The supero-medial dermal-glandular pedicle mastoplasty with Wise pattern: an easy technique with a shorten learning curve. Is it the gold standard for severe gigantomastia?

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The supero-medial dermal-glandular pedicle mastoplasty with Wise pattern: an easy technique with a shorten learning curve. Is it the gold standard for severe gigantomastia?

The Authors present their experience using the supero-medial dermal-glandular pedicle technique with a "Wise pattern" for severe gigantomastia, which they found easy to perform and to explain when teaching and they recommend its use especially for junior who are at the beginning of their experience with breast reduction.
Although the preferred technique in our practice is the vertical scar mammaplasty with the superomedial pedicle according to Hall-Findlay, we believe the extension of the "Wise pattern" is necessary for severe gigantomastia (> 1200 g).
From January 2005 to April 2008 50 breast reductions were carried out by the Authors using the supero-medial pedicle technique with a Wise pattern skin resection.
The mean age was 40 years (range 20 to 65), mean body mass index was 28 (range 25 to 32) and mean weight of breast tissue removed was 1450 g per side (range 1120 to 2200).
A maximum follow-up of 3 years was carried out. The complications were minor and self-limiting. The revision rate was very low (2%) compared to the other techniques.
The supero-medial pedicle technique is a safe and reliable procedure in patients with severe gigantomastia and its versatility allows to be performed on all types of breasts regardless of size or degree of ptosis.

KEY WORDS: Breast reduction; Gigantomastia; Wise pattern.

Introduction

There are a variety of techniques described for breast reduction that allow the surgeon to choose and select the most suitable for the patient, following a careful assessment of the advantages and disadvantages of each one.
The history of breast reduction evolved from the use of amputation with free nipple grafting[1-2], until the adoption of the pedicles techniques [3-8], more commonly performed today.

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The amputation with free nipple graft is now barely used since the introduetion of the pediele techniques, in view of the complications such as loss of nipple areola complex, hypopigmentation and poor breast projection.
The pedicles procedures have the unquestionable advantage of producing a high degree of reliability and safety for the nipple areola complex, in terms of both sensation and blood supply.
Most of the pedicle techniques are a feasible solution for any degree of ptosis, but only few can be considered reliable and suitable for severe gigantomastia (more than 1200 g per breast).
Although currently most of the breast reduction techniques have focused their interest on the shape of the breast as well as limiting the cutaneous scars [9-11], it is a challenge to prevent the extended scars in patients with severe gigantomastia, especially when removing more than 1200 g of tissue from each breast.

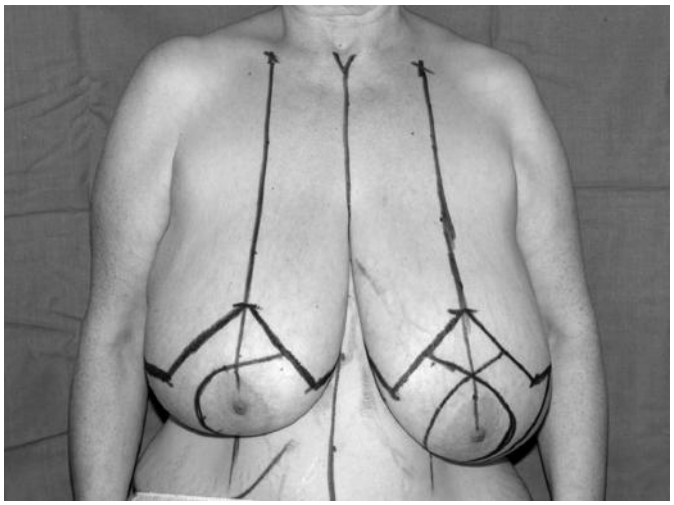

Fig. 1: Pre-op. Drawing.

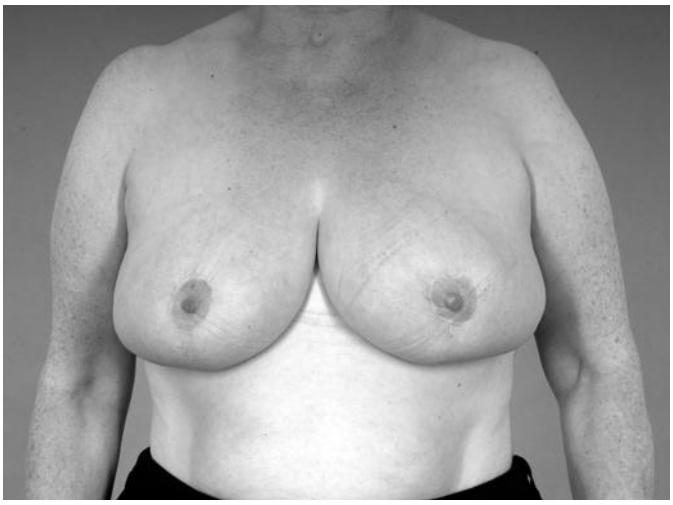

Fig. 2: Post-op. After 3 years of follow-up.

