



Preventive Use of the Pedicled Buccal Fat Pad Flap in Minimally Invasive Zygomatic Implant Surgery: A Modification of the Parisi–Févola Protocol

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Abstract

Purpose: To describe a modification of the Parisi–Févola Protocol for minimally invasive zygomatic implant surgery through the incorporation of the pedicled buccal fat pad flap as a biological strategy to optimize peri-implant soft tissue management.

Materials and Methods: The proposed modification consists of harvesting and repositioning the pedicled buccal fat pad during the same surgical procedure performed for zygomatic implant placement. The flap is indicated in patients presenting with severe maxillary atrophy, reduced soft tissue thickness, buccally positioned implant emergence profiles, immediate loading protocols, or increased risk of postoperative soft tissue dehiscence.

Results: The incorporation of the buccal fat pad flap increases peri-implant soft tissue volume, reduces closure tension, enhances vascularity, protects implant emergence sites, and may reduce postoperative soft tissue complications.

Conclusion: The addition of the pedicled buccal fat pad flap represents a biologically based refinement of the Parisi–Févola Protocol, improving peri-implant soft tissue stability while preserving the minimally invasive philosophy of the surgical technique.

Keywords: Bichat Fat Pad; Buccal Fat Pad; Immediate Loading; Maxillary Atrophy; Oral Surgery; Soft Tissue Management; Zygomatic Implants.

Introduction

Treatment of patients with severe maxillary atrophy remains one of the greatest challenges in implant dentistry. Over the last decades, zygomatic implants have become a predictable alternative for rehabilitation of the severely resorbed maxilla while avoiding extensive grafting procedures [1]. The **Parisi–Févola Protocol** was developed to reduce surgical morbidity through meticulous three-dimensional planning, anatomically guided implant positioning, and minimally invasive intraoral access. The protocol emphasizes preservation of vascular supply, reduction of soft tissue trauma, and immediate prosthetic rehabilitation whenever clinically indicated. Although primary implant stability and bicortical anchorage are fundamental for treatment success, long-term outcomes also depend on the quality of the peri-implant soft tissues. Soft tissue deficiencies remain one of the major causes of implant exposure, mucosal dehiscence, chronic inflammation, and long-term maintenance difficulties. For this reason, the present article proposes incorporating the **pedicled buccal fat pad flap** into the Parisi–Févola Protocol as a preventive biological adjunct for selected clinical situations [2-5].

Biological Rationale

The buccal fat pad is a specialized encapsulated adipose structure located within the masticatory space. Because of its abundant vascularization and anatomical proximity to the posterior maxilla, it has become an established reconstructive option for oral defects. Its biological characteristics make it particularly attractive for zygomatic implant surgery [6-8].

- The pedicled flap provides:
- Excellent vascular supply.
- Autogenous tissue with minimal donor-site morbidity.
- Increased peri-implant mucosal thickness.
- Reduced tension during flap closure.
- Rapid spontaneous epithelialization.
- Mechanical protection of implant emergence profiles.
- Improved soft tissue quality surrounding the prosthetic components.

These biological properties may contribute to improved peri-implant tissue stability during the critical healing phase.

Surgical Application within the Parisi–Févola Protocol

The buccal fat pad can be harvested through the same posterior intraoral access already used for placement of zygomatic implants. No additional external incision is required. After implant placement and before definitive wound closure, the buccal fat pad is gently mobilized while preserving its vascular pedicle. The flap is advanced to cover the implant emergence areas and stabilized using resorbable sutures. This additional maneuver requires only a few extra minutes and does not substantially increase surgical morbidity [9-11] (Figures 1-7).



Figure 1: Image showing an unfavorable soft tissue biotype.



Figure 2: Flapless Parisi–Févola Protocol Approach Through A Minimal Vestibular Ridge Incision.

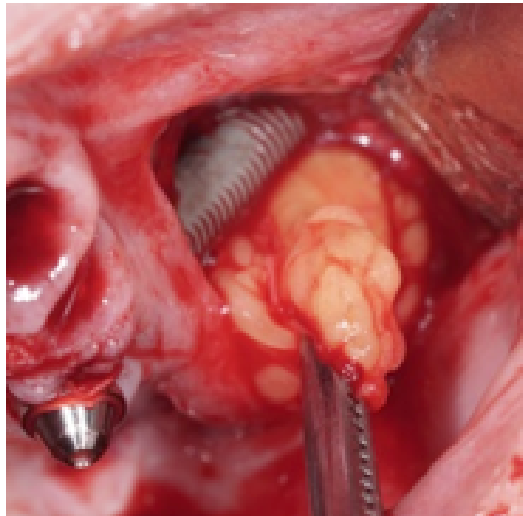


Figure 3: Pedicled buccal fat pad flap harvested through the same surgical approach used in the Parisi–Févola Protocol.

