

Original Research Article

Our early experience in immediate total breast reconstruction with deep inferior epigastric artery perforator flap

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ABSTRACT

Background: As the breast cancer diagnosis has increased over recent years, patient have become more informative regarding treatment and reconstructive options, hence the expectation of the results will be very high. Reconstruction of breast with best result and less donor site morbidity is the target.

Methods: A total of 20 cases were studied between January 2018 to January 2019 at our hospital to assess the outcome of deep inferior epigastric artery perforator (DIEP) flap for immediate breast reconstruction.

Results: A total of twenty DIEP flaps were performed. Mean time required for flap harvest was 125 minutes, and time taken for flap inset was 110 minutes. There was no flap loss in any of the twenty cases. Two patients had fat necrosis. All patients were satisfied with aesthetic outcome.

Conclusions: DIEP flap has good aesthetic result with less donor site morbidity.

Keywords: DIEP, Morbidity, Aesthetic outcome

INTRODUCTION

Autologous breast reconstruction has undergone progressive evolution since introduction of the transverse rectus abdominis musculocutaneous (TRAM) flap in 1979.¹ Major shifts have been a reflection of improved technique and understanding of anatomy. Within this timeline, development of the deep inferior epigastric artery perforator (DIEP) flap represented a significant step forward.

The use of transverse rectus abdominus a pedicled flap was described by Hartrampf et al, Robbins and Holmstrampf et al described the use of abdominal flap as a free flap for breast reconstruction.¹⁻³

Over the last 15 years, the popularity of perforator flaps have been increasing rapidly, especially DIEP flap which

have shown excellent results. Expanders and implants have been popular choices for breast reconstruction; however, the aesthetic outcomes are known to deteriorate with time, particularly following radiation therapy which is indicated in all cases of breast conserving surgery.⁴

Our study aimed to assess the DIEP flap for breast reconstruction with regards to ease of dissection, time taken for flap harvest and inset, complications, and aesthetic outcome.

METHODS

A total of 20 cases were studied between January 2018 to January 2019 at our hospital. Study protocol followed CONSORT guidelines. Patient demographic details were recorded. Twenty patients (mean age 35 years) were selected for the study. All patients were cases of unilateral breast carcinoma planned for mastectomy with

immediate breast reconstruction. Inclusion criteria included patient choice, presence of sufficient lower abdominal subcutaneous tissue, and patients with unilateral breast carcinoma. Patients who were very slender, with history of previous abdominal surgery or abdominal scarring, those with severe comorbidities or limited life span, and those patients who refused donor site scar or complications were excluded from the study.

Institute ethics committee clearance was obtained prior to initiation of the study, and informed consent was taken from all included patients after explaining the nature of the procedure, treatment options, and associated complications.

All patients were operated upon by the same surgical team, comprised of surgical oncologists and plastic surgeons. All patients received 1 gm Cefotaxime IV at induction as per our institute protocol.

The selected patients anthropometry was documented, clinical examination of breast and abdomen was done and appropriate staging investigations were performed. The perforators were preoperatively marked with CT angiography / Doppler.

Surgical technique

The patient was placed in supine position with arms positioned beside the trunk, intravenous line secured, urinary catheter placed. Incision was placed over the previously marked area. A separate circumferential incision was made around the umbilicus to separate it from the flap. Dissection of the pedicle was started from laterally in the flanks and progressed medially.

Anterior rectus fascia was incised, and rectus abdominis muscle was split longitudinally to expose the perforator. The perforator was then liberated by blunt dissection taking care to avoid spasm. The side branches were ligated, and appropriate length of perforator was dissected as per requirement.

Once flap harvest was completed, inset was performed after anastomosing perforator to the ipsilateral internal mammary perforator. Donor site was closed primarily in all cases in layers. Suction drains were placed in both the donor site, as well as below the flap.

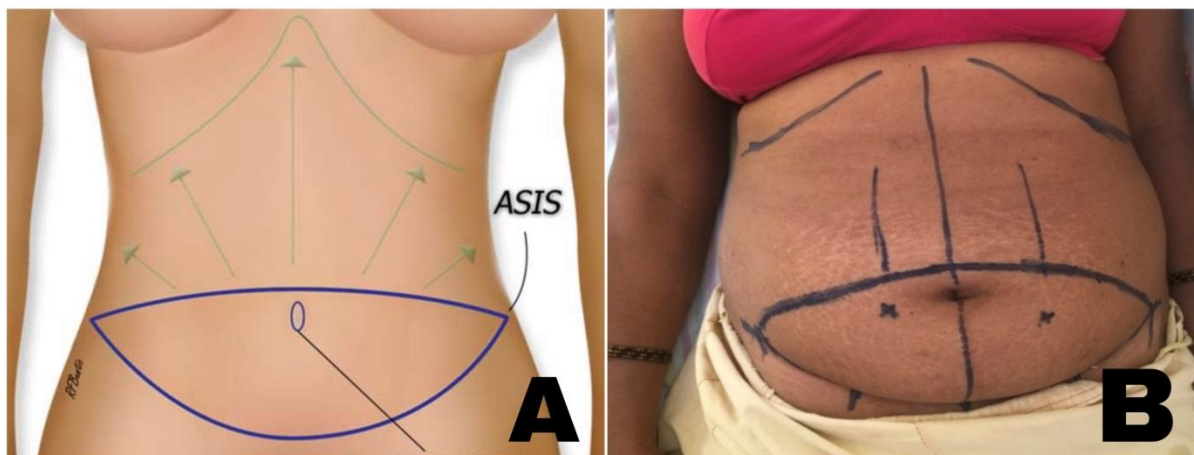


Figure 1 (A and B): Marking of the flap.

