



Wise-pattern Skin Reducing and Nipple-Sparing Mastectomy Using Modified McKissock's Vertical Bi-pedicle Dermal Flap in Large Breasted Patients for Immediate Reconstruction and Revision Cases.

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Abstract

The safety of nipple-sparing mastectomy has been adequately validated and increasing number of patients opt for mastectomy with immediate reconstruction in early breast cancer or risk-reducing mastectomy. In large breasted women, down-sizing the breast skin envelope can be challenging, particularly when nipple preservation is desired. A bi-pedicle nipple-sparing mastectomy using the modified Letterman technique has been previously described. This technique combines the McKissock's vertical bi-pedicle dermal flap and the Wise-pattern skin-reducing mastectomy, to achieve the desired skin envelope in large breasted patients. There is minimal scarring on the breast mound, particularly within the social triangle or décolletage. The vertical bi-pedicle dermal flap ensure good vascularity to the nipple and protects the underlying implant from the skin incision.

This versatile technique translates the principles of breast reduction and nipple-sparing mastectomy to help achieve smaller reconstruction for large breasted women and has been previously described with 2-stage Tissue-expander reconstruction. Use of this technique in patients undergoing mastectomy with immediate implant reconstruction or autologous lateral chest wall perforator flaps, including revision cases by a single Oncoplastic Breast Surgeon is described. Despite the small number of cases, there were very few complications with high rates of patient satisfaction and without any implant loss.

Keywords: *McKissock; Vertical bi-pedicle dermal flap; Wise-pattern; Letterman; Immediate reconstruction; Autologous reconstruction; Implant reconstruction; Synthetic absorbable TIGR mesh; Lateral chest wall perforator flap reconstruction; L-TAP; Li-CAP; Adipo-dermal flap.*

Introduction

Breast cancer is one of the commonest cancers affecting more than 1.7 million women annually and is the leading cause of female cancer deaths in the world [1]. Increasing number of women elect to have mastectomy with immediate reconstruction when faced with a new diagnosis of breast cancer. There are multifactorial reasons for this preferential global trend; ranging from technical advances with simpler reconstruction options with less morbidity and early recovery, the so-called "Angeline Jolie effect" and the desire to take greater ownership of their own treatment [2, 3].

The introduction of Acellular Dermal matrix (ADM) in the late 1990's was a major game-changer resulting in an exponential uptake of implant-based reconstruction [4]. Made from a variety of biological sources, ADMs provide a stable inframammary fold, consistent aesthetic results, lower donor site morbidity, early recovery, shorter hospital stay compared to traditional autologous reconstruction, with high pati-

ent satisfaction rates. More recently, prepectoral implant placement using ADM cover and lipo-modelling has helped avoid some of the donor site morbidity associated with retropectoral implant reconstruction [5]. Newer and better design ADM's with parallel development of synthetic meshes offer greater choice for surgeons compared to the late 90's, with better reconstruction outcomes and fewer complication rates.

Immediate reconstruction following mastectomy with direct to implant or two-stage Tissue-expander is well established for patients with small to medium size breasts [6]. The aesthetically placed inframammary fold (IMF) incision offers adequate access for removal of the breast tissue and relevant axillary procedure [Figure 1]. Large breasted patients who desire smaller reconstructed breasts post mastectomy, present additional challenges due to redundant mastectomy skin envelope. Traditional skin-sparing mastectomy which sacrifices the nipple-areolar complex (NAC), can leave unsightly scarring across the breast mound. The mastectomy scar is often visible within the "social triangle" or décolletage area of the breast. The nipple is an integral component of breast aesthetics and loss of the nipple can have significant psychological implications for patients, with lower satisfaction rates compared to nipple-sparing mastectomy [Figure 2].

