LIGHTWEIGHT BREAST IMPLANTS
A NOVEL SOLUTION FOR BREAST AUGMENTATION AND RECONSTRUCTION MAMMAPLASTY

Govrin-Yehudain J, Dvir H, Preise D, Govrin-Yehudain O, Govreen-Segal D. / Aesthet Surg J. 2015 Nov; 35(8):965-71. doi:10.1093/asj/sjv080. Review.

COMPLICATIONS FROM TRADITIONAL BREAST IMPLANTS

- Breast augmentation and reconstruction mammaplasty have been in practice for decades and are highly prevalent surgeries performed worldwide.
- While overall patient satisfaction is high, common long-term effects include breast tissue atrophy, accelerated ptosis, sensory loss, and inframammary fold breakdown.
- Increasing evidence attributes these events to the durative loading and compressive forces introduced by the breast implants.

IMPLANT WEIGHT STANDS AT THE BASIS OF FUTURE TISSUE COMPROMISE AND DEFORMATION

- This is contrary to long-standing dogmas which considers these long-term complications due to breast implant volume.
  - Traditional implants demonstrate equivalence between their size and weight.
- Weight-induced mechanical stress exceeding the elastic capacity of the breast tissue components, eventually leads to irreversible tissue stretching, directly proportional to the introduced mass (Figure 1).
- Even a slight reduction in breast tissue weight can adequately reduce gravitational forces on the tissue, diminishing their long-term detrimental effects and associated symptoms.
- Considering breast implant weight preoperatively has been shown to reap clinical benefits and substantially lower reoperation rates.

A NOVEL LIGHT WEIGHT BREAST IMPLANT TO ADDRESS THE DRAWBACKS OF TRADITIONAL BREAST IMPLANTS

- A novel, new-generation silicone gel B-Lite® Lightweight Breast Implant (LWBI) design allows for a reduction in implant weight of up to 30%, while maintaining the size, form, and function of traditional breast implants.
- The round or anatomical implant (Figure 2) contains a continuous phase, reinforced, medical-grade silicone gel filler enriched with inert, high-purity, hollow, borosilicate microspheres chemically bound to and encapsulated by the gel network (Figure 3).
- The unbreakable nature of the gel, the microspheres, and the microsphere-gel interactions result in an implant with a marked mechanical gel strength that is instrumental in maintaining the form and structure of the implant, resisting dispersion even in case of rupture.
- The CE-marked device can be implanted using standard of care procedures and has been established safe for human use.

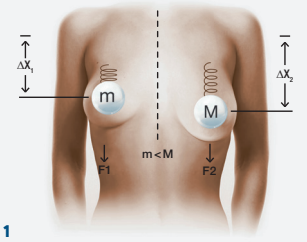

Figure 1
HOOKE'S LAW:
Force exerted on breast tissue is in direct proportion to weight. A heavier implant will result in increased forces and consequential stretch of the breast, as compared with a lighter implant. The elastic tissue of the breast is symbolized by a spring with constant K. Stretching is proportional to mass and inversely proportional to elasticity. Therefore, F1<F2 and X1<, X2. X=m/k*g; m=mass; k=constant; g=standard gravity constant.

Figure 2
ROUND AND ANATOMICAL B-LITE® LIGHTWEIGHT BREAST IMPLANTS (LWBIs)

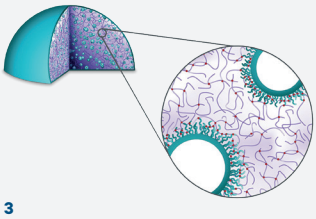

Figure 3
MICROSPHERE-ENHANCED SILICONE GEL.
Integration of silicone gel cross-linked to borosilicate microspheres yields a reinforced gel. The magnified segment shows the high crosslinking density at the surface of the microspheres, resulting in a microsphere-gel adhesion strength exceeding the gel's internal strength of cohesion.

KEY TAKEAWAYS

- Implantation of the B-Lite® breast implant is projected to significantly reduce the inherent strains imposed by traditional implants, thereby conserving tissue stability and integrity over time.
- Utilizing microspheres enables a substantial reduction of the implant's weight, up to 30%, when compared with traditional silicone-filled implants of equal size.
- This novel, lightweight breast implant promises to reduce breast tissue compromise and deformation and subsequent reoperation, further improving patient safety and satisfaction.

UP TO 30% LIGHTER

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