Bipedicle procedures [3,4], were proposed horizontally and vertically, but are difficult to perform for severe gigantomastia, due to the limiting amount of tissue that can be removed from both respectively the superior and inferior or lateral and medial aspect of the breast, in conformity with the position of the pedicle.
The inferior pedicle[5,6] is the most popularised procedure, especially for reducing the volume of a very large breast, but it tends to produce a bottoming out over the time and leaves a squared shape and an empty upper pole of the breast.
It is therefore predictable the possibility to develop a bottoming-out, in particular whether we think that among the four quadrants of the breast the greatest hypertrophy occurs in the lower and lateral pole.
The superior pedicle technique [7] was designed to avoid late loss of projection while allowing easy transposition of the nipple areola complex.
However limitations of the pedicle length arise from the difficulty with infolding the pedicie, especially when the distance between the new nipple position and the old one is very long.
The infolding of the long pedicle might compromise the vascular and sensory supply.
The supero-medial pedicle technique as originally described by Orlando and Guthrieg[8] is a logical extension of the superior pedicle, with the additional blood supply provided by the internal mammary system, when the medial component is incorporated to the superior pediele.
The Authors discuss in this paper their experience using the supero-medial dermal-glandular pedicle technique with a Wise pattern, especially used for severe gigantomastia, which provides, when compared to the other techniques, more reliability in terms of blood supply and sensitivity, other than maintaining a better projection of the nipple areola complex.
Furthermore it is easy to perform and to explain when teaching trainees. We recommend its use especially for junior who are at the beginning of their experience with breast reduction.
We believe it is the gold standard for severe gigantomastia, reducing the need of nipple grafting.

Operative technique (material and methods)

The patient is marked preoperatively in the standing position, following the standard "Wise pattern", as for the superior technique (Fig. 3).
The midaxial line of the breast is marked and the new nipple position is determined at the level of the existing inframammary fold.
The position of the nipple is then checked by measurement to the clavicle and the midline. In severe ptotic breasts with a concave slope, the nipple position should be lowered, in order to avoid its migration too high.
The amount of skin to be resected is determined by pinching the breast between the thumb and the index finger and these two points are drawn.
An inverted V-shape from the new nipple location is marked with the limbs measuring between seven and nine cm each (the lower the nipple position, the longer the length of the vertical limbs).
We mostly tend to maintain the length of the vertical limbs slightly longer than usual, to avoid excessive tension at the T junction.
The inframammary fold is marked and the medial and lateral draw are outlined by pushing gently both breasts toward the midline and laterally.
The base of the supero-medial pedicle is drawn on the upper portion of the medial triangular limb with a small extension on the medial lower one and it measures between six and eight cm. The pedicle is dermal-glandular pedicle (Fig. 5), not just dermal, and one cm of dermis is left around the areola for safety.

Fig. 3: Pre-op. Marking.

Fig. 4: Intra-op: deepithelialized supero-medial pedicle on the right breast.

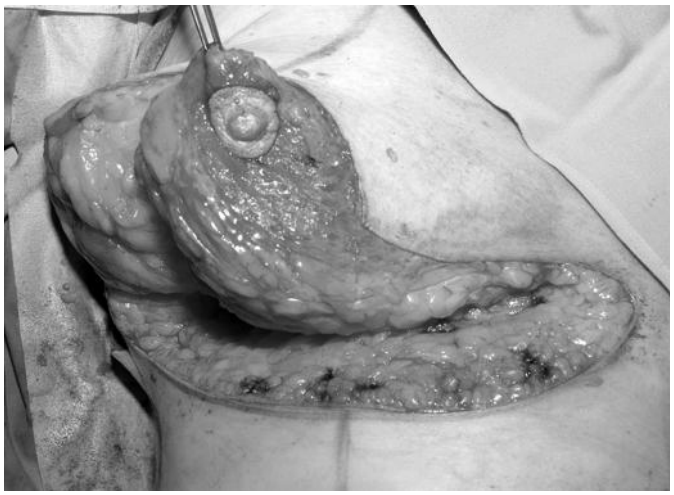

Fig. 5: Intra-op: Raising the supero-medial pedicle.