Two-stage procedure with reduction mammoplasty followed by nipple-sparing mastectomy and immediate implant/ tissue-expander reconstruction, has been previously described. This was mainly used in the prophylactic setting and requires a period of recovery between

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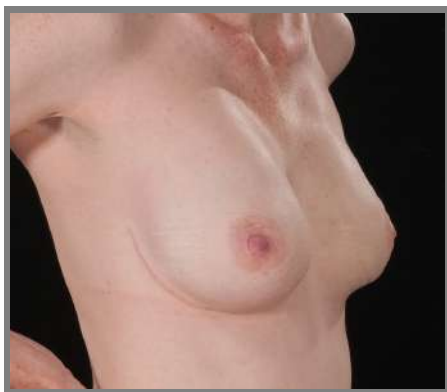


Figure 1: Nipple sparing mastectomy via IMF incision.



Figure 2: Right skin-sparing mastectomy sacrificing NAC and LEFT nipple-sparing mastectomy via IMF incision.

the two operations [7]. Wise-pattern skin incision with lower pole dermal flap support for implant reconstruction, with or without nipple preservation via superior pole pedicle is also well documented [8, 9, 10, 11]. Modified Letterman's technique with a bi-pedicle dermal flap to preserve the nipple has been previously described by the author [12]. The McKissock's vertical bi-pedicle flap technique to provide dual blood supply to the NAC, was originally described in 1972 with reduction mammoplasty [13].

An adaptation of McKissock bi-pedicle dermal flap, combined with a Wise-pattern incision to achieve skin-reducing mastectomy is described [Figure 3, 4]. This technique has been published by Folli et al in the context of 2-stage Tissue-expander reconstruction following mastectomy [14]. This article describes a single Oncoplastic Breast Surgeon's experience of this technique with direct to implant immediate reconstruction, revision surgery following previous implant reconstruction and autologous lateral chest wall perforator flap reconstruction following mastectomy. The bi-pedicle dermal flap helps protect the underlying implant and mesh from the incision site and minimises the risk of infection and implant loss. The Wise-pattern incision addresses any redundant mastectomy skin envelope and avoids excessive and unsightly scarring on the "social" aspect of the breast mound. The vascular supply to the mastectomy skin flap and the nipple is maintained via the fine dermal and subdermal plexus of vessels. Careful patient selection, avoidance in smokers and meticulous surgical techniques can help achieve good aesthetic results with minimal complications and high patient satisfaction rates. Early results of the author's experience with this technique was accepted as a poster presentation at the Leura 8 Conference in Sydney 2016.



Figure 3: Preoperative photo for prophylactic mastectomy.



Figure 4: Post operative Nipple-sparing_ skin-reducing mastectomy.

Methods

A case series of 13 procedures in 8 patients between November 2015 to July 2018 is described, combining Wise-pattern skin incision and modified McKissock vertical bi-pedicle dermal flap for preservation of the NAC. All cases were performed by a single Oncoplastic Breast Surgeon who undertook both mastectomy and the reconstruction components of the procedure. The results of the Italian group were not known when this technique was first introduced in Christchurch, New Zealand. Immediate reconstruction was carried out in 10 cases with either mesh-assisted direct to implant reconstruction or autologous lateral chest wall perforator flaps. There were 3 revision cases to address the redundant mastectomy skin from previous nipple-sparing mastectomy and implant reconstruction [Table 1].

Table 1: Types of reconstruction procedures.

| Procedure | Number of patients | Number of procedures |
|--|--------------------|----------------------|
| Mastectomy with immediate implant reconstruction | 4 | 6 |
| Revision surgery to address redundant skin envelope | 2 | 3 |
| Mastectomy with immediate autologous flap reconstruction | 2 | 4 |
| Total | 8 | 13 |

All patients in this series had E-cup (550cc) or larger breast size with variable degree of ptosis. Patients underwent mastectomy for treatment of breast cancer or risk-reducing surgery due to inherited gene mutation. All patients requested smaller reconstructed breast compared to their preoperative breast size.

Ethics approval was sought and each patient had detailed preoperative discussions on two or more separate occasions. Patients were offered all appropriate reconstruction options as part of the discussion. Hand-drawn diagrams were used to explain about scar placements and bi-pedicle dermal flap to maintain vascular supply to the nipple. Patients were cautioned about potentially higher risk of nipple necrosis or loss, compared to standard nipple-sparing mastectomy via an inframammary fold (IMF) incision. All patients had additional counselling with specially trained Breast Care Nurses to ensure compliance with follow up protocols and restriction of activities during recovery. Patients undergoing risk-reducing mastectomy were assessed by Clinical Psychologist as part of the surgical work up, in accordance with current international guidelines. Specially prepared Patient information leaflets with details about the operation and potential risks and complications were provided to all patients in advance. Special Consent Forms permitting use of clinical photographs were signed by all patients.