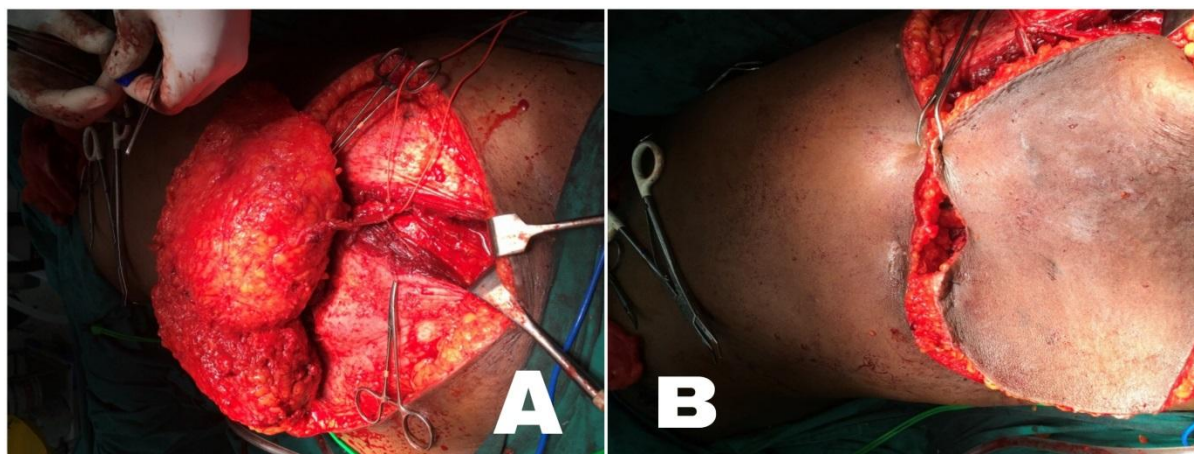


Figure 2 (A and B): Elevation of flap with single perforator.



Figure 3 (A and B): Immediate post operative photos.



Figure 4 (A and B): Follow up pictures.

RESULTS

A total of twenty DIEP flaps were performed in twenty patients for total breast reconstruction, with a mean age of 35 years, 15% of patients having history of tobacco intake. Flap volume was adequate in all cases. Mean time required for flap harvest was 125 minutes, and time taken for flap inset was 110 minutes. Total case duration was shortened by means of two teams operating simultaneously, with one team preparing the recipient site (55 min average) after ablative surgery while the other harvested the flap. There was no flap loss in any of the twenty cases. Two patients had fat necrosis, which was managed conservatively (10%). Three (15%) patients had seroma formation at recipient site, and three patients (15%) had seroma formation at donor site. All cases were managed conservatively with needle aspiration. None of the patients had any surgical site infection, skin necrosis, or wound dehiscence. All patients were satisfied with aesthetic outcome.

Table 1: Demographic of patients.

Variables		Number	Percentage (%)
Age (in years)	Less than 30	1case	5
	30 to 50	19 cases	95
	More than 50	0 case	0
Side	Right	10 cases	50
	Left	10cases	50
History of tobacco intake		3 cases	15
Past medical history	Diabetes mellitus	2 cases	10
	Hypertension	1 case	5

Table 2: Time required for flap preparation and inset.

Time taken	Range	Mean
Flap harvest time	95 min - 150 min	125 min
Recipient site preparation time	48 min - 60 min	55 min
Flap inset time	96 min - 120 min	110 min

Table 3: Complications of surgery.

Complication	No of cases	Percentage (%)
Total flap necrosis	0 case	0
Fat necrosis		
Major	1 case	5
Minor	1 case	5
Seroma formation	3 cases	15
Infection	0 case	0
Donor site haematoma	0 case	0
Donor site seroma formation	3 cases	15

DISCUSSION

Breast reconstruction using autologous tissue is very safe and reliable operation, with very minimal complications in our study

In our experience, DIEP breast reconstruction is a significant and complex operation that is demanding of both the patient and the surgeon but can give a superb cosmetic result in shape, warmth and movement that is

very difficult to reproduce using any other reconstructive technique. The immediate breast reconstruction has a advantage of decreased amount of time and decreased exposure of patients to many surgeries. Whereas, delayed breast reconstruction is performed on the basis of patient's preference and advanced tumour requiring radiation. To put it in a word DIEP flap is ideal for both immediate and delayed reconstruction.

In our study total flap loss was not seen in any of the patients whereas six percent of total flap loss are seen in study done by Yap in Singapore and two percent in study done by Hamdi.^{5,7} Partial flap loss was seen in five percentage of our patients which were managed conservatively, which is also comparable with the study done by Hamdi in United Kingdom (six percent), Yap in Singapore (four percent).^{5,7} We had an experience of ten percent of fat necrosis in our patients, which was managed by regular dressings. Fat necrosis is the most common complication we had to face in our study which was managed with ease, it is also comparable with the study done by Chen in United States with fat necrosis of ten percent, but other like Selber has fat necrosis as low as two percent.^{6,8}

Table 4: Comparison with other studies.

Authors	No. of flaps	Total flap loss (%)	Partial flap loss (%)	Fat necrosis (%)
Yap⁵ (Singapore)	50	6	4	10
Chen⁶ (US)	41	0	0	12
Hamdi⁷ (UK)	50	2	6	6
Selber⁸ (US)	97	1	0	2
Enajat⁹ (Sweden)	18	0	0	6
Present study (India)	20	0	5	10

CONCLUSION

DIEP flap is major turnover in the field of breast reconstruction, which has given patients and surgeons an excellent satisfaction with the surgical outcome. Early experience of the surgeon is promising if proper anatomy and imaging is used. Aesthetic outcome are more concentrated in the experience curve and hence we want to conclude that DIEP flap has good aesthetic result with less donor site morbidity.

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Ethical approval: Not required

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