Fig. 6: Intra-op: re-shaping and provisional closure of the right breast.

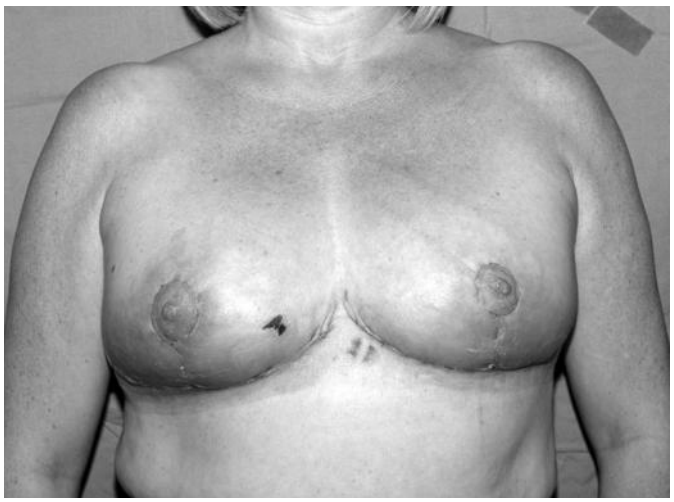

Fig. 7: Post-op. After 2 weeks.

The breasts are infiltrated with a mixture of local anaesthetic with epinephrine: 1 ml of adrenalina 1:1000 plus 20 ml of chirocaine 5.0, diluted in 500 ml of normal saline. The nipple is circumscribed with an areola marker of appropriate size.

The skin above the pedicle is deepithelialized (Fig. 4), preserving the reduced nipple-areola complex.

The incisions are deepened and the breast tissue in the lower, lateral and partially medial part is removed.

Additional tissue can be removed under the pedicle and under the medial and lateral flaps, taking care not to reduce the flaps too much.

Usually more tissue is removed from the lateral aspect of the breast in order to avoid postoperative fullness at the end of the operation. The supero-medial pedicle is then rotate toward the new nipple position usually of 90° and sutured into place with 3/0 vicryl.

Fig. 8: Post-op. After 1 year follow-up.

Fig. 9: Post-op. After 3 years of follow-up.

Fig. 10: Pre-op. Marking.

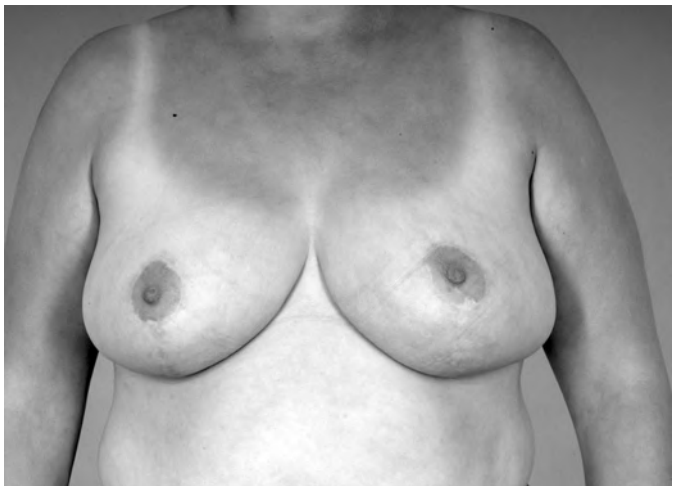

Fig. 11: Post-op. After 3 years of follow-up.

Now the breasts can be re-shaped and stitched in two layers with 2/0 vicryl and 3/0 monocryl (Fig. 6). Two drains, are positioned before elosing both breasts and a dressing is left for few of days. Antibiotic prophylaxis with IV Flucloxacillin was given at induction and carried out for 48 h, followed by 5 days of oral antibiotic (Fig. 7). Then a sport bra is suggested to wear for six weeks.

Results

From January 2005 to April 2008, 50 breast reductions were carried out by the Authors using the supero-medial pedicle technique with a Wise pattern skin resection.
All patients required greater than 1 Kg excised per breast. The mean age was 40 years (range 20 to 65), mean body mass index was 28 (range 25 to 32) and mean weight of breast tissue removed was 1450 g per side (range 1120 to 2200).

