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Autogenous Post-Mastectomy Reconstruction

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ABSTRACT

The present study included 20 female patients after modified radical mastectomy. Ten patients had chest wall defects and the other ten patients asked for a new breast reconstruction. Four pedicled myocutaneous flaps were used:

a- Latissimus dorsi myocutaneous flap, LDMF (4 cases).

b- Vertical rectus abdominis myocutaneous flap, VRAMF (6 cases).

c- Unipedicled transverse rectus abdominis myocutaneous flap, `unipedicled TRAM (4 cases).

d- Bipedicled transverse rectus abdominis myocutaneous flap,

`bipedicled TRAM (6 cases).

12 cases were immediate reconstruction and 8 cases were delayed reconstruction. Results were evaluated, based upon: Flap reliability, complications, aesthetic result, donor site morbidity, operative time, limitations and patient selection.

Results were discussed. It was concluded that the latissmus dorsi myocutaneous flap is the most reliable, the vertical rectus abdominis myocutaneous flap has the shortest operative time, the bipedicled transverse rectus abdominis myocutaneous flap has the best aesthetic result, while the unipedicled transverse rectus abdominis myocutaneous flap is in need for preliminary delay to increase reliability.

INTRODUCTION

After modified radical mastectomy, the role of plastic surgeon is either to close a chest wall defect or to reconstruct a new breast. Postmastectomy chest wall defect may be due to operative defect, wound dehiscence, skin flaps necrosis, or radionecrosis, and these patients are considered for reconstruction by myocutaneous flaps **[1]**.

On the other hand, breast reconstruction is now regarded as an integral part of breast cancer management. A variety of techniques have been described for breast reconstruction including myocutaneous flaps, silicone implants, and tissue expanders **[2]**. The world-wide popularity of expander/implant reconstruction is related to the speed and apparent simplicity of this approach, which has no donor site morbidity and requires a short hospital stay and little convalescence. Complications are common with prosthetic reconstruction like infection, exposure, capsular contracture, and rupture **[3]**.

In contrast to prosthetic reconstruction, autologous techniques are complex, more expensive and require comprehensive training and experience **[4]**.

L.D reconstruction is a versatile and reliable method which results in a life-like, ptotic breast and can be used to reconstruct irradiated tissues. Complications are related to donor site morbidity, including pain, scarring, and seroma formation in up to 33% of cases **[5]**. Most patients need additional implant volume replacement, leading to capsule formation in up to one-third when using smooth surfaced implants **[6]**. Autogenous LD reconstruction may be considered for smaller-breasted women who have enough dorsal skin and subcutaneous fat to create a flap which has sufficient volume to replace the breast without the need for a prosthesis **[7]**.

The TRAM-flap is based on a transversely sited lower abdominal island of skin and fat, supplied by perforators arising from the superior and inferior epigastric vessels. Division of the inferior epigastric vessels allows elevation and transposition of the flap, attached to one or both superior epigastric pedicles, depending on the size of flap required. Rectus muscle is taken with each pedicle, and both pedicles may be used in high risk patients to improve the circulation and reduce the flap necrosis **[8]**.

Modern TRAM flap reconstruction results in a soft natural and ptotic breast, and avoids the need for additional prosthetic volume replacement. The overall complication rate is 16-28%, major complications include flap loss, abdominal herniation and abdominal weakness [9].

The VRAM-flap has a vertical skin island over the entire muscle or located on the distal or proximal muscle flap in relation to the flap base. This skin island may extend across the midline or beyond the lateral aspect of the muscle. The limitation of the skin island design is primarily related to achieving direct donor site closure. Closure of the donor site in the vertical direction is generally limited to a width of 6 to 8cm [10].

Immediate breast reconstruction offers many advantages compared with delayed reconstruction. A superior cosmetic result can be achieved while reducing the cost and anesthetic risk for a two-stage procedure [11].

The aim of this work is to evaluate and compare between 4 types of myocutaneous flaps used for post-mastectomy reconstruction.

PATIENTS AND METHODS

The present study included 20 female patients after modified radical mastectomy. 10 patients had chest wall defects, and the other 10 patients asked for a new breast reconstruction. 12 cases were immediate reconstruction and 8 cases were delayed. Four pedicled myocutaneous flaps were used:

1- L.D flap (4 cases).

2- V.R.A.M flap (6 cases).

3- Unipedicled T.R.A.M flap (4 cases).

4- Bipedicled T.R.A.M flap (6 cases).

The results were evaluated, based upon flap reliability, aesthetic result, donor site morbidity, operative time, and complications.

RESULTS

No mortality or total flap loss occurred in this work. The complications (35%) were:

1- Partial loss of the flap in 3 cases (2 unipedicled TRAM, 1 VRAM) (15%).

2- Seroma in one case (L.D flap) (5%).

3- Infection in one case (bipedicled TRAM) (5%).

4- Abdominal wall weakness in two cases (bipedicled TRAM) (10%).

