The horizontal breast reduction: Surgical tips for maintaining projection

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Reduction mammoplasty is one of the most common procedures performed by plastic surgeons in Canada. The Wise and vertical scar techniques are two of the most commonly published and performed. Although the horizontal breast reduction is a less commonly used technique, it offers added benefits over other procedures. These include elimination of the vertical scar and a consistently round nipple. However, one of the criticisms of the horizontal technique is the loss of projection of the breast mound. The present article outlines several important points that can aid in achieving an optimal aesthetic result when performing a horizontal breast reduction.

Key Words: *Horizontal breast reduction; Macromastia; Reduction mammoplasty*

Reduction mammoplasty is one of the most common procedures performed by plastic surgeons in Canada (1). Patients undergoing breast reduction surgery are seeking relief from symptoms such as neck and back pain, inframammary rashes and furrowing of the shoulders from bra straps. Most women are also interested in achieving the best possible aesthetic result following their surgery.

The 'no vertical scar' (ie, horizontal) breast reduction has the advantage of eliminating the vertical scar present in both the inverted T (Wise) and vertical scar techniques. This can result in an 'unoperated' look after surgery. The periareolar scar is concealed by the junction of the areolar skin and breast skin. The inframammary scar is concealed beneath the breast. Patients who have undergone horizontal breast reduction see only the periareolar scar when looking in the mirror and only see the inframammary scar if they lift their breasts. Another benefit of the horizontal breast reduction is that the periareolar scar is designed to be tension free, resulting in an aesthetically pleasing, more rounded shape for the areola (2).

The horizontal breast reduction technique has been criticized for several reasons. First, it can give the breast a 'boxy' appearance on the medial and lateral contours from the chest wall to the nipple-areola complex (NAC) (3). Second, the scar on the chest wall can extend more laterally than it does with the Wise pattern (2). Another drawback of the no-vertical-scar breast reduction technique is that it is not ideal for all types of breasts. It is best suited for breasts that are exceedingly ptotic (≥ 5 cm of normal skin between the areola and the new areolar site) (2). Finally, some critics suggest that there is loss of projection of the breast mound postoperatively (4).

The vertical scar is accepted in the most commonly used breast reduction method (Wise pattern) because of the aesthetically pleasing shape it gives the breast and the associated increased projection. With the conventional Wise pattern, the pull on the skin lifts the inferior pedicle superiorly and medially. The recent popularity of the vertical mammoplasty, which preserves the most conspicuous scar of the Wise pattern, is believed to be secondary to shape (ie, the perceived improved projection). One disadvantage of the vertical scar breast reduction technique is the temporary breast

La réduction mammaire horizontale : des conseils chirurgicaux pour maintenir la projection

La plastie de réduction mammaire est l'une des interventions que les plasticiens du Canada pratiquent le plus. Les incisions verticales et de type Wise font partie des plus exécutées et des plus publiées. La technique de réduction mammaire horizontale est moins utilisée, mais elle a des avantages par rapport aux autres, y compris la disparition de la cicatrice verticale et le maintien d'un mamelon rond. Cependant, elle s'associe à des critiques sur la perte de projection de la protubérance mammaire. Le présent article expose plusieurs points importants qui peuvent contribuer à obtenir un résultat esthétique optimal dans le cadre d'une plastie de réduction mammaire horizontale.

misshape in addition to the vertical scar appearance (5). Another disadvantage is the fact that better results are more easily achieved in small to moderate reduction volumes (<800 g per side); thus, with larger reductions, it can be difficult to achieve a good cosmetic result (5).

The vertical scar is eliminated with the horizontal reduction. This technique has not become more popular for several reasons, including the false notion of perceived lack of projection. The advantages of the horizontal technique remain consistent in that there is no vertical scar and the periareolar incision is tension free, leading to a rounder NAC. The horizontal technique is easy to learn and can be converted to a Wise-type pattern if necessary while still preserving breast projection. However, several technical points need to be learned to produce consistent results.

The present article describes these critical technical points and modifications of the horizontal breast reduction. If these steps are observed, it is possible to maintain breast projection while, most importantly, eliminating the vertical scar.

SURGICAL TECHNIQUE

The horizontal breast reduction technique has been well described previously but is summarized below.

Preoperative skin markings are made with the patient in the seated position. The new NAC position is marked on the anterior skin at the level of, or just superior to, the native inframammary fold (IMF). The IMF is marked in addition to a transverse anterior line that is situated 6 cm below the new NAC position (Figure 1). Intraoperatively, a 6 cm inferior pedicle is de-epithelialized after first tumescing the breast tissue with a dilute solution of lidocaine and epinephrine (