The mean suprasternal notch to nipple distance was 36 cm (range 29 to 45). The mean surgical time was 120 minutes (range 95 to 125) per patient (procedure carried out by a single surgeon). The length of the surgical time was reduced over the time, due to the increasing confidence of the surgeons with the technique. The complications were minor and self-limiting.
There were one haematoma (it was a patient on aspirine), one dog ear and two wounds dehiscence of the vertical limb, which healed satisfactory with simple dressing alone, without requiring further revision surgery.
These latter were active smoker during both the preoperative and postoperative periods.
The nipple-to-infiammamary fold distance increased of 10% in patients whose reduction was 1000 g per side, and 30% in patients whose reduction was greater than 1000 g.
We therefore decided to low the position of the new nipple to one-two cm in reduction where more than 1000 g were removed.

Patient satisfaction after breast reduction with the supero-medial technique was high as 95%, as was good the nipple sensation and the shape over the time. The mean follow-up was 2 years (range 1 to 3). The revision rate was very low (2%) compared to that of other Authors with the same technique [17].
No seroma or infection was identified and no cases of total nipple loss were encountered.
T junction breakdown was limited by increasing the length of the medial and lateral limbs to 1-2 cm, in order to avoid excessive tension at the tripod point (Figg. 8, 9, 10, 11).

Discussion

Different techniques have been described for breast reduction in the last 30 years, but only few are really reliable for severe gigantomastia.
The trend durung the last 30 years has been toward a variety of combination of dermal or glandular pedicles for nipple areola transposition.
This flexibility in pedicle selection is made possible by the rich blood supply network to the breast, which includes the internal mammary artery, the lateral thoracic artery, intercostals perforators, toracoacromial artery and toracodorsal artery. Our personal evolution evolved from the most known techniques with Wise pattern, till the most used vertical scar mammaplasty procedures.
The authors performed the standard Wise pattern techniques with different pedicles for the first 5 years of their practise and have now used variation of the vertical technique for the past 4 years.
We personally found that the supero-medial pedicle mastoplasty gives the best results m our hands. In particular the Hall-FindIay's technique is our favourite procedure and it is an excellent technique for breast reduction of all sizes, shapes, and tissue situations. We therefore use it as a standard technique in our practise.
However in our experience the Hall-FindIay's technique is difficult to use for breast reduction when more than 1100 g is removed from each side[21].
In these patients we believe the extension of the Wise pattern is still necessary to provide a satisfactory cosmetic outcome. The supero-medial dermal-glandular pedicle with the Wise pattern is therefore our gold standard for severe gigantomastia. We believe the supero-medial pedicle technique is a reliable procedure in terms of blood and nerve supply, it is easy to perform and the markings are simple to make clear, especially when explaining the technique, during the teaching.
In this particular situation as we work in a Teaching Hospital, we believe that during the plastic surgery training is necessary to acquire expertise in all basic Wise pattern techniques of breast reductions, before performing a vertical scar mammaplasty procedure, which is more sophisticated and requires a longer learning curve period. We therefore use the supero-medial dermal-glandular pedicle with Wise pattern as a basic technique for teaching trainees who are at the beginning of their experience with breast reduction, but we also use it as a gold standard in severe gigantomastia.
This procedure has a more reliable blood and nerve supply, compared to the other techniques and permits the reduction of both the lateral and inferior aspect of the breast, avoiding the bottoming out over the time and the discomfort of the lateral fullness, complained by the majority of patients.
Furthermore it is fast to undertake, easy to perform and more projection and fullness of the upper pole of the breast can be provided by the full-thickness dermal-glandular pedicle.
The supero-medial pedicle mastoplasty with a Wise pattem was carried out by the Authors in 50 patients with severe gigantomastia and a satisfactory result was shown over three years of followup, in terms of breast contouring, volume, projection and nipple sensation.
Moreover we found the grade of satisfaction of the patients was also high immediately after surgery, due to the possibility to achieve an early outcome (Fig. 7), which is more difficult to obtain with the vertical scar mammaplasty.
In our experience there were no major complications attesting to the reliability and versatility of the technique. Minor sloughing at the site of the vertical scar occurred in 2 patients (4%), who healed without noticeable scarring. T junction breakdown was avoided by increasing the length of the medial and lateral limbs to 1-2 cm, in order to relieve tension at the tripod point. This allowed us to have a significantly reduced rate of this complication compared with that reported in literature. The dermal-glandular pedicle remains partially attached to the pectoralis major's fascia, in order to protect the vessels and nerves, which come through the pedicle, avoiding the loss of nipple sensation and the risk of nipple-areola necrosis.
However there is a branch from the internal mammary artery, which comes from the second or third intercostals space and angles obliquely downward forward the nipple[14]. This vessel is present at the breast meridian about 1 cm deep to the skin and it supplies the superior or supero-medial pedicle. For this reason it is possible to perform a further debulking of the pedicle. Although there are veins that accompany the arterial perforator from the pectoralis muscle, that supplies the inferior pedicle, most of the arteries do not have an accompanying vein [14].
The venous plexus is superficial and concentrated around the areola. For this reason it is important not to incise circumferentially the areola in order not to cause significant damage to the venous system. Any folding of the pedicle, as in the superior technique, might compromise the venous outflow. Arterial inflow might be strong

