

Breast augmentation

Breast augmentation, also referred to as augmentation mammoplasty, involves using implants and/or fat transfer to increase the size of the breasts. As fat transfer has been covered in a previous article in this series, this piece will focus solely on breast augmentation using implants. This procedure can also restore volume lost after weight reduction or pregnancy, achieve a perter shape, or improve natural breast size asymmetry. The science of breast augmentation has changed dramatically over the past 5 years—Olivier Branford provides an overview of what is involved in the procedure

According to the latest figures, breast augmentation continues to be the top cosmetic surgical procedure in the US and has been since 2006, with 300 000 procedures being performed per year, up 3% from 2016's figures. While silicone implants were used in 87% of all breast augmentation procedures in 2017, saline implants were used in 13% (American Society of Plastic Surgeons, 2018). **UK stats?**

Aesthetic goals

Science is revolutionising the aesthetics of breast augmentation, favouring enhancement over distortion. As a result of recent scientific analyses of what constitutes natural breast beauty, there is now a change to a more natural ideal as a perceived goal in breast augmentation (Mallucci and Branford, 2014; 2015).

The author has published clear evidence about how to achieve a natural look using the 'ICE' principle (implant dimensions, capacity of the breast and excess tissue required) (Mallucci and Branford, 2016). This principle allows precise placement of the incision within the fold under the breast, and guides implant selection to avoid distortion of the patient's anatomy.

Who performs breast augmentation and where?

Breast augmentation is most commonly performed by plastic surgeons who are both comprehensively trained in the

standards of care for the procedure and fluent in managing complications. Breast augmentation, in the UK, should be performed in a facility or hospital that is inspected at regular intervals by the Care Quality Commission (CQC), to ensure patient safety and best practice by plastic surgeons who are on the specialist General Medical Council register for plastic surgery.

Candidates for breast augmentation procedures

People who are suitable for breast augmentation include:

- ▶ Those who are physically healthy and are not pregnant or breastfeeding
- ▶ Those with realistic expectations
- ▶ Those in whom breasts have finished developing
- ▶ Those who are bothered by the feeling that their breasts are too small
- ▶ Those who are dissatisfied with their breasts having lost shape and volume after pregnancy or weight loss or as a result of ageing
- ▶ Those with asymmetrical breasts
- ▶ Those in whom one or both breasts have failed to develop normally or have an elongated (tuberous) shape.

What breast augmentation cannot do

Breast augmentation does not correct severely drooping breasts. A breast lift may be required for this indication, along with a breast augmentation for sagging breasts, to look both fuller and lifted.

Contraindications

Breast augmentation is contraindicated in smokers due to the higher risk of wound breakdown, implant infection and the need for implant removal. Smoking should be discontinued for 6 weeks before surgery

and a minimum of 3 weeks after. Those who are not fit for general anaesthesia are also advised not to have breast augmentation.

Consultation

The consultation will cover:

- ▶ The patient's desired aesthetic outcome
- ▶ Medical conditions, risk factors, medical treatments, and any drug and dressing allergies
- ▶ Medications (patients should avoid taking aspirin or other blood-thinning drugs, as well as anti-inflammatory drugs, as they increase bleeding)
- ▶ Vitamins and herbal supplements (which should be stopped 2 weeks preoperatively due to often poorly studied or unknown effects on post-surgical bleeding)
- ▶ Alcohol, tobacco and drug use
- ▶ Previous surgery
- ▶ Family history of breast cancer and results of any mammograms or biopsies.

The surgeon should also:

- ▶ Assess for preoperative asymmetry
- ▶ Discuss any underlying chest-wall abnormalities and how these will affect the outcome
- ▶ Obtain several breast and chest measurements, with careful documentation of nipple position, and assess skin and tissue quality and laxity
- ▶ Take standard clinical photographs, which may include three-dimensional images which can be morphed to assist in understanding the patient's goals and how realistic their expectations are. In the author's experience, four-dimensional imaging has been invaluable. Here, a woman can see her predicted postoperative result with different implant choices as she moves around in front of a full-length 'virtual mirror'. This is far superior to the traditional method of using implant sizers in a bra



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- ▶ Discuss any procedure-related risks or potential complications
- ▶ Look at what implant shape, size, surface texturing, incision site and pocket placement site are recommended for the patient
- ▶ Outline how many additional implant-related operations the patient can expect to undergo over their lifetime. There is no shelf life for implants and these only need to be replaced if they become symptomatic
- ▶ Discuss the ability to breastfeed after breast augmentation. Not all women can breastfeed before augmentation and a similar proportion can breastfeed after
- ▶ Explore how the implanted breasts are likely to look over time, and after pregnancy and breastfeeding
- ▶ Patients should arrange for someone to drive them home from surgery and to stay with them for at least the first night following surgery.

Breast implant types

Saline breast implants are filled with sterile salt water. Should the implant shell leak, a

saline implant will collapse and the saline will be absorbed and naturally expelled by the body.

Silicone breast implants are filled with silicone gel, which feels a bit more like natural breast tissue. If the implant leaks, the gel may remain within the implant shell, or could escape into the breast implant pocket.

Form-stable implants are sometimes referred to as 'gummy bear' breast implants because they maintain their shape even when the implant shell is broken, similar to cutting a 'jelly baby' in half. The consistency of the silicone gel inside the implant is thicker than traditional silicone gel implants. These implants are also firmer than traditional implants.