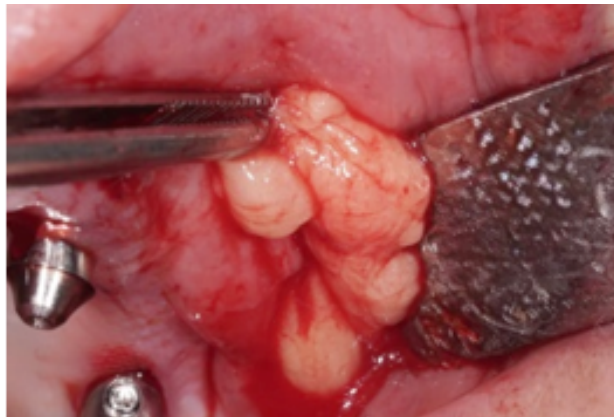


Figure 4: Blunt dissection and mobilization of the buccal fat pad extension.

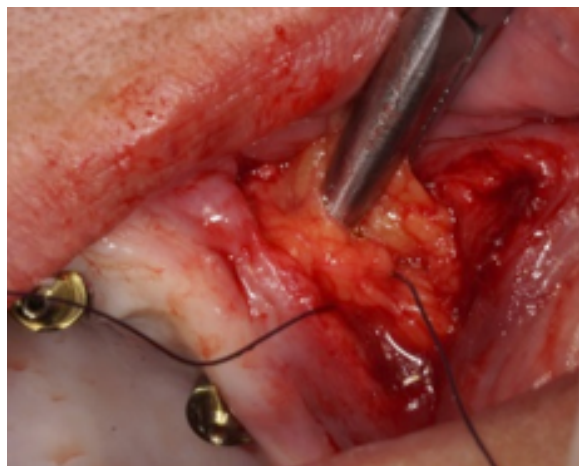
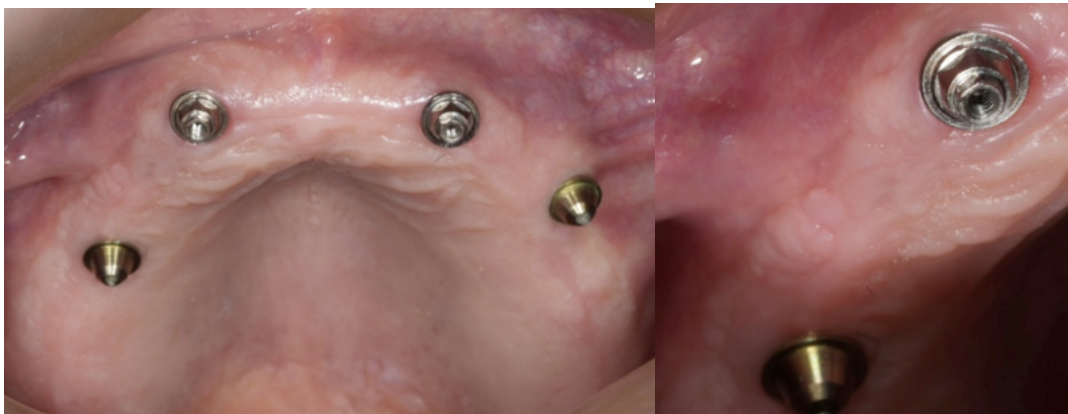


Figure 5: Pedicle Sutured To The Wound Margins.



Figures 6,7: Clinical appearance after 12 months of follow-up.

Clinical Indications

The authors recommend considering the technique in patients presenting with:

- Severe or extreme maxillary atrophy.
- Thin peri-implant soft tissues.
- Scarred mucosa after previous surgeries.
- Buccally positioned implant emergence.
- Immediate loading protocols.
- Patients at increased risk for wound dehiscence.
- Revision surgery.
- Previous implant exposure.

Clinical Advantages

From a biological perspective, incorporation of the pedicled buccal fat pad flap may provide several advantages:

- Improved quality of soft tissue closure [12-16].
- Increased peri-implant soft tissue thickness.
- Reduced incidence of implant exposure.
- Enhanced vascularization.
- Faster soft tissue maturation.
- Lower incidence of postoperative dehiscence.
- Improved long-term peri-implant maintenance.
- Reduced need for secondary soft tissue grafting.

Discussion

Soft tissue management has become increasingly recognized

as an essential determinant of long-term implant success. While most publications regarding zygomatic implants focus primarily on implant positioning, biomechanical stability, and prosthetic rehabilitation, relatively little attention has been devoted to biological optimization of peri-implant soft tissues. The incorporation of the pedicled buccal fat pad flap addresses this limitation by introducing a well-vascularized autogenous tissue into an area frequently characterized by reduced mucosal thickness and compromised vascularity. Unlike connective tissue grafts, the buccal fat pad provides abundant tissue volume with minimal donor-site morbidity and can be harvested through the same surgical access used during zygomatic implant placement [17-20]. Its preventive use aligns with the minimally invasive philosophy of the Parisi–Févola Protocol by reducing the likelihood of postoperative complications without increasing surgical complexity. Future prospective clinical studies should evaluate the long-term effects of this modification on implant survival, soft tissue stability, prosthetic maintenance, and patient-reported outcomes [21-24].

Conclusion

The incorporation of the pedicled buccal fat pad flap into the Parisi–Févola Protocol represents a biologically driven refinement of minimally invasive zygomatic implant surgery. By enhancing peri-implant soft tissue quality and improving biological protection of implant emergence sites, this modification has the potential to reduce postoperative complications and optimize long-term clinical outcomes. Further clinical investigations are warranted to validate these preliminary concepts.

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