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Research Article

Argon Plasma: A New Perspective on Aesthetic Breast Surgery

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Abstract

Minimally invasive breast surgery aligned with ERAS principles has increased the adoption of energy-based technologies. Argon plasma offers rapid, focused thermal contraction with minimal lateral heat spread. This preliminary study evaluates argon plasma as an adjunct to mastopexy and breast reduction.

Keywords: Breast Surgery; Argon Plasma; Breast Reduction

Introduction

Contemporary aesthetic surgery has undergone a significant conceptual shift toward minimally invasive approaches and enhanced recovery [1,2]. This paradigms, aligned with ERAS (Enhanced Recovery After Surgery) has influenced body contouring, facial rejuvenation and increasingly, breast surgery.

Traditional modalities, nonsurgical skin-tightening technologies such as lasers, ultrasound and radiofrequencies have demonstrated limitations [3,4]. Plasma-based devices generate controlled and focused subdermal thermal contraction, therefore with minimal collateral injury [5].

Patients and Methods

Fifteen female patients presenting with breast ptosis grades I–II were prospectively evaluated between February 2024 and March 2025. Patients with significant dermal stretch marks or poor skin quality were excluded.

Surgical Technique

After defining the highest position of the Nipple-Areola Complex (NAC), we define and mark the upper, medial, lateral and lower limits of the breast. Vectors with 1 cm in between or each other are marked in a radial fashion in the areas of more flaccidity (Fig. 1).



Figure 1: Under general anesthesia, four 0.5-cm periareolar incisions were made. A 2-mm cannula was used to infiltrate tumescent solution. Argon plasma was applied at 30 W, 2.0 L/min, for 2 minutes per breast in the desired areas for tightening. Implant replacement was then performed with or without skin removal as needed.

Results

All fifteen patients (100%) reported high satisfaction with postoperative breast shape and contour, consistent with reports of energy-based tightening methods [6]. Objective assessment showed measurable reduction in pinch test thickness across the treated quadrants, confirming dermal contraction [3,5]. In addition visible improvement in skin quality, including enhanced firmness, better lower pole definition and a smoother transition to the inframammary fold was noted (Fig. 2,3). No intraoperative or postoperative complications ocurred.

Mean operative time was approximately 75 minutes and all patients were discharged on the same day with minimal discomfort. Postoperative follow-up at 1, 3 and 6 months confirmed sustained improvements, with no cases of hematoma, infection or significant scarring. Minor transient edema and bruising resolved within two weeks for all patients and no revisions were required during the follow-up period.

We have had the opportunity to decrease implant's size from 305cc to 235cc and observed with argon plasma technology a perfect adjustment of skin (Fig. 2,3).

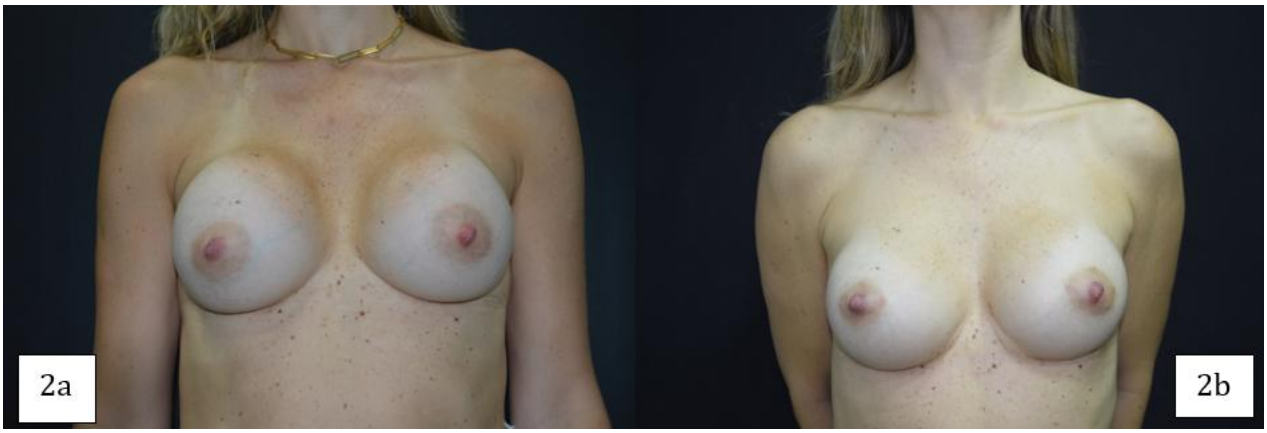


Figure 2: a Pre-op front view; b: Post-op front view showing implants reduction from 300cc to 235cc.