Shaped (teardrop or anatomical) gummy bear breast implants have more projection at the bottom and are tapered towards the top, giving a more natural shape, especially in those with little breast tissue. If a shaped implant rotates, it may lead to an unusual appearance of the breast, which may require a separate procedure to correct. Specific indications for anatomically-shaped devices

include limited soft-tissue coverage (slim patients with small breasts), those who desire a full but natural result, breast and chest wall asymmetry, constricted breast type, and short nipple-to-inframammary fold distance.

Round breast implants have a tendency to make breasts appear fuller in their upper part, meaning they look less natural than teardrop implants when undressed. Because round implants are the same shape all over, there is less concern about them rotating out of place. However, in the author's experience, if the patient follows a 6-week protocol for recovery, there is an extremely low risk of rotation of shaped implants.

Smooth breast implants may have some palpable or visible rippling under the skin. Textured breast implants offer some advantage in diminishing the risk of a tight scar capsule.

Types of anaesthesia used

Most breast augmentation patients receive general anaesthesia supplemented by local anaesthesia, as the procedure is performed as day case surgery.

Steps of the procedure

Incisions are made in inconspicuous areas to minimise visible scarring. The plastic surgeon will discuss which incision options are appropriate for the desired outcome. Incision options include: along the areolar edge (periareolar incision), the fold under the breast (inframammary fold) and in the armpit (axillary incision). A belly-button approach is associated with a higher complication rate (reference).

The inframammary fold incision gives the best control of the shape of the lower half of the breast, which is critical to achieving natural results. Data from recent publications have continued to support the use of the inframammary approach as statically significant in the prevention of capsular contracture (Nannoum et al, 2013), as it draws in less bacteria than in the nipple and armpit areas, with less biofilm production. Incision length varies between 3.5 and 6 cm depending on the size of the implant.

After the incision is made, the implant is inserted into a pocket either above the pectoral muscle, below the muscle or as a 'dual-plane' approach (with a pocket above and below the muscle with the implant going below the muscle and the dissection above the muscle allowing the breast to 'redrape'), which gives the most natural appearance. In particular, smooth implants have a lower rate of capsular contracture when placed below the muscle than above it. The pocket is dissected in an atraumatic way, and not using forced blunt dissection.

The implant pocket should be irrigated with 50% povidone-iodine. A 'Keller funnel' is used to insert the implant without touching it, and nipple guards should be applied, as well as gloves changed before implant insertion, all designed to reduce biofilm, which is implicated in both capsular contracture and breast implant-associated anaplastic large-cell lymphoma (ALCL).

Incisions are closed with three layers of absorbable sutures, skin adhesive and surgical tape to close the skin.

Most surgeons do not use drains for breast augmentation, and if they do they are removed after only a few hours.

Recovery

Pain subsides after 1–4 days and breasts are fairly symptom-free by 1 week. Patients are

fitted with a post-surgical garment with a strap across the upper breasts to avoid the implants healing too high up on the chest. This is worn day and night for 6 weeks to ensure the best long-term results and to reduce the risk of shaped implant rotation. Strenuous upper-body exercises should be avoided for 6 weeks.

Complications

Possible complications include (reference):

- ▶ Those related to anaesthesia
- ▶ Bleeding or haematoma
- ▶ Infection
- ▶ Changes in nipple or breast sensation
- ▶ Poor scarring—poor incision placement or overactive scarring (it can take 12–18 months for scars to fully mature and appear less pink and flat)
- ▶ Wrong or faulty position of the implant
- ▶ Asymmetry
- ▶ Implant leakage or rupture (1% per year) (reference)
- ▶ The formation of tight scar tissue around the implant (capsular contracture) in 3–5% of cases (reference)
- ▶ Fluid accumulation (seroma)
- ▶ Visible rippling of the skin over the implant
- ▶ Persistent pain
- ▶ Possibility of revision surgery.

Reviews of scientific research by independent groups in large-scale, long-term studies have found no link between breast implants and autoimmune or other systemic diseases (references).

There is a rare documented association between breast implants and a typically indolent form of lymphoma (breast implant-associated ALCL), which appears to occur more frequently with certain implant types (coarsely textured breast implants), possibly as a result of biofilm production, and hence many surgeons are moving to microtextured breast implants. However, the cause of the disease does appear to be multifactorial, with some genetic predisposition. Because of the potential inflammatory pathway, and prevention of capsular contracture in general, Adams (2016) recommended a 14-step plan to minimise pocket contamination.

Conclusion

Breast augmentation can boost people's self-confidence and remains a safe, effective

procedure. There is an increasingly greater emphasis on achieving natural-looking results, as requested by patients, which can be achieved with careful planning, to give longevity and aesthetically pleasing results both in and out of clothes. 

References

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CPD reflective questions

- ▶ What types of breast implant are available?
- ▶ What steps can be taken to achieve a natural-looking result?
- ▶ What are the options for reducing capsular contracture?
- ▶ In whom is breast augmentation contraindicated?
- ▶ What is breast implant-associated anaplastic large-cell lymphoma?

Key points

- ▶ Breast augmentation continues to be a popular cosmetic surgical procedure
- ▶ Natural results are possible with careful treatment planning
- ▶ Four-dimensional virtual reality imaging is likely to revolutionise planning in breast augmentation consultations, allowing patients and surgeons to jointly visualise desired patient goals
- ▶ There is a move to microtextured implants to prioritise safety with regard to reducing biofilm development