickly during the post-surgical orthodontic phase [3]. Studies have shown that this biological response may help reduce overall treatment time without compromising final outcomes [4].

However, the surgery-first method is not only a technical shift but also a change in how the treatment team plans and collaborates. Unlike conventional sequencing where orthodontists prepare the occlusion before surgery, SFA demands more precise planning, early identification of skeletal discrepancies, and clear communication between the orthodontist and the oral and maxillofacial surgeon [5]. For this reason, clinician experience, comfort level, and training play a major role in case selection and successful execution.

Although existing studies describe the clinical outcomes of the surgery-first method, there is comparatively less focus on clinician perspectives, particularly on how orthodontists and surgeons feel about workflow changes, case selection, and practical barriers. Understanding these viewpoints is important because adoption of SFA depends not only on evidence of shorter treatment time but also on whether clinicians feel confident and prepared to implement it in various clinical settings.

Clinicians may express concerns about stability, relapse, and occlusal finishing, especially in complex skeletal patterns [6]. Some may also worry about increased

need for digital tools, presurgical simulation, or multidisciplinary planning sessions. On the other hand, many surgeons and orthodontists who routinely practice SFA report that the approach improves patient satisfaction and reduces dropout rates by offering earlier facial correction [7]. The difference in attitudes suggests that professional experience, training environment, and exposure to SFA influence how comfortably clinicians integrate it into practice.

Because treatment success in SFA highly depends on interdisciplinary cooperation, exploring clinician perspectives provides meaningful insight into why some teams adopt SFA more confidently than others. A qualitative approach allows deeper understanding of subjective factors such as clinical judgment, comfort with surgical timing, risk perception, workflow change, and patient communication strategies. These aspects are often not captured in quantitative studies, which focus more on numeric outcomes like millimeter correction or months saved.

Therefore, this study seeks to explore clinicians' perspectives on the surgery-first approach in orthognathic treatment. By understanding the experiences, perceived advantages, concerns, and clinical reasoning behind case selection, the study aims to highlight real-world considerations that shape treatment planning. These insights may help clarify when and why clinicians choose the surgery-first method, the barriers that limit its wider use, and the professional skills required for safe integration into practice.

MATERIALS AND METHODS

Study Design: This study was designed as a qualitative, exploratory study to understand clinicians' perspectives on the surgery-first approach in orthognathic treatment. A phenomenological design was adopted to capture lived professional experiences, decision-making patterns, and perceived benefits or challenges. A qualitative approach was selected because it allowed in-depth discussion of clinical reasoning beyond numerical outcomes, which are usually reported in quantitative literature.

Study Setting: The study was conducted among orthodontists and oral and maxillofacial surgeons working in hospital-based, private clinic-based, and academic teaching environments. The setting included both government and private institutions to capture variation in training exposure, patient profiles, and

infrastructure.

Participants and Sample Size: The study population consisted of practicing oral and maxillofacial surgeons who were involved in orthognathic treatment planning. A purposive sampling technique was used to recruit participants who had prior experience or knowledge of the surgery-first approach. Saturation was reached after 12 interviews, but 15 participants were included to ensure thematic stability and professional diversity. This sample size is consistent with recommendations for phenomenological qualitative inquiry, where 8–20 participants are generally considered adequate for rich data.

Inclusion Criteria

- Registered oral and maxillofacial surgeons.
- Minimum of 3 years of clinical experience in orthognathic treatment.
- Familiarity or exposure to surgery-first sequencing (either direct clinical use or case planning involvement).

Exclusion Criteria

- Clinicians with no exposure to orthognathic cases.
- Clinicians currently in training or internship without independent clinical responsibility.

Data Collection Method

Semi-structured, in-depth interviews were used to collect data. An interview guide containing open-ended questions and prompts was prepared in advance, focusing on case selection, workflow differences, confidence level, planning strategies, and perceived advantages or limitations. Interviews were conducted in-person, depending on clinician convenience. Field notes were taken during and immediately after each interview to capture non-verbal impressions and contextual information.

