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Short Communication

Breast augmentation using autologous fat grafting optimised by negative pressure wound therapy

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Breast augmentation remains the most common cosmetic surgical procedure performed in the UK.¹ Traditionally implants have been used to produce the enhancement in shape and volume in breast augmentation surgery. However, autologous fat grafting is becoming increasingly popular as the sole treatment modality for breast augmentation.² Increasing evidence has demonstrated it as an easy to perform technique with good volume retention, high rates of patient satisfaction and complication rates that are low/comparable to implant-based breast augmentation.³

Historically, one of the disadvantages of the technique has been a limitation in the volume of fat that can be safely and effectively transferred during any single stage. This resulted in development of innovations such as the BRAVA system to improve fat graft survival through pre-expansion of the breast. Despite good initial outcomes being reported, use of the BRAVA system has been criticised for its cost, impracticality, discomfort and skin related complications.⁴ As such, it has not always been

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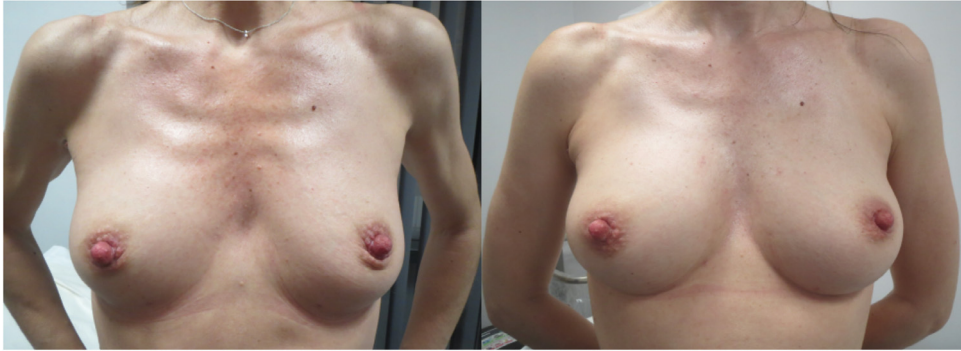


Fig. 1. Preoperative and 6-month postoperative results in a patient who underwent primary augmentation with 250cc fat transferred per breast.

favoured as an auxiliary peri-operative device, despite having recognised benefits to postoperative outcomes.

We present a new, innovative technique for optimising the breast for augmentation using autologous fat transfer. Our technique utilises the PICO™ negative pressure wound therapy system (Smith and Nephew, UK) to pre-condition the breast for large volume autologous fat transfer. The principal indication for our technique is the patient who seeks a natural contour breast augmentation with mild to moderate volume enhancement and minimal scarring.

PICO™ dressings are applied to the breasts two weeks prior to planned augmentation with autologous fat transfer. During this time dressings are worn continuously and are well tolerated by patients. Surgery is then performed under general anaesthesia on a day-case basis. Donor sites are pre-infiltrated using a tumescent solution of Hartmann's solution and adrenaline at a concentration of 1:1,000,000. Suction assisted liposuction is then performed of the selected donor site targeting the deep layer of subcutaneous fat.

Lipoaspirate is processed using the Puregraft™ (Cytori Therapeutics, USA) fat processing system. We aim to harvest 30-50% more lipoaspirate than the desired volume of grafted fat required for transfer. Curved and straight fat infiltration cannulas are then used to administer the processed fat via symmetrical peri areolar, inframammary and lateral breast border stab incisions. Fat is infiltrated into subcutaneous, intraparenchymal and retroparenchymal/peripectoral planes in a multilayer trellis pattern. PICO dressings are then re-applied and worn continuously for a further 2 weeks postoperatively.

We have utilised this technique for cosmetic breast augmentation in 15 patients to date. 8 cases were for primary augmentation and 7 for secondary augmentation. Volumes of autologous fat transferred per breast ranged from 40-365cc. The average volume of fat transferred per breast was 176cc for the primary augmentation group and 228cc for the secondary augmentation group. All patients reported high satisfaction with postoperative outcomes and there were no significant complications observed.

Dependent on the baseline size of the breast, we have transferred up to 365cc of autologous fat per breast in any single stage. The use of pre and postoperative PICO dressings has allowed us to comfortably transfer large volumes of fat whilst minimising the risk of fat necrosis, which would otherwise have posed a significant potential risk with such large volume transfer.

We now routinely utilise PICO negative pressure wound therapy for all cases where primary augmentation via autologous fat transfer is being undertaken. Fig. 1 demonstrates preoperative and 6-month postoperative results in a patient who underwent primary augmentation with 250cc of fat per breast. Fig. 2 demonstrates another similar patient who underwent primary augmentation with 145cc of fat per breast.

Following similar principles to the BRAVA system, PICO dressings apply a mechanical stress stimulation to the pre-operative breast skin envelope increasing the scaffold of graftable space within the breast. This form of stress stimulation has been shown to promote angiogenesis, cell proliferation and



Fig. 2. Preoperative and 6-month postoperative results in a patient who underwent primary augmentation with 145cc fat transferred per breast.

reduce interstitial pressure within a recipient site for fat transfer.⁵ The use of PICO dressings enables us to harness a combination of these factors to optimise the breast for larger volume fat transfer.

In addition, PICO use in the postoperative period splints the breast minimising shear forces surrounding the transferred fat, optimising conditions for graft take and improving retention rates. Unlike the BRAVA system, PICO dressings are comparatively less expensive. They are comfortable for patients and can be worn discretely underneath underwear and clothing due to their low profile from the skin. We have not observed any skin-related complications from their use. Application of the dressings can be performed in under 5 minutes and removal of the dressings is a painless experience for the patient.

In conclusion, we recommend the use of PICO dressings to pre-expand and pre-condition the breast before cosmetic breast augmentation with autologous fat transfer. They permit large volumes of fat transfer in any single stage, facilitate better fat retention and have a minimal complication profile.

Declaration of Competing Interest

All authors have no disclosures.

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Ethical Approval

Not required.

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