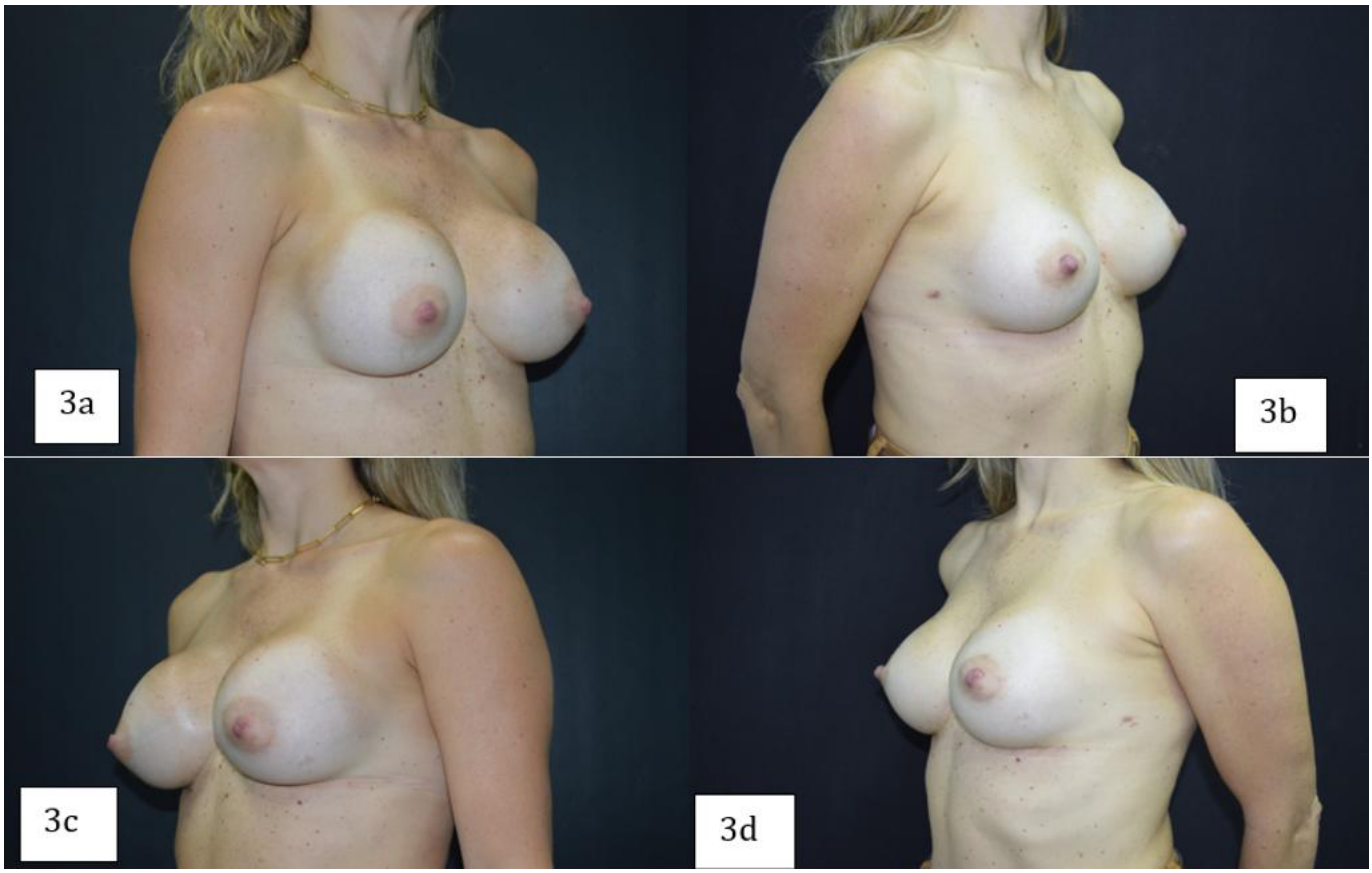


Figure 3: a: Pre-op left oblique view; b: Post-op left oblique view showing implants reduction from 300cc to 235cc; c: Pre-op rigth oblique view; d: Post-op right oblique view showing implants reduction from 300cc to 235cc.

Discussion

During the last 5 years, breast reduction surgery has become a trend, driven by the desire for physical comfort and body image improvement. Social media is playing a major role in normalizing cosmetic procedures by opening the discussion and creating awareness about different technology assisted procedures

Argon plasma, traditionally used for surgical coagulation, has demonstrated reliable tissue tightening via collagen contraction and neocollagenesis [5-7]. The use of argonplasma in the mastopexies resulted in enhanced skin tightening, providing a better lifting effect, reduced sagging and flaccidity by stimulating collagen production and contributed to a more balanced appearance by offering symmetrical contours.

Breast ptosis has well-documented physical and psychological consequences such as shoulder pain, headache, neck pain, shoulder groove, kyphosis, intertriginous rash and even neurological symptoms such as ulnar paresthesia besides the psychological aspects such as a negative self-image [8].

Conclusion

Argon plasma is a valuable adjunct in mastopexy and breast reduction, offering precise thermal control, enhanced tightening, reduced scar burden, potentially reduced intraoperative bleeding and improved aesthetic outcomes in appropriately selected patients. Our findings support the integration of argon plasma to enhance contour, improve firmness and reduce the need for extensive skin excision. These initial cases have proven the excellence of results and high degree of patient's satisfaction.

Conflict of Interest

The authors declare no conflict of interest.

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