Data Analysis

Data were analyzed using thematic analysis. The analysis followed a stepwise approach that followed familiarization with transcripts, identification of meaningful units, development of initial codes, grouping of similar codes into themes, reviewing and refining themes and final definition and naming of themes Coding was performed manually by the primary researcher, and a second reviewer independently verified a subset of transcripts to check consistency. Differences were resolved through discussion to improve credibility.

RESULTS

The study was conducted on 15 oral and maxillofacial surgeons to assess their perception on surgery first approach in orthognathic surgery.

Most clinicians preferred case-based selection rather than routine use of SFA, and those familiar with 3D planning reported greater comfort in adopting the approach as observed in Table 1.

Table 1: Clinician Characteristics

Variable	Category	n (%)
Years of Experience	3–5 years	3 (20.0%)
	6–10 years	6 (40.0%)
	>10 years	6 (40.0%)
Number of SFA cases handled	1–5 cases	5 (33.3%)
	6–15 cases	6 (40.0%)
	>15 cases	4 (26.7%)
Preferred protocol	Depends on case selection	10 (66.7%)
	Conventional	3 (20.0%)
	Surgery-first	2 (13.3%)
Digital planning used	3D simulation / VSP	9 (60.0%)
	2D only	4 (26.7%)
	None	2 (13.3%)

Clinicians viewed SFA positively for aesthetics and time efficiency but emphasised careful case selection, digital planning skills, and strong interdisciplinary coordination as critical to predictable outcomes as seen in Table 2.

Table 2: Thematic Summary of Clinician Perspectives

Major Theme	Sample Meaning Units	Overall Finding
Perceived Benefits	Early facial improvement, faster visible outcome, improved motivation, smoother social acceptance	SFA improves *patient satisfaction* and reduces psychological burden of long pre-surgical orthodontics
Clinical Advantages	Shorter total treatment time, RAP-based faster tooth movement, better compliance after surgery	Seen as *efficient* when case selection is appropriate
Challenges / Barriers	Difficult case planning, fear of unstable occlusion early, steep learning curve, need for digital tools	Adoption limited mainly by *technical confidence and planning accuracy*
Case Selection Importance	Mild–moderate dental compensation, stable surgical splinting, cooperative patients	Wrong indication = higher risk of relapse
Interdisciplinary Need	Strong surgeon–orthodontist coordination	SFA success depends more on *teamwork* than technique

Training / Resource Gap	Limited hands-on exposure, uneven access to digital workflow	Wider adoption needs *training + infrastructure*

Surgery-first was perceived as a clinically useful method with high patient satisfaction and reduced total treatment duration. However, most clinicians felt it should not replace conventional sequencing but be used selectively. Confidence and adoption increased when clinicians had access to 3D planning tools and prior experience.

DISCUSSION

This qualitative study explored the perspectives of clinicians on the surgery-first approach in orthognathic treatment, with a focus on practical experience, case selection reasoning, planning habits, and perceived barriers. The findings suggest that clinicians view surgery-first as an approach with clear advantages in selected situations, especially when rapid facial improvement and treatment-time reduction are desired. However, its adoption is not universal, mainly due to concerns related to planning complexity, postoperative occlusal control, and variation in training exposure.

A major theme that emerged was patient satisfaction. Many clinicians reported that performing the surgery earlier led to faster visible changes in facial appearance. This early improvement enhanced patient confidence and increased treatment motivation. The psychological relief of immediate aesthetic change is one of the strongest reasons some clinicians favour this approach. This observation aligns with research showing that patients often experience higher satisfaction with earlier correction of visible deformities and do not have to endure the socially uncomfortable "decompensation phase" seen before conventional surgery [8]. By reducing the time patients appear worse before improvement, the surgery-first sequence fulfils a significant psychosocial need.

