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LETTER TO THE EDITOR

Letter to the Editor: "How Does the Buccal Fat Pad Age and How Can it Be Managed in Facelift Surgery? A Scoping Review of the Literature and Our Proposed Algorithm"

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Dear Editor,

We read with great interest the comprehensive scoping review by Bellity et al. on buccal fat pad (BFP) aging and its management during facelift surgery [1]. The Authors have provided a valuable synthesis of available literature and proposed a practical algorithm for surgical decision-making. The BFP serves multiple important functions: protective (for the parotid gland, duct, and neurovascular structures), aesthetic (contributing to youthful cheek fullness), and reconstructive (as a donor site for flaps or free adipose grafts). However, we would like to raise several important discussion points that warrant further consideration and may have significant implications for clinical practice.

The review presents anatomically divergent descriptions of BFP herniation that require clarification. Zhang et al. describe an antero-inferior descent of the buccal extension due to relaxation of mimetic muscles, poor ligamentous development, and rupture of BFP capsules with aging. This is supported by Tsai et al., who demonstrated that the inferior end of the BFP was positioned higher than the labial commissure in patients aged 48−63 years but descended below it in those aged 66–74 years [2]. In contrast, Mendelson describes the BFP appearing "in the continuity of the parotid–masseteric fascia at the anterior border of the premasseter space" during sub-SMAS dissection [3], suggesting a more lateral location. These descriptions cannot represent the same pathological process. We propose that BFP herniation may follow distinct patterns based on individual anatomical variations and the specific sites of fascial weakness. A medial herniation pattern, characterized by weakening of the anterior SMAS and buccinator muscle, allows antero-medial descent toward the oral commissure and may predominate in patients with thin SMAS, necessitating an intraoral or extended anterior facelift approach for adequate surgical access. A lateral herniation pattern, resulting from weakness in the parotid–masseteric fascia, permits lateral herniation into the premasseter space and may be more readily accessible through standard sub-SMAS facelift approaches. In many patients, both vectors may coexist to varying degrees, requiring individualized surgical planning. The Author's proposed algorithm does not account for these potentially different herniation patterns. We suggest that preoperative clinical examination should specifically characterize the vector and location of herniation (medial perioral versus lateral premasseter), as this should fundamentally guide surgical approach selection rather than relying solely on the anterior–posterior position of the bulge.

Future anatomical studies employing three-dimensional imaging to map herniation patterns and correlate them with

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specific areas of fascial weakness would provide surgeons with objective criteria for approach intervention selection.

The review also reveals a fundamental contradiction in our understanding of BFP aging that deserves greater emphasis. While cadaveric studies by Gierloff et al. demonstrate volume decrease after age 60–70 years [4] in vivo radiologic studies Aksamoglu et al. show either no volume loss or continued volume increase beyond age 50 [5]. Notably, no statistically significant volume difference was consistently demonstrated across all age groups in the reviewed studies.

This discrepancy is not merely academic but has profound implications for surgical planning. We propose several hypotheses that may explain this contradiction. First, cadaveric studies may be affected by post-mortem artifacts including dehydration, tissue fixation, or post-mortem fat metabolism that artificially reduces BFP volume. Second, as the Authors note, in vivo studies included younger patient cohorts (maximum age 76 years) compared to cadaveric studies (up to 104 years), leaving the critical age range where volume loss may occur (70–104 years) largely unexplored in living patients. Third, total BFP volume may remain stable while the buccal extension specifically undergoes atrophy, a possibility that current volumetric studies measuring global BFP volume cannot distinguish. We strongly advocate for prospective longitudinal radiologic studies following patients from age 60 through their 80s and beyond. Without such data, we risk performing reductive procedures on a fat compartment that may not be genuinely hyperplastic but only descending, potentially accelerating age-related facial hollowing in later decades of life.

Gierloff's observation that contrast agent does not migrate between BFP lobes when injected suggests that the buccal extension functions as an independent compartment, [4] presenting a compelling paradigm shift in our understanding of BFP pathology. If the buccal extension truly behaves independently, this could elegantly explain why vertical descent and pseudo-herniation occur preferentially in the buccal extension rather than uniformly across all BFP components. This hypothesis supports the concept that surgical management of the buccal extension alone provides aesthetic improvement without necessarily affecting malar or temporal projection. This anatomical insight highlights the need for compartment-specific radiological evaluation. Such analysis would help determine whether our surgical focus should remain on the buccal extension specifically, as current practice dictates, rather than attempting more extensive BFP reduction. However, a critical question arises: If the buccal extension is truly independent and descends with age while centrofacial volume decreases, why should we remove it rather than reposition it to address centrofacial volume deficiency?

This consideration brings us to the issue of BFP transposition. The review includes only two small studies on BFP transposition, representing limited clinical evidence. Given the weak evidence base, we propose that BFP transposition should be considered an investigational technique requiring proper prospective evaluation before inclusion in standard treatment algorithms. Surgeons seeking malar or inframalar augmentation during facelift should preferentially use autologous fat grafting, which has a robust evidence base, predictable outcomes, and a well-established safety profile. BFP transposition might be reserved for select cases where fat grafting has failed or is truly contraindicated, and patients should be counseled about the limited evidence supporting this approach.

Bellity et al. have provided an important synthesis of BFP management during facelift surgery. However, our analysis reveals significant gaps in the evidence base that should temper enthusiasm for routine BFP intervention. The contradiction between cadaveric and in vivo volume studies, the unresolved question of compartmental independence, the anatomically inconsistent descriptions of herniation patterns, and the weak evidence for transposition all suggest that we are still in the early stages of understanding BFP aging. Until such evidence is available, surgeons should exercise judicious patient selection for BFP removal versus repositioning, carefully document their techniques and outcomes, and remain vigilant for long-term consequences that may not be apparent in current short-term follow-up studies.

Declarations

Conflicts of interest The authors declare no conflicts of interest.

Ethical Approval Not applicable for this letter to the editor.

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