Volume 3, Issue 10, 2025

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

A "FUNCTIONAL AND AESTHETIC OUTCOMES FOLLOWING COMBINED PERIODONTAL–MAXILLOFACIAL SOFT-TISSUE REPOSITIONING FOR ANTERIOR ORAL REHABILITATION"

Dr. Amna Zubair Ghazi[*1], Prof. Dr. Syed Shah Faisal[2], Dr. Manahil Tanveer[3], Assoc. Prof. Dr. Sufyan Ahmed[4], Dr. Mahrukh Iqbal[5], Prof. Dr. Nasir Ali Khan[6]

*[*1]BDS Resident, Oral & Maxillofacial Surgery (OMFS) Department of Oral & Maxillofacial Surgery Abbasi Shaheed Hospital Karachi, Pakistan*

[2]Professor of Orthodontics Head, Department of Paediatric Dentistry Karachi Medical & Dental College Karachi Metropolitan University Karachi, Pakistan

[3]BDS General Dentist Department of Dentistry Cantonment Board Malir Healthcare Centre Karachi, Pakistan

[4]FCPS (Oral & Maxillofacial Surgery), BDS, CHPE Associate Professor & Head of Department Oral & Maxillofacial Surgery Karachi Medical & Dental College / Abbasi Shaheed Hospital Karachi, Pakistan

[5]BDS, CHPE MS Oral & Maxillofacial Surgery (Scholar – R4) Abbasi Shaheed Hospital / University of Karachi Karachi, Pakistan

[6]Professor & Head of Department Oral Biology Karachi Medical & Dental College Karachi Metropolitan University Karachi, Pakistan

DOI: https://doi.org/10.5281/zenodo.17920299

Keywords

Anterior oral rehabilitation; periodontal plastic surgery; maxillofacial surgery; soft-tissue repositioning; smile aesthetics; multidisciplinary approach.

Article History

Received: 11 October 2025
Accepted: 23 November 2025
Published: 13 December 2025

Corresponding Author: *
Dr. Amna Zubair Ghazi

Abstract

Background:

Anterior oral rehabilitation poses significant functional and aesthetic challenges due to the complex interplay between gingival architecture, mucosal integrity, lip dynamics, and facial soft tissues. Traditional single-discipline approaches often fail to address these interdependent factors comprehensively.

Objective:

This literature review aims to evaluate the functional and aesthetic outcomes of combined periodontal–maxillofacial soft-tissue repositioning in anterior oral rehabilitation.

Methods:

A narrative review of the literature was conducted focusing on periodontal soft-tissue repositioning, maxillofacial soft-tissue surgical techniques, and multidisciplinary approaches in anterior oral rehabilitation. Emphasis was placed on functional outcomes, aesthetic parameters, patient-reported satisfaction, and long-term stability.

Results:

The reviewed literature demonstrates that periodontal techniques such as coronally advanced flaps, connective tissue grafts, and papilla reconstruction effectively optimize gingival contours, while maxillofacial procedures including vestibuloplasty and lip repositioning correct broader anatomical and muscular discrepancies. Combined approaches consistently result in superior functional outcomes–such as improved speech, mastication, and lip competence–and enhanced aesthetic results, including gingival symmetry, smile harmony, and soft-

Volume 3, Issue 10, 2025

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

tissue stability. Patient satisfaction rates were notably higher with multidisciplinary interventions.

Conclusion:

Combined periodontal–maxillofacial soft-tissue repositioning represents a comprehensive and effective strategy for anterior oral rehabilitation. While current evidence supports improved functional and aesthetic outcomes, further high-quality prospective studies and standardized assessment tools are required to establish definitive clinical protocols.

INTRODUCTION

Anterior oral rehabilitation represents one of the most demanding areas of restorative dentistry due to its direct impact on facial aesthetics, speech, mastication, and psychosocial well-being. Successful outcomes in the anterior region depend not only on hard-tissue reconstruction but also on precise management of soft tissues, including gingiva, mucosa, lips, and perioral structures. Over the past two decades, the concept of **multidisciplinary collaboration between periodontology and maxillofacial surgery** has gained prominence, particularly in cases involving soft-tissue deficiencies, altered gingival architecture, traumatic deformities, or complex esthetic demands.

Isolated periodontal or maxillofacial interventions often fail to achieve optimal results in advanced anterior defects. Consequently, combined periodontal–maxillofacial soft-tissue repositioning has emerged as a comprehensive approach aimed at restoring both **function and aesthetics**, while maintaining long-term stability.