Limitations of the flaps were as follows:

- LDMF was relatively contraindicated if thoracodorsal blood vessels were ligated during the mastectomy operation.
- VRAM and TRAM flaps were contraindicated if there was surgical scarring of the upper abdomen (ligation of the superior epigastric artery), and if there was a previous abdominal lipectomy (ligation of the perforators of the flaps supplying the skin and subcutaneous tissues).

All the donor sites were closed directly and a prolene mesh was used in 6 cases (4 bipedicled TRAM and 2 unipedicled TRAM).

Suction drains were removed either from the donor or the recipient site when the discharge was less than 30c.c./24 hours.

Figs. (1-4) show some of our cases pre and postoperatively.

DISCUSSION

The breast is an important symbol of femininity. Patients with breast deformities often experiences loss of self-confidence that may affect their everyday life. Breast reconstruction can restore a sense of self and help the patient return to a normal life [12]. The standard latissimus breast reconstruction was a dramatic improvement over the subcutaneous and subpectoral implant reconstruction that were the prevailing methods in 1978 [13]. The total autogenous L.D. breast reconstruction carries the full thickness of back fat with the myocutaneous skin paddle, and carries fat over most of the surface of the latissimus muscle. It is this fat that replaces the lost breast volume, the shape of the upper breast, and the anterior axillary fold [14]. McCraw et al., [15] reported excellent results in partial defects, Poland deformity, and salvage of failed implant and TRAM reconstructions. Flap loss in less than 2% in the early period. Revisions are usually minor and can be done with local anesthesia. When small saline implants are used to augment the flap shape it is very unusual to have a problem, because these implants range from 100 to 150cc and only account for about 25% of the breast volume. When it is necessary to use large implants, any changes in the shape of the implant will cause visible changes in the reconstruction. In this study, L.D myocutaneous flap reconstruction was very reliable with only one case of post-operative seroma and the donor site morbidity was minimal.

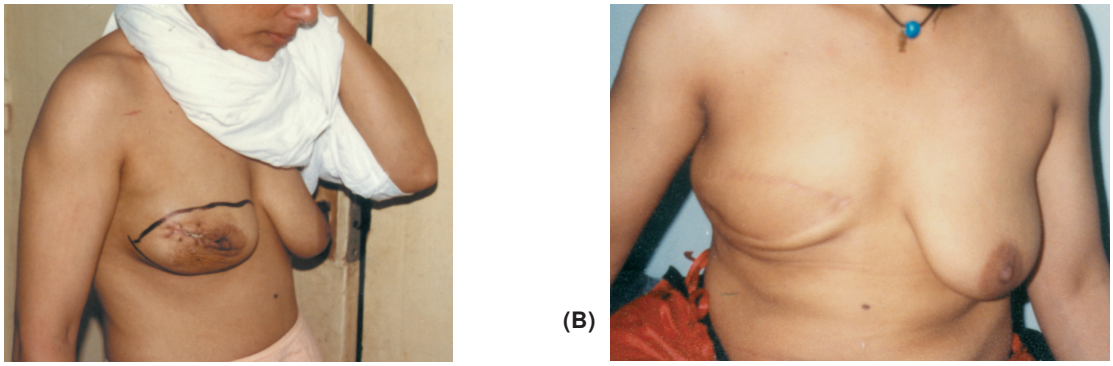

Fig. (1): Pre and postoperative photos of immediate breast reconstruction with latissimus dorsi myocutaneous flap.

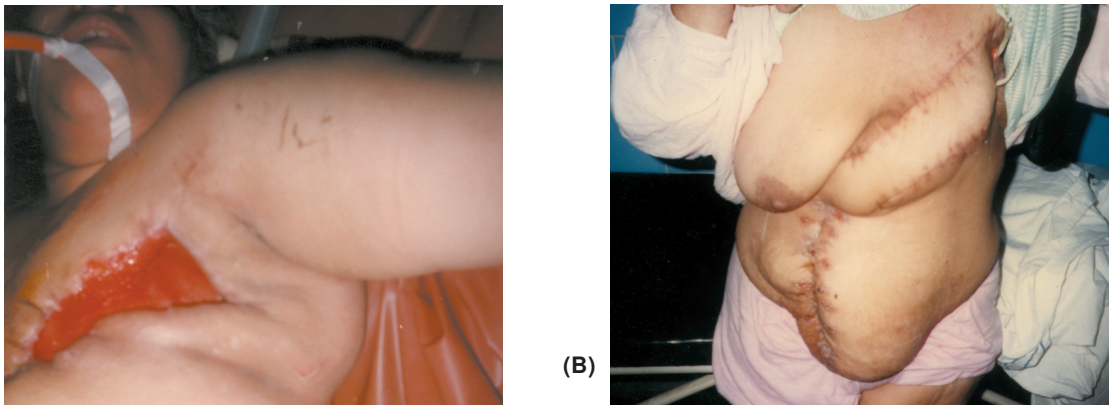

Fig. (2): Pre and postoperative photos of delayed breast reconstruction with vertical rectus abdominis myocutaneous flap.