All patients in this series were non-smokers or had given up more than 2 years prior to surgery. Patients with BMI >32 were not considered for implant reconstruction as per hospital protocol, due to concerns about higher complication rates and reconstruction failure. There were two patients with raised BMI of 32.7 and 39 respectively, who were offered lateral chest wall perforator flaps, as an alternative to implant reconstruction or Latissimus dorsi (LD) flap. The L-TAP (Lateral thoracic artery perforator) and Li-CAP (Lateral intercostal artery perforator) served as a complete autologous adipo-dermal flap reconstruction in both these patients.

Clinical photographs were taken at various stages before and after surgery to monitor progress and to document any complications. Patients were measured preoperatively to mark the desired final nipple position and redundant skin flaps, before designing the vertical bi-pedicle dermal flap [Figure 5 & 8]. The skin marking is similar to standard Wise-pattern breast reduction, and angle and length of the vertical limb is based on the desired final breast volume [Figure 6]. The base of the inferior pedicle was deliberately kept wide to help recruit blood supply from anterior intercostal perforators. The dual pedicle allowed variable positioning of the NAC which could be adjusted at the end of the reconstruction [Figure 7]. The superior pedicle was marked and de-epithelised at the end of the procedure to ensure ideal position of the NAC. Larger NAC was down-sized to create the appropriately sized nipple, which was proportionate to the final reconstructed breast.



Figure 5: Pre operative marking RIGHT breast TE replacement with implant.



Figure 6: Skin markings and bi-pedicle dermal flap.



Figure 7: Bi-pedicle dermal flap after mastectomy.



Figure 8: Post op results at 2 years LEFT skin-reducing_ nipple sparing mastectomy with implant reconstruction.

Temporary sizer was used to determine the optimal implant volume for retropectoral implant reconstruction and in revision cases to ensure adequate skin envelope and tension-free wound closure. Synthetic absorbable TIGR mesh was used as lower pole support for both retropectoral direct to implant reconstruction and in revision cases. The mesh also helped provide adequate cover for the lower third of the silicone implant.

Two patients underwent mastectomy with immediate lateral chest wall perforator autologous flap reconstruction. The donor site was closed with Glubran, a synthetic haemostatic glue with standard 2-layer closure of the wound with absorbable sutures (Vicryl and Stratafix, Ethicon J&J®). Both patients developed seroma in the back wound 1-2 weeks post-surgery and aspirated regularly by the Breast Care Nurses until it settled completely.

A single drain was used to remove the seroma from the mastectomy site in all patients. A closed system, low-suction no.15 French Blake drain (MILA international *) was placed below the skin flap and brought out via a separate incision in the lower chest, away from the IMF. Use of low-negative pressure dressing (PICO Smith and Nephew*) was used prophylactically to help improve wound healing along the IMF in the first week post-surgery. The NAC was protected using Jelonet paraffin gauze and Allevyn sponge (Smith & Nephew*) and covered with clear Tegaderm dressings (3M Health Care United States) to allow monitoring of the nipple viability during the initial post-operative period.

This technique was also used in 3 cases of revision surgery in patients with redundant mastectomy skin flaps following previous nipple-sparing mastectomy and implant reconstruction [Figure 8, 9]. The incision provided adequate access for capsulectomy and replacement of implant and mesh without compromising the vascular supply to the NAC. A single No. 15 Blake drain was used for seroma and to minimise any tension along the suture line. Patients were marked carefully prior to surgery and use of temporary sizers during surgery helped ensure tension-free wound closure.

