Case report

Extensive abdominal surgery and scar does not absolutely contraindicate bilateral flap harvest from the abdomen: A case report

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ABSTRACT

Introduction: This case reports a female patient with a history of multiple laparotomies including stoma formations and reversals, who underwent successful bilateral abdominal flap based breast reconstruction. It highlights that even complex and repeated abdominal surgery is not an absolute contraindication to this procedure.

Presentation of case: A 52-year-old female with a history of bilateral mastectomy and implant-based breast reconstruction presented with bilateral capsular contracture, wanting removal and alternative breast reconstruction. Her history of ulcerative colitis and multiple complex and extensive abdominal surgeries initially seemed to preclude bilateral abdominal flap harvest and the patient was referred on for another opinion. CT-angiography after the subsequent opinion identified adequate deep inferior epigastric artery perforators and successful bilateral abdomen-based flap reconstruction was performed.

Discussion: This is the first case report of successful bilateral abdomen-based flap harvest in a patient with 6 previous laparotomies including stoma formations and reversals.

Conclusion: Complex and extensive abdominal surgery is not an absolute contraindication to bilateral flap harvest from the abdomen. With accurate CT-angiography to guide pre-operative planning and meticulous surgery, safe flap harvest is possible.

1. Introduction

In abdominal-based flap harvest, previous procedures to the abdomen and pelvis pose a risk of scarring to perforator vessels and surrounding tissue which may alter perfusion and disrupt flap dissection [1]. In bilateral flap harvest for breast reconstruction, this risk of scarring is particularly important as both hemi-abdomens are required. Although the safety of bilateral abdomen-based free flap reconstruction in patients with certain abdominal scars has been shown [2], abdominal scar remains a relative contraindication in the eyes of the reconstructive surgeon. This case report of a female with a history of two stoma formations and reversals and multiple other laparotomies, who underwent successful bilateral abdominal flap based breast reconstruction, highlights that even the most complex abdominal surgery is not an absolute contraindication to this procedure. This work has been reported in line with the SCARE criteria [3].

2. Presentation of case

A fifty-two-year-old female was referred by a fellow plastic surgeon for explantation of bilateral breast implants and possible secondary breast reconstruction with free tissue transfer. The referring plastic surgeon believed that DIEP or TRAM reconstruction was contraindicated. The patient had a history of bilateral skin sparing, nipple-sacrificing mastectomy with tissue expander insertions 5 years prior. She had subsequent implant exchanges 1 year later, without adjuvant radiotherapy or chemotherapy. At presentation to the senior author (SF) both implants had become uncomfortable due to capsular contracture and the right implant was migrating laterally. Ultrasound and MRI confirmed rupture of the left implant.

The patient had a very significant past history of ulcerative colitis requiring extensive abdominal surgery. She had undergone six laparotomies including end colostomy, loop colostomy and reversals. Consequently, the patient had major abdominal scarring including a midline vertical laparotomy scar as well as a right lower quadrant stoma scar (Fig. 1).
Fig. 1. Pre-operative view demonstrating midline laparotomy scar and right lower quadrant stoma scar.
The senior author’s initial preference for popliteal artery perforator flap (PAP) or gluteal artery perforator (GAP) flap reconstructions was discussed with the patient. A deep inferior epigastric artery perforator (DIEP) flap was not expected to be available due to the extent of her abdominal surgery and scarring. CT-angiography of the patient’s abdomen and buttocks and thighs was performed.

GAP perforators were seen to be favourable and a staged GAP bilateral breast reconstruction was definitely an option. Upon further reformatting and assessment of the CT-angiogram however, unexpectedly adequate deep inferior epigastric artery (DIEA) perforators were identified. A single large calibre perforator was identified inferior to the right stoma scar as well as multiple left DIEA perforators (Fig. 2). Given DIEP flap is the gold standard for breast reconstruction [4–8], providing the best volume, texture and donor site morbidity, the patient and surgeon elected for this single stage bilateral revisional breast reconstruction. It was well discussed with the patient prior to surgery that if scarring were to preclude well perfused flap harvest, then the operation may be aborted or changed to a first stage unilateral reconstruction. The patient was also explicitly consented for possible muscle harvest (msTRAM flap) to reduce vascular risk if required.

Intraoperatively, bilateral capsular contracture and left implant intracapsular rupture with free silicone was confirmed. On the right abdomen, two patent perforators were identified following intricate dissection, one above and one below the stoma scar (Fig. 3). A right sided msTRAM was harvested with only the medial third of the rectus abdominis muscle included in the flap to incorporate both perforators. The rectus sheath was repaired directly. A left sided DIEP flap was harvested on two perforators. Successful reconstruction was completed without complication (Fig. 4).

Fig. 2. Pre-operative computed tomography demonstrating patent DIEA perforators.
3. Discussion

Autologous reconstruction for bilateral mastectomy defects using non abdominal donor tissue is generally more complicated and less reliable than using abdominal tissue. Most surgeons therefore believe that free DIEP flaps are the gold standard [4–8]. IGAP, SGAP, PAP, TUG, LAP, and lateral thigh flaps are all possible, but generally less desirable [9]. Conspicuous or undesirable scars, greater seroma and wound

Fig. 3. Intra-operative view of right deep inferior epigastric artery and vein with two best perforators, one above and below dense stoma scar (circled in black).
healing problems, short pedicles, smaller calibre vessels, greater difficulty shaping and higher revision rates commonly make these reconstructions inferior. We believe these operations become indicated when abdominal tissue is truly unavailable, either due to absent tissue or absent appropriate vasculature. Past surgery is one possible cause of inadequate vasculature, but this should not be assumed.

Unilateral and bilateral DIEP flap breast reconstruction in women with certain abdominal scars has been shown to be feasible [1,2,10]. Retrospective studies comparing flap outcomes between patients with and without abdominal scar have shown comparable flap outcomes (flap loss, fat necrosis) with an increased risk of donor site healing complications (delayed healing, hernia formation, seroma) [1,10]. The type of abdominal procedures that these patients had however were limited to Pfannenstiel incision for caesarean delivery, hernia repair, open or laparoscopic cholecystectomy or appendicectomy.

The complexity and number of prior abdominal surgeries in this case was a risk to finding sufficient deep inferior epigastric perforators separate enough from encasing scar to allow reliable DIEP or MS-TRAM flap harvest. This clinical suspicion however was not found to be correct, and a detailed assessment of CT angiography during the patient’s assessment permitted a cautious but realistic plan to explore the abdomen as the preferential donor site for bilateral reconstruction. To our knowledge, this case report is the first description of bilateral abdomen-based breast reconstruction for a patient with such complex and extensive previous abdominal surgery with 6 previous laparotomies including stoma formations and reversals.

4. Conclusion

This case demonstrates that even the most extensive and complex previous abdominal surgery is not an absolute contraindication to abdomen-based bilateral breast reconstruction. With careful clinical examination, accurate CT-angiography to guide pre-operative planning and careful surgery, safe flap harvest is possible.

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Consent

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Author contribution

Isabella Reid- writing of paper, preparation of manuscript. Scott Ferris – case report concept, provision of case and accompanying images, editor.
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N/A.

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Declaration of competing interest

None declared.

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