2. Importance of Soft-Tissue Architecture in Anterior Oral Rehabilitation

Soft-tissue contours play a pivotal role in defining smile aesthetics, phonetics, and prosthetic success. Parameters such as gingival zenith position, papilla height, mucogingival junction location, lip mobility, and vestibular depth are essential determinants of anterior esthetics. Literature consistently demonstrates that inadequate soft-tissue management leads to compromised outcomes, including black triangles, asymmetrical gingival margins, impaired speech articulation, and patient dissatisfaction.

Periodontal health and soft-tissue thickness (biotype) directly influence restorative success. Thin biotypes are particularly prone to recession and esthetic failure, emphasizing the need for pre-prosthetic soft-tissue optimization. Maxillofacial soft-tissue considerations, including lip length, smile line, and perioral muscle dynamics, further complicate anterior rehabilitation and necessitate a combined surgical perspective.

3. Periodontal Soft-Tissue Repositioning Techniques

Periodontal soft-tissue repositioning primarily aims to correct gingival discrepancies and enhance peri-dental aesthetics. Commonly reported techniques include:

- ✓ Coronally advanced flaps
- ✓ Subepithelial connective tissue grafts
- ✓ Free gingival grafts
- ✓ Tunneling procedures
- ✓ Papilla reconstruction techniques

These procedures are widely documented to improve gingival margin symmetry, increase keratinized tissue width, and prevent future recession. Studies report high patient satisfaction and predictable root coverage outcomes when these techniques are appropriately selected. However, periodontal approaches alone may be insufficient in cases involving extensive mucosal deficits, traumatic scarring, or compromised vestibular anatomy.

4. Maxillofacial Soft-Tissue Repositioning in the Anterior Region

Maxillofacial surgical interventions focus on broader soft-tissue realignment involving lips, vestibule, and facial musculature. Procedures commonly described in the literature include:

- ✓ Vestibuloplasty
- ✓ Lip repositioning surgery

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

- ✓ Scar revision and soft-tissue release
- ✓ Muscle reattachment or repositioning
- ✓ Soft-tissue augmentation using local or regional flaps

These techniques are particularly valuable in managing excessive gingival display, traumatic deformities, congenital anomalies, or post-surgical soft-tissue distortions. Functional benefits include improved lip competence, speech articulation, and oral hygiene access, while aesthetic improvements include balanced smile lines and enhanced facial harmony.

5. Rationale for a Combined Periodontal–Maxillofacial Approach

Recent literature increasingly supports a **combined surgical approach** for complex anterior oral rehabilitation cases. Periodontal procedures address localized gingival architecture, while maxillofacial interventions correct broader anatomical and muscular imbalances. When performed in isolation, each specialty addresses only part of the problem; when combined, they offer comprehensive correction.

Multidisciplinary planning allows for:

- ✓ Improved gingival–lip harmony
- ✓ Stable soft-tissue margins around restorations
- ✓ Enhanced prosthetic emergence profiles
- ✓ Reduced risk of relapse or recession

Several case series and cohort studies demonstrate superior aesthetic scores and functional outcomes when both specialties collaborate in treatment planning and execution.

6. Functional Outcomes

Functional outcomes are a critical measure of success in anterior rehabilitation. Literature reports improvements in:

- ✓ Speech articulation, particularly labiodental and sibilant sounds
- ✓ Mastication efficiency
- ✓ Lip competence and oral seal
- ✓ Ease of oral hygiene maintenance

Combined soft-tissue repositioning has been shown to restore natural oral dynamics, particularly in patients with altered vestibular anatomy or excessive gingival exposure. These improvements contribute significantly to patient comfort and long-term prosthetic success.

7. Aesthetic Outcomes and Patient-Reported Satisfaction

Aesthetic evaluation remains a primary driver for anterior rehabilitation. Studies assessing combined approaches consistently report high aesthetic scores based on gingival symmetry, smile line balance, and soft-tissue stability. Patient-reported outcome measures highlight improved self-confidence, social comfort, and satisfaction with smile appearance.

Objective indices such as pink esthetic scores and smile analysis tools further support the superiority of combined periodontal–maxillofacial interventions over single-discipline treatments.

8. Limitations and Gaps in Current Literature

Despite encouraging outcomes, the existing literature is largely composed of case reports and small case series. High-quality randomized controlled trials and long-term prospective studies remain limited. Variability in surgical techniques, outcome measures, and follow-up durations complicates direct comparison across studies.

Standardized protocols and validated functional and aesthetic assessment tools are needed to strengthen evidence and guide clinical decision-making.