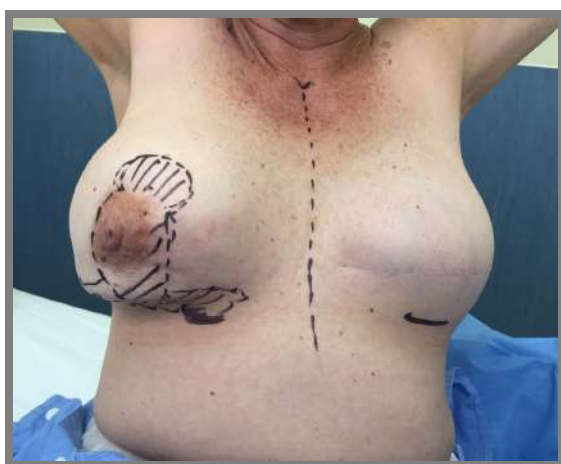


Figure 9: Redundant mastectomy skin flap following implant reconstruction.

All patients were carefully monitored by an experienced Oncoplastic Breast Care Nurse following discharge from hospital to ensure consistent wound care and early recognition of complications. Hospital stay, wound infection, seroma output, nipple viability, wound dehiscence, implant loss within 3 months, post-operative pain, scarring and cosmetic outcomes were carefully assessed. Patients were given preoperative Chlorhexidine body wash for 3 days prior to surgery to minimise the risk of infection. Two patients did not receive Chlorhexidine body wash due to documented allergy. All patients received intravenous prophylactic antibiotics for 24 hours.

Post-operative antibiotics was continued for the duration of the drain in all cases of immediate reconstruction and revision cases involving implants. All patients were reviewed in the Surgical outpatient clinic at regular intervals until the wounds were completely healed. Patient satisfaction scores from 1-5 were recorded at 3 months following surgery; with 1 being completely dissatisfied ranging to 5 as very satisfied with their cosmetic outcome. Most patients were very happy with their cosmetic results and preferred their reconstructed breast compared to preoperative breast size. One patient scored her results as 4 at the three-month post-operative follow up, but was very satisfied with her results at 2 years post-surgery

[Figure 5, 10]. All other patients rated high satisfaction scores of 5 at 3 months post op



Figure 10: Revision surgery post op RIGHT nipple preserving mastectomy.

Results

All patients were operated by a single Oncoplastic Breast Surgeon who performed both the mastectomy and the reconstructive components of the operation. There were no implant losses at 90 days and at 32 months of follow up, in all 9 cases of immediate implant reconstruction or revision surgery [Table 2]. There were 4 cases of mastectomy with immediate autologous lateral chest wall perforator flaps reconstruction using Lateral thoracic and lateral intercostal artery perforators. The average mastectomy specimen weight was 859.4gm (range 501-1288gm) and the average implant size was 466cc (range 400-640cc).

Table 2: Results.

| Patient Demographics | Mean (range) | Total number |
|---|----------------------|--------------|
| BMI | 29.4 (24-39) | |
| Body weight | 80.7kg (64-114kg) | |
| Mastectomy specimen weight for immediate reconstruction | 859.4g(501 -1288g) | |
| Seroma output | 561ml (345-720ml) | |
| Implant size | 466cc (400-640cc) | |
| Hospital stay | 2.09 days (1-4 days) | |
| Partial nipple necrosis | | 2 (15.38%) |
| Delayed wound infection | | 1 (7.6%) |
| Number of implant loss @ 90 days | | 0 (0%) |
| Patient satisfaction score (1-5) @ 3 months | 4.8 (4-5) | |

There were two cases of partial nipple necrosis (15.3%); one case of superficial epidermal necrolysis which healed within 6 weeks without compromising integrity or aesthetic appearance of the NAC or the underlying implant. The other case of nipple necrosis was full thickness involving the lower 1/2 of the NAC in a patient with autologous Li-CAP flap. Both cases were managed conservatively with special dressings with acceptable final results. One patient had delayed wound infection (7.6%) at the junction of the circumareolar incision and vertical limb 3 months post-surgery. Simple dressings and oral antibiotics helped achieve satisfactory results without affecting cosmetic outcome [Figure 11, 12]. The bi-pedicle dermal flap helped contain the infection without compromising the underlying mesh or implant.



Figure 11: Pre op bilateral risk reducing mastectomy.