enough to overcome folding but venous outflow could suffer from the compression.
Regarding the nerve supply, it is well known that the lateral cutaneous branch of the fourth intercostals nerve is the most common nerve giving sensation to the nipple. One branch of the nerve goes superficially, while a significant branch runs along the pectoralis fascia and then takes an almost 90 degrees turn at the level of the breast meridian and runs vertically from the posterior aspect of the breast toward the nipple[15]. It is for this reason that any full-thickness pedicle (where tissue is left over the pectoralis fascia) is likely to preserve sensation to the nipple-areola complex.
The lateral cutaneous branch is not the only nerve to supply sensation.
It was showed that anterior cutaneous branches take a superficial course and then terminate at the medial aspect of the areola [16]. A medially based pedicle would therefore not need to be full thickness to preserve sensation.
In-fact the supero-medial technique permits a further reduction of the pediele, maintaining a good innervation and blood supply and allowmg therefore a greater reduction of the breast, when compared with the other procedures. The superior component allows design of a Vader pedicle which enhances its safety.
Additionally the pedicle based superomedially and the nipple areola complex rotated laterally avoid the kinking which can occur with the superior pedicle technique, particularly in large breast reduction. The supero-medial technique with a Wise patter is a versatile procedure which can be perforined in all types of breasts regardless of size or degree of ptosis.
It is well known that as the size of breast reduction increase, there is an increasing possibility to develop the bottoming out over the time. This is particularly evident after few years of follow-up of the inferior pedicle technique. The explanation of this phenomenon is related to the remaining breast tissue on the inferior pole, causing pressure on the vertical limb, which gradually tends to increase its length, with the result of the bottoming-out.
The supero-medial pedicle technique with the Wise patterm is unlikely to cause pseudoptosis [20,21] with the time due to the possibility to remove a large amount of tissue from the inferior pole of the breast. The absence of a heavy inferior pedicle may explain the lack of the late bottoming-out of the breast.

Conclusion

The superomedial pedicle technique is a safe and reliable procedure in patients with severe gigantomastia.
It is an easy and versatile procedure, which does not require a long period of learning curve to be undertaken and it is relatively quick to perform saving operative time. For all these reasons the Authors recommend the use of this technique for trainees at the beginning of their experience with breast reduction. Furthermore the satisfactory outcomes combined with a low rate of complications, makes this technique our first choice for severe gigantornastia.

Riassunto

Gli Autori illustrano la loro esperienza con la tecnica del peduncolo dermo-ghiandolare supero-mediale con il "Wise pattern" nel caso di grave ginecomastia, di cui hanno riscontrato la facilità di esecuzione ed anche di spiegazione in fase didattica, raccomandando il suo uso specialmente nei chirurghi più giovani che sono alle loro prime esperienze con la riduzione mammaria.
Sebbene nella nostra pratica la tecnica preferita è quella della mammoplastica con cicatrice verticale usando il peduncolo supero-mediale secondo Hall-Findlay, riteniamo che l'estensione della caratteristica Wise sia necessaria per le gigantomastie più gravi (> 1200 g).
Dal Gennaio 2005 ad Aprile 2008 la riduzione mammaria è stata eseguita dagli Autori usando la tecnica del peduncolo supero-mediale con una caratteristica Wise di resezione cutanea.
L'età media delle pazienti era di 40 anni (da 20 a 65 anni), l'indice medio di massa corporea (BMI) era 28 (da 25 a 32) ed il peso medio del tessuto mammario asportato era di 1450 g per lato (da 1120 a 2200).
Il follow-up massimo è stato di 3 anni.
Le complicazioni sono state minori ed autoemendate.
La percentuale dei reinterventi è stata molto bassa (2%) se comparata con altre tecniche.
La tecnica del peduncolo supero-mediale è una procedura sicura ed affidabile in pazienti con gigantomastia grave e la sua versatilità permette di utilizzarla con tutti i tipi di mammelle, indipendentemente dalle dimensioni e dal grado di ptosi.

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