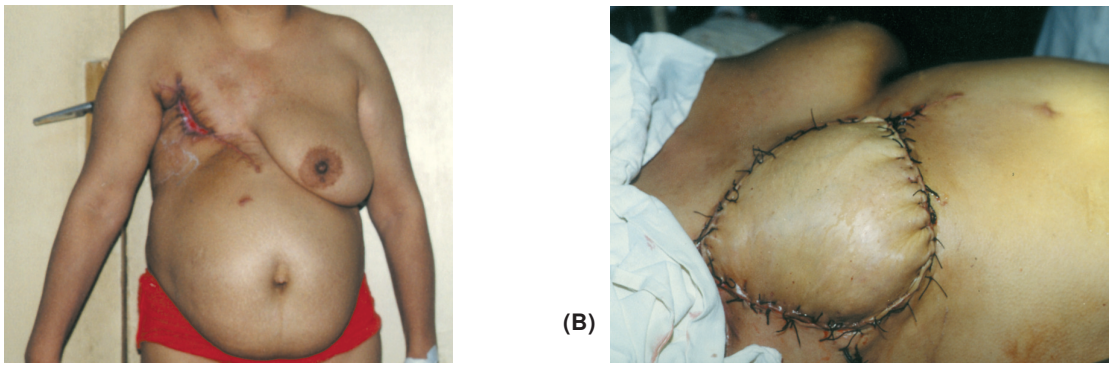

Fig. (3): Pre and postoperative photos of delayed breast reconstruction with unipedicled transverse rectus abdominis myocutaneous flap.

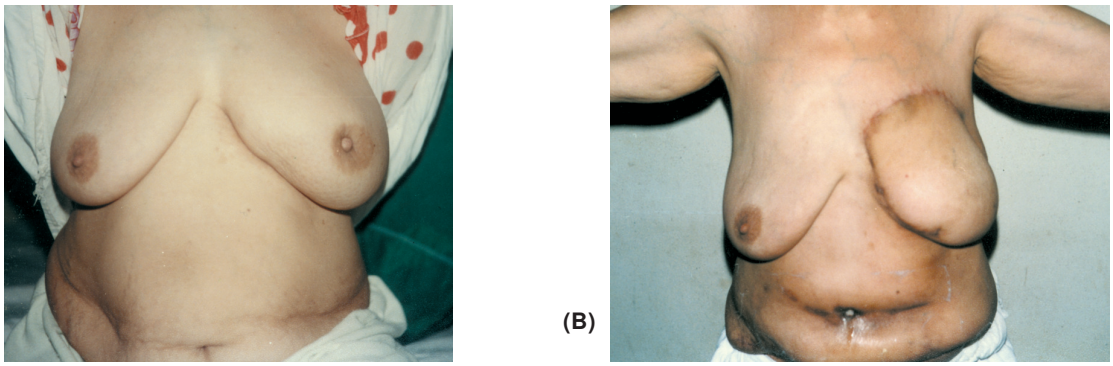

Fig. (4): Pre and postoperative photos of immediate breast reconstruction with bipedicled transverse rectus abdominis myocutaneous flap.

Table (1): Comparison between the four flaps.

	Reliability	Aesthetic result	Donor site morbidity	Operative time
LDMF	++++	++	+	++
VRAM	+++	+	++	+
U-TRAM	+	+++	+++	+++
B-TRAM	+++	++++	++++	++++

VRAM myocutaneous flap with vertical skin island has rich blood supply from the perforators of the superior and inferior epigastric vessels. Maruyama et al., **[16]** reported the use of VRAM in 16 cases with two superficial necrosis and one distal 2cm loss of the flap. In this study, VRAM flap had great reliability with only one case of 2cm distal necrosis of the flap.

TRAM myocutaneous flap with transverse skin island for breast reconstruction was originally described by Hartrampf et al., **[17]** with maintenance of the continuity between the anterior rectus sheath and the overlying subcutaneous fat and skin. The procedure may be performed as a unipedicled flap using one rectus muscle or as a bipedicled flap using both rectus muscles to support a larger amount of skin and fat for creation of a larger breast mound with more vigorous blood supply **[17]**. In this study unipedicled TRAM had moderate reliability with two cases of distal flap necrosis, while, the bipedicled TRAM had better reliability with one case of infection and two cases of abdominal wall weakness.

The results were discussed and it was concluded that the latissimus dorsi myocutaneous flap is the most reliable, the vertical rectus abdominis myocutaneous flap has the shortest operative time, the bipedicled transverse rectus abdominis myocutaneous flap has the best aesthetic result, while the unipedicled transverse rectus abdominis myocutaneous flap is in need for preliminary delay to increase reliability.

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