Conflict of interest

None.

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A cost-effective modification in progressive barbed suture closure of the abdominal donor site in DIEP and MS-TRAM patients: A review of surgical technique☆

Dear Sir,

Use of a progressive barbed quilting suture has been shown to be effective in reducing seroma formation in aesthetic abdominoplasty patients and more recently in patients undergoing autologous breast reconstruction. Mohan et al. (2015) have shown that the use of barbed progressive tension sutures for donor site closure is effective in the reduction of abdominal seroma in patients undergoing DIEP free flap reconstruction and may even negate the need for abdominal drains.[1] We too advocate the use of a progressive tension closure of the abdominoplasty donor site with a bi-directional barbed suture, however we believe that comparable results can be achieved through modification of their technique and that of Warner and Gutowski,[2] by using only a single barbed suture.

In their paper, Mohan et al. use a technique not dissimilar to the original description by Warner and Gutowski — that being the use of two double-ended barbed Quill sutures, one on either side of the midline. Our team used a single double-ended 2-0 PDO barbed suture, progressing each half of the suture from the xiphisternum to the abdominal incision, on either side of the midline (Figure 1).

We carried out a retrospective review comparing two groups of patients who underwent DIEP or MS-TRAM flap breast reconstruction at the Queen Victoria Hospital, East Grinstead between January 2013 and August 2014. One group of 76 patients had abdominal closure with a progressive barbed quilting suture (PQ) and the other, a group of 26, had a standard closure with no barbed suture (SC) and only a few interrupted vicryl quilting sutures. All abdominal closures with a progressive barbed suture were carried out by the senior author of this paper and statistical analyses were used to compare patient characteristics and outcomes of surgery between the two groups.

In our study, seroma rates at 2.6% were lower in progressive barbed quilting (PQ) patients vs 7.7% in the standard closure with no barbed suture (SC). These findings are similar to those achieved by Mohan et al. In both studies, this difference was not significant. However, total abdominal drain output prior to drain removal was measured and found to be significantly lower in the PQ group as compared with the SC group (median 130 mls versus 222.5 mls, $p < 0.001$). The mean difference from bootstrap sampling was 115.6 ml (95% CI 46.8—183.3). It is also interesting to note that there was a significant difference in median operating time between PQ and SC groups — 425 min vs 480 min ($p < 0.001$) with mean difference of 57.4 min (95% CI 34—82.8), (Table 1) although we were unable to identify the reasons for this difference.

Results from linear regression (Table 2) of the total operation time showed that despite the SC group having a shorter flap raise time that there was a 75 (95% CI 48.0—100.7, $p < 0.001$) minute overall operation time difference when other confounders including age, BMI, radiotherapy, flap type and smoking were adjusted. The final model was selected based on AIC. The adjusted R squared of the final linear model was 0.33 indicating that this model explains 33% of the relationship between operation time and the predictor variables.

Quilting with ordinary smooth suture material, such as described by McCarthy et al.,[3] involves placement of multiple knots which can be time-consuming and is avoided with the use of the barbed suture. Though using a barbed suture for quilting may speed up abdominal closure, its use has cost implications. A single 2-0 PDO Stratafix suture costs £27.50. In a nationalised healthcare system such as the NHS in the UK, where there is an inherent drive for cost-efficiency savings to be made,[4] any factor that can reduce operating costs should be highlighted. In centres, like our own, where over 230 free abdominal flaps for breast reconstruction are performed per year, the use of only one bi-directional barbed suture rather than two sutures is clearly cheaper.

☆ Data presented at: CAPRAS 2015 (Caribbean Association of Plastic Reconstructive Aesthetic Surgeons), Barbados, 29 October 2015.

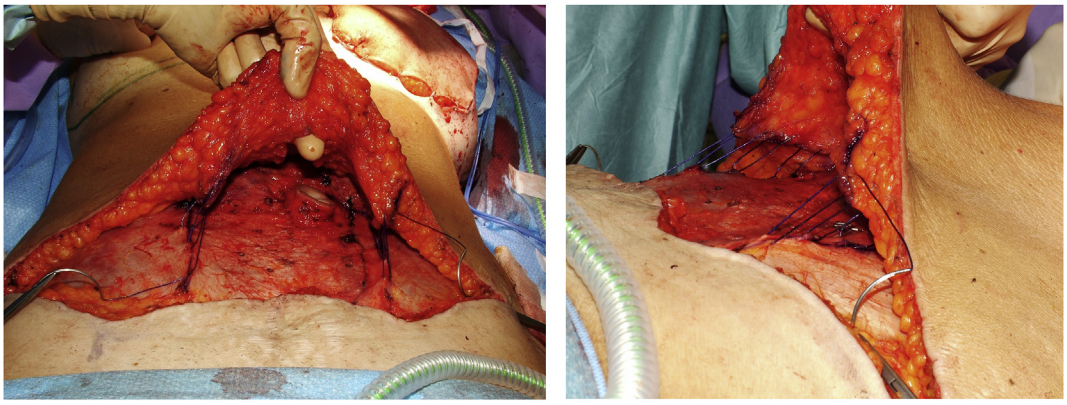

Figure 1 Frontal and lateral views demonstrating quilting technique.

Table 1 Length of surgery and post-surgical complication by surgical technique.