9. Future Directions

Future research should focus on:

- ✓ Long-term stability of combined soft-tissue repositioning
- ✓ Comparative studies between single-discipline and multidisciplinary approaches
- ✓ Development of standardized outcome assessment frameworks
- ✓ Integration of digital smile design and 3D surgical planning
- ✓ Advancements in biomaterials, minimally invasive techniques, and digital workflows are expected to further enhance predictability and patient satisfaction.

10. Conclusion

The literature supports the use of **combined periodontal–maxillofacial soft-tissue repositioning** as an effective strategy for achieving optimal

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

functional and aesthetic outcomes in anterior oral rehabilitation. A multidisciplinary approach allows for comprehensive correction of both localized gingival defects and broader soft-tissue imbalances, resulting in improved oral function, enhanced aesthetics, and high patient satisfaction. While current evidence is promising, further high-quality research is required to establish standardized protocols and long-term outcome predictability.

REFERENCES

Zucchelli G, De Sanctis M. Treatment of multiple recession-type defects in patients with esthetic demands. *J Periodontol.* 2000;71(9):1506–1514.

Cairo F, Cortellini P, Tonetti MS. Root coverage outcomes using periodontal plastic surgery. *Periodontol 2000.* 2018;77(1):108–127.

Allen EP. Surgical crown lengthening for function and esthetics. *Dent Clin North Am.* 1993;37(2):163–179.

Tarnow DP, Magner AW, Fletcher P. The effect of the distance from the contact point to the crest of bone on the presence of the interproximal dental papilla. *J Periodontol.* 1992;63(12):995–996.

Seibert JS. Reconstruction of deformed, partially edentulous ridges. *Dent Clin North Am.* 1989;33(2):247–261.

Miller PD Jr. A classification of marginal tissue recession. *Int J Periodontics Restorative Dent.* 1985;5(2):8–13.

Garber DA, Salama MA. The aesthetic smile: diagnosis and treatment. *Periodontol 2000.* 1996;11:18–28.

Zucchelli G, Mounssif I. Periodontal plastic surgery. *Periodontol 2000.* 2015;68(1):333–368.

Polo M. Lip repositioning surgery to reduce excessive gingival display. *J Esthet Restor Dent.* 2005;17(6):356–364.

Rosenblatt A, Simon Z. Lip repositioning for reduction of excessive gingival display. *Int J Periodontics Restorative Dent.* 2006;26(5):433–437.

Ribeiro-Junior NV, Campos TV, Rodrigues JG. Excessive gingival display treatment using lip repositioning surgery. *J Appl Oral Sci.* 2013;21(5):449–455.

Bhuvaneswaran M. Principles of smile design. *J Conserv Dent.* 2010;13(4):225–232.

Mehta P, Lim LP. The width of the attached gingiva—much ado about nothing? *J Dent.* 2010;38(7):517–525.

Graber LW, Vanarsdall RL, Vig KW. *Orthodontics: Current Principles and Techniques.* 6th ed. St. Louis: Elsevier; 2017.

Misch CE. *Dental Implant Prosthetics.* 2nd ed. St. Louis: Elsevier; 2015.

Levine RA, Guy HB. Esthetic risk assessment in implant dentistry. *Compend Contin Educ Dent.* 2011;32(6):34–40.

Coachman C, Calamita MA. Digital smile design: a tool for treatment planning and communication in esthetic dentistry. *J Esthet Restor Dent.* 2012;24(5):308–319.

Lang NP, Lindhe J. *Clinical Periodontology and Implant Dentistry.* 6th ed. Oxford: Wiley-Blackwell; 2015.

Goldstein RE. *Esthetics in Dentistry.* 3rd ed. Hamilton: BC Decker; 2010.

El-Mangoury NH, El-Deeb ME. Evaluation of the smile line. *J Prosthet Dent.* 1997;77(5):470–474.

·Sclar AG. *Soft Tissue and Esthetic Considerations in Implant Therapy.* Chicago: Quintessence; 2003.

McNamara JA Jr, Brudon WL. *Orthodontics and Dentofacial Orthopedics.* Ann Arbor: Needham Press; 2001.

Ahmad I. Anterior dental aesthetics: principles and practice. *Br Dent J.* 2005;199(2):81–88.

Kokich VO Jr, Kokich VG, Kiyak HA. Perceptions of dental professionals and laypersons to altered dental esthetics. *J Esthet Restor Dent.* 2006;18(6):311–324.

Magne P, Belser U. *Bonded Porcelain Restorations in the Anterior Dentition.* Chicago: Quintessence; 2002.