Another recurrent observation was the reduction in total treatment duration. Clinicians noted that the time between treatment start and final debonding was shorter when compared with traditional sequencing. This was consistent with reports that surgery-first can shorten total treatment by making better use of the regional acceleratory phenomenon after surgery [9]. However, although clinicians agreed on the time advantage, they also emphasized that it depends on careful coordination and postoperative orthodontic follow-up.

The study also highlighted the importance of case selection, which clinicians described as a key determinant of success. According to them, favourable cases include those with stable occlusal stops, minimal dental compensation, and good compliance. More complex skeletal discrepancies or unpredictable occlusal relationships were seen as less appropriate for early surgery. This finding corresponds with literature that stresses the need for controlled intraoperative positioning and a stable splint to avoid postsurgical instability in borderline cases [10]. Several clinicians expressed that without accurate presurgical prediction of tooth movement, final occlusion may be harder to refine postoperatively.

Interdisciplinary communication was another strong theme. The surgery-first sequence places more responsibility on synchronized planning between the orthodontist and surgeon from the earliest stage, as orthodontic preparation is minimal. This collaborative demand was reported as higher than in conventional workflows, where orthodontics largely precedes the surgical step. Strong teamwork was viewed as essential to avoid occlusal ambiguity and intraoperative surprises. This supports previous findings that the surgery-first protocol succeeds best in centers where orthodontists and surgeons plan cases jointly and share digital planning tools [11].

Despite the benefits, clinicians also described several barriers to wider adoption. One of the most common concerns was planning uncertainty, especially in the absence of accurate virtual simulation. When digital splints and planning systems are not available, clinicians may worry about the predictability of postoperative occlusion. This reflects international literature showing that digital tools significantly increase clinician confidence in the surgery-first sequence by improving presurgical visualization and predictability [12]. In smaller clinics or resource-limited institutions, limited access to such technology became a practical restriction.

In addition to technology, training exposure was emphasized. Many clinicians shared that their postgraduate education focused more heavily on the conventional orthodontics-first model, and formal exposure to surgery-first workflow was limited. Without mentorship or structured case-based training, learning the approach independently was seen as challenging. This is consistent with recent academic reports that call for more inclusion of surgery-first modules in orthognathic surgery training programs [13]. Surgeons and orthodontists who

had handled more cases felt more confident, suggesting that progressive experience is an important factor in adoption.

Interestingly, the responses also showed that clinicians do not view surgery-first as a replacement for the conventional approach. Instead, they consider it an adjunct strategy — appropriate for specific case profiles but not ideal for all patients. In this sense, their approach was selective and pragmatic. They argued that stable long-term outcomes are possible, but only when indications are correct, instructions are followed, and postoperative orthodontic finishing is well controlled. This echoes findings from multicenter analyses showing that postoperative stability in surgery-first cases is comparable to conventional sequencing when planning is well executed [14].

Another theme that emerged was risk perception. A few clinicians felt that, while surgery-first can shorten the timeline, it may create pressure on orthodontic finishing because fixed appliances are applied to an already operated jaw. They reported that finishing errors may become harder to correct if the surgical plan does not leave sufficient margin for later detailing. This demonstrates that the technique shifts the orthodontic burden from "preparation" to "polishing," which may require advanced biomechanics familiarity

Overall, the findings reflect a balanced clinical attitude: surgery-first is viewed as an effective and efficient method when the right case is selected and handled with well-coordinated planning. However, clinicians still rely on conventional sequencing for complex malocclusions, unfamiliar anatomical patterns, or limited technological support.

CONCLUSION

This qualitative study highlights that adoption of surgery-first is less about clinical controversy and more about confidence, resources, and structured planning habits. The approach is accepted conceptually, but implementation depends on readiness factors such as diagnostic clarity, access to digital simulation, and interdisciplinary alignment. These real-world insights provide a clearer understanding of why the surgery-first technique is still selectively used, even though the evidence supports its success when appropriately indicated.

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