



Permanent facial filler: conservative ultrasound guided removal with histopathological correlation

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ABSTRACT

Introduction: The management of complications arising from permanent facial fillers remains a significant clinical challenge. Traditional surgical interventions can be highly invasive and risk damaging critical neurovascular bundle structures. High-frequency ultrasound has emerged as an indispensable diagnostic and intraoperative tool, allowing clinicians to map filler distribution, depth, and potential tissue migration, while identifying underlying secondary inflammatory changes.

Objective: To evaluate the clinical efficacy of ultrasound-guided techniques for the precise localization, conservative minimally invasive removal, and subsequent histopathological diagnosis of permanent facial fillers.

Case Report: A patient presented with significant aesthetic discomfort and palpable nodules in the perioral region. The patient reported a history of facial filler injections in the nasolabial folds performed over 25 years ago. Clinical examination suggested delayed material migration within the deep facial soft tissues. The proposed therapeutic approach was conservative surgical extraction.

Methods: High-definition imaging and ultrasound mapping were performed using an L20 HD3 Ultra-High Frequency Linear Scanner to accurately define the anatomical boundaries, lesion depth, and proximity to adjacent vascular structures. Under real-time ultrasound guidance, targeted needle placement was performed to enable precise aspiration of fluid/material and safe access to the affected tissue beds while minimizing mechanical trauma and preserving adjacent neurovascular structures. The retrieved specimens were fixed in 10% buffered formalin and processed for standard histopathological examination. Macroscopically, the specimen from the left buccal mucosa region consisted of an irregular, firm, brownish tissue block measuring $16 \times 7 \times 5$ mm, whereas the specimen from the right buccal mucosa region comprised fibroelastic, brownish tissue fragments measuring $6 \times 4 \times 2$ mm.

Results: The intraoperative use of High-frequency ultrasound enabled a completely bloodless and minimally invasive procedure. Histopathological analysis demonstrated distinct tissue responses between the two sides. Microscopic evaluation of the right-sided specimen revealed native connective tissue fragments containing sparse collagen fibers intermingled with skeletal muscle fibers, without evidence of an active inflammatory process. In contrast, microscopic examination of the left-sided specimen demonstrated a classic foreign body giant cell reaction directly associated with degraded permanent aesthetic filler material, confirming chronic low-grade immune reactivation.

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Conclusion: Ultrasound-guided techniques represent a reliable, highly accurate, and essential tool for diagnosing and managing long-term permanent facial filler complications. Preoperative high-definition mapping combined with real-time intraoperative ultrasound guidance ensures a controlled, minimally invasive, and safer surgical execution, minimizing mechanical trauma while yielding diagnostic tissue samples for histopathological confirmation.