	All	SC	PQ	Bootstrap mean difference (95% CI)	p-value
Operation time, median (IQR)	430 (408–480)	480 (420–510)	425 (398–450)	−57.4 (−82.8–−34.0	<0.001
Return to theatre, n (%)	10 (9.9)	1 (3.9)	9 (12.0)	\	0.446
Seroma, n (%)	4 (3.9)	2 (7.7)	2 (2.6)	\	0.268
Abdominal drain output	145 (100–251)	222.5 (145–390)	130 (79–180)	−115.6 (−183.3–−46.8)	<0.001
Time with drains (days)	5 (4–6)	5 (4–6)	5 (3–6)	−0.28 (−0.89–0.32)	0.36

Table 2 Linear regression model for association between surgical technique and operation length, adjusted for potential confounders.

	Beta	SE	P
Flap raise time	0.582	0.148	<0.001
Group			<0.001
SC	Ref	\	
PQ	−74.3	13.4	
Ischaemia time	0.496	0.309	0.112

Obviously a prospective randomized controlled trial would be required to show a clear link between the use of a quilting suture and a reduction in seroma rates and operating time. However our results add to the pre-existing body of evidence that support the use of a progressive barbed suture for closure of the abdominal wound in patients undergoing DIEP and MS-TRAM free flap reconstructive surgery. We believe that the use of one suture for abdominal suture is just as effective as two and anticipate that future studies will confirm this.

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Author contribution

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Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.bjps.2016.10.002

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Lateral nasal artery perforator V—Y flap for reconstruction of nasal defects

Dear Sir,

We commend the authors of the article published in the JPRAS "An "oxhorn"-shaped V—Y advancement flap unilaterally pedicled on a nasal superficial musculoaponeurotic system for nasal reconstruction"[1] for the accurate description of their surgical technique. We found the geometrical description of the article useful and the artwork accompanying the text is excellent. The authors describe the use of the SMAS layer of the nose as a vascularised carrier system for a curved V—Y advancement flap for the reconstruction of nasal tip, tip-alar and tip-dorsal defects with good functional and cosmetic outcome. The main advantages of this technique according to the authors are the dependable nature of this flap and the amount of advancement that is achieved, allowing the flap to reach the midline comfortably. Disadvantages of this technique, in our view, include the extensive dissection required to mobilise this flap and the possible additional scar placed on the side of the lateral nasal area.

The senior author (NSN) has used the curved V—Y advancement flap in this area extensively and it is the standard way to reconstruct defects up to the dorsal tip of the nose, and for an area size up to 1.6 cm in diameter in our practice. In our view this flap gives the best cosmetic outcome as it follows the natural lines of the ala and extensive scarring is avoided.

We have two comments to make. First, we avoid extending the "tail" of the flap onto the nasolabial area of the cheek, as this places scars on the aesthetic unit of the cheek and it may distort the cheek/nasal ala border with scarring.

Furthermore, the vascular supply to the skin flap can be based on the pedicle of the lateral nasal artery avoiding extensive dissection of the lateral nasal skin, point being proven in the case we present in this letter.

We design the flap to overly the anticipated course of the lateral nasal artery. This vessel can be identified with careful dissection in the subdermal plane. Skin incisions are made and the cephalad border of the flap is raised on this plane. The artery is identified close to this border of the flap (Figure 1). Gentle dissection of the artery from the surrounding soft tissues and laterally allows for significant degree of flap mobility, obviating dissection further cephalad and additional scarring. Flap inset is performed without tension and no distortion of the alar rim is observed (Figure 2). We have found this pedicle very dependable and a lateral nasal branch is identified in the vast majority of patients. In the few cases where the artery is not identified near the cephalad border, the flap is raised on the subperichondrial plane with careful spread dissection and it is based on the nasal SMAS layer for vascular supply.

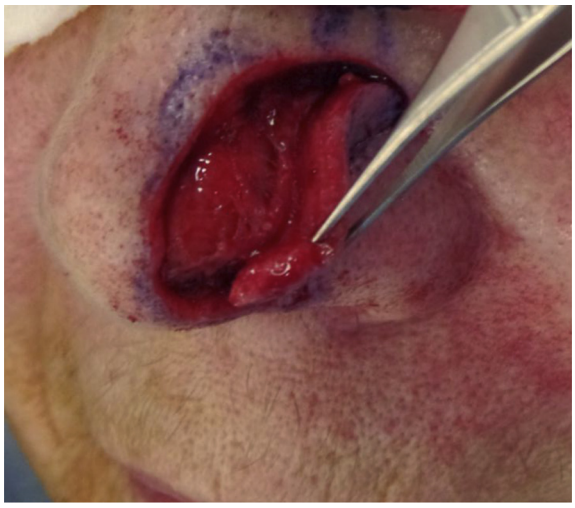

Figure 1 Following careful dissection of the superior border of the flap on the subdermal/nasal SMAS plane, the vessel is identified and preserved in contact with the skin flap.

Using the described technique we have not observed any flap complications, including partial or complete flap loss. Transient postoperative venous congestion is usually observed, but this resolves within the first week. It is

Figure 2 Postoperative result-oblique view shows well healed scars with no distortion of the contours of the nose. The scars are limited to the nose and they do not extend onto the nasolabial fold area.