Figure 12: Post op results revision surgery with implant reconstruction.

All implant-based reconstruction in this series were undertaken in patients having risk-reducing mastectomy or those requesting contralateral mastectomy. This procedure was not offered to women who were active smokers or those with significant medical comorbidities. Two patients underwent immediate autologous flap reconstruction due to raised BMI. One of them had Neoadjuvant Endocrine therapy with Letrozole for 9 months for a left breast cancer, but requested bilateral mastectomy as per preferred treatment. Histology confirmed clear margins and node negative invasive lobular cancer with MDT recommendations for Radiotherapy. The patient declined Adjuvant Radiotherapy due to small benefit. The second patient underwent risk-reducing mastectomy for BRCA1 gene mutation and found to have an incidental triple negative breast cancer on histology of the right breast. Patient was referred for Adjuvant Chemotherapy but did not required Adjuvant Radiation treatment.

Despite the extent of scarring with the Wise-pattern incision, the implant remained well protected by the bi-pedicle dermal flap and without any case of implant loss in this series. The average length of hospital stay was 2.09 days and mean seroma output was 561ml (range 345-729ml). The drain was left until the daily measured output was less than 30ml, but no longer than 2 weeks. Patients with raised BMI who underwent autologous lateral chest wall perforator flap reconstruction, had minimal donor site morbidity and lower analgesia requirements compared to standard LD or implant reconstruction. The average return to normal activities was approximately 3 months after immediate implant reconstruction and 6 weeks following autologous chest wall perforator flap and revision cases.

The final cosmetic outcome was better in patients undergoing revision surgery due to redundant mastectomy skin flaps following implant reconstruction [Figure 9, 10]. High satisfaction rates with the aesthetic outcome and more natural appearance of post reconstruction results, makes the autologous lateral chest wall perforator flaps, a popular option in larger breasted patients with raised BMI [Figure 13, 14].

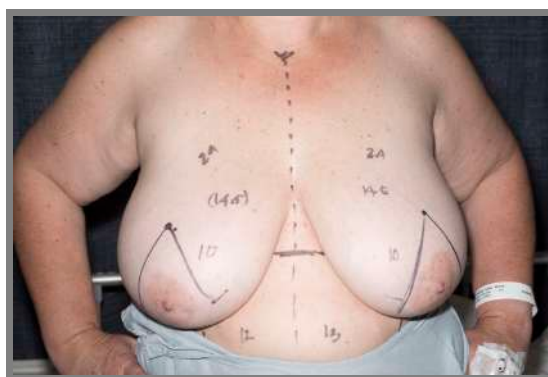


Figure 13: Pre op Nipple-sparing skin-reducing mastectomy with lateral chest wall perforator flap.



Figure 14: Post op mastectomy + autologous perforator flap.

Discussion

Following introduction of Goldilocks mastectomy in 2012, various skin-reducing mastectomy techniques have been described to help larger breasted women achieve the desired breast size following reconstruction [9, 10, 15]. Recent articles of skin-reducing and nipple preserving techniques describe superiorly based dermal flap to preserve NAC vasculature, in large breasted women undergoing maste-

ctomy [11]. Studies have documented increased rates of reconstruction failure when the mastectomy specimen weight is greater than 750gm [16]. Implant reconstruction in patients with large BMI is associated with higher risks of wound related complications and reconstruction failure [17]. It is difficult to obtain a suitable shape or implant size in larger BMI patients due to their chest width and good aesthetic outcomes from implants alone remains challenging. These patients often require revision surgery, with possible fat grafting to achieve the desired cosmetic outcome. Large seroma output combined with need for larger implants also increases the risks in these women with greater need for post-operative intervention and higher implant loss rates. One of the main reasons for the worldwide popularity of the Goldilocks mastectomy was it offered a simple immediate reconstruction option for high BMI patients, as an alternative to mastectomy and living with a heavy external prosthesis.

The Wise-pattern mastectomy and modified McKissock's vertical bi-pedicle dermal flap, combines existing techniques to provide dual vascular supply to the NAC and reduce the skin envelope in large breasted patients. This is a versatile technique and can be used in larger BMI patients having autologous lateral chest wall perforator flap reconstruction. In patients undergoing implant reconstruction, this technique works well, both in immediate reconstruction and in revision surgery.

Clinical experience in breast reduction surgery is useful in estimating the final desired breast volume when marking patients prior to surgery. Standard Wise pattern marking for breast reduction can be used to achieve the desired skin envelope. It is advisable to have a conservative approach when marking the skin flaps and avoid excessive removal at the outset. It is possible to achieve good outcomes with careful patient selection and education to ensure compliance with post-operative instructions. One case of superficial epidermal necrosis could have been caused by tight dressings along the IMF in the initial post-operative stage. Although supported by the mesh, it is possible that the implant weight could have potentially compromised the inferior blood supply to the NAC. Interestingly, both cases of nipple compromise developed several days after surgery, despite good intraoperative vascularity of the NAC.

Patients should be measured preoperatively and marked in the upright position and using permanent marking pens. The main limbs of the Wise-pattern are marked and de-epithelialized around the NAC, which may be down-sized to match the final desired breast volume. It is the author's preference to defer the final de-epithelialisation of the superior pedicle until the end of the procedure. This allows the nipple height to be adjusted based on the final breast reconstruction. It avoids committing the nipple position as the height can vary depending on type of implant, or shape of the autologous perforator flap reconstruction. This simple manoeuvre can prevent the "setting-sun" phenomenon due to inaccurately placed high nipple.

Basic surgical principles such as gentle tissue handling, avoiding traction injury to the skin edges from vigorous instrument retraction, regularly "resting the skin flap" during the procedure, maintaining core temperature with Bair-Hugger patient warming system and regular warm packs; can help protect the mastectomy skin flap and avoid flap necrosis [Figure 15]. It is important to avoid excessively thin mastectomy skin flaps to preserve the fine dermal and subdermal plexus of vessels which maintain the vascular supply to the mastectomy skin flaps and ultimately to the superior pedicle. Despite small numbers in this series, there were fewer complications of nipple necrosis and wound infection, compared to Folli's group; 15.3% compared to 81.8% and 7.6% compared to 38.5%, respectively.



Figure 15: Careful dissection and avoiding instruments to retract the skin flaps.

Careful pre-operative planning with dedicated Breast Radiologists helps to confirm adequate clearance of the tumour from the overlying skin. When the tumour is located in the lower inner or lower outer quadrants, the overlying skin may be removed as part of the dissection. Although there are no strong contraindications to Radiotherapy after implant reconstruction, patients need to be adequately counselled about the higher risks of implant loss and reconstruction failure if post-operative Radiotherapy is indicated. Due to the complexity of this technique and uncertainty about post-operative wound healing, this procedure was not offered to patients who were likely to need Radiotherapy. There is currently insufficient evidence to confirm the safety of nipple-sparing and skin reducing technique with implant reconstruction after Reverse sequencing or Neoadjuvant Radiotherapy.

All patients in this series underwent implant reconstruction as a one-stage procedure following mastectomy. Surgeons should have a low threshold to convert to Tissue-expander reconstruction, if there are any concerns about viability of the mastectomy skin flap. New SPY-technology laser angiography to assess tissue perfusion can verify intraoperative mastectomy skin flap viability, but should not be a substitute for good surgical technique and gentle tissue handling [18]. Avoiding excessively thin mastectomy skin flaps, careful dissection when preserving the fine dermal and subdermal plexus of vessels, avoiding indiscriminate use of diathermy near the skin flap and tension-free wound closure; are simple ways to avoid mastectomy skin flap necrosis. It is useful to order a range of implants to choose from during surgery. Temporary sizers can help determine the final implant volume and ensure tension-free mastectomy skin flap closure.

Inferior pole support is provided by using a mesh in retropectoral implant reconstruction and in revision cases. The mesh helps to minimise the tension on the suture line along the IMF and on the NAC, due to the weight of the underlying implant. Synthetic absorbable mesh (TIGR Novus Scientific ©) was used in all cases in this series.

Lifting the nipple height by more than 10cm in large ptotic breasts, is a recognised risk factor during breast reduction surgery. The superior pedicle provides a relatively poor vascular supply to the NAC following mastectomy. Use of modified McKissock's bi-pedicle dermal flap in this situation, confers a more robust blood supply to the NAC and lowers the risk of nipple necrosis. The nipple viability should be carefully monitored throughout the procedure. When performing the mastectomy, excessive traction injury to the dermal

flap should be avoided with use of traumatic instruments. The vertical bi-pedicle dermal flap allows for adjustment of the nipple height towards the end of the procedure, after the implant or autologous flap has been positioned.

The final area of de-epithelisation for the superior aspect of the bi-pedicle flap can be reserved until the end to help adjust the nipple position. The vertical bi-pedicle dermal flap can be left relatively thick for most of the operation and any excess breast tissue carefully dissected off the flap, using scissors or with diathermy at a lower setting, at the end of the procedure [Figure 16]. The pedicle needs to be thinned down so that it can be folded without tension and avoid "ghosting" effect under the skin. PlasmaBlade (Medtronic ©) is a newer diathermy device which allows safe dissection due to lower tissue temperatures and helps minimise the risk of nipple necrosis. Tension-free closure of the skin flap is imperative for good wound healing and minimises the risk of wound necrosis or venous congestion of the NAC [Figure 17].



Figure 16: Dermal flap thinned down to allow it to fold without tension.



Figure 17: Tension free closure of skin.

Larger mastectomy specimen weights and high BMI also results in high seroma output and drains are recommended to avoid any additional tension at the incision site. In the author's own experience, use of synthetic absorbable TIGR mesh resulted in half the seroma output compared to older design ADM's [19]. The TIGR mesh also provides a consistent IMF for at least 18 months post-surgery and minimises any tension along the IMF by supporting the inferior pole of the implant [20]. This allows the long IMF incision to heal well, including the T-junction. Early use of low negative pressure dressings along the IMF helps to improve wound healing, particularly in the T-junction.

Conclusion

The modified McKissock's technique combines breast reduction surgical principles using a Wise-pattern and vertical bi-pedicle nipple-sparing mastectomy for patients with large ptotic breasts. This technique allows a single stage mastectomy without sacrificing the NAC to achieve the desired smaller reconstructed breast. The vertical bi-pedicle dermal flap provides robust vascular supply to the NAC, even in revision cases.

The use of Wise-pattern is well established and easily translated in the context of mastectomy and previous literature have described both nipple-sacrificing as well as nipple-preserving techniques. There are several reports on use of dermal flap to provide inferior pole support for implant reconstruction or combined with mesh, to help minimise the tension along the IMF and T-junction. These techniques rely on a small superior pedicle to maintain the vascular supply to the NAC. The modification of McKissock technique helps minimise the risk of nipple necrosis by providing a robust dual vascular supply to the NAC. The dermal flap protects the mesh and implant from the incision site and the versatility of an adjustable NAC position at the end of the procedure.

In large and ptotic breasts, the Wise-pattern skin incision provides adequate access to carry out the mastectomy and the entire specimen can be delivered en-bloc. This can easily be combined with the appropriate axillary procedure without the need for additional scars. There is virtually no "ghosting effect" observed even in slim patients and becomes less evident in the weeks following surgery.

Successful outcome relies on careful patient selection, avoiding the procedure in smokers and in patients who require post-operative Radiotherapy. Good patient education with more than 2 consults prior to surgery, clear protocols for post-operative management and dedicated Breast Care Nurses familiar with complex wounds; helps ensure consistent results. The modified McKissock's vertical bi-pedicle dermal flap offers adequate protection for the underlying implant and mesh with acceptable scarring similar to Wise-pattern breast reduction. Careful dissection to avoid excessively thin mastectomy flaps, gentle tissue handling and avoiding excessive retraction with use of traumatic instruments and judicious use of diathermy; are all basic surgical principles which ensure good outcomes with low complication rates. This technique avoids unsightly scarring on the breast mound, particularly in the décolletage area with high patient satisfaction.

Conflict of interest

There are no conflicts of interest or financial disclosures in preparation of this manuscript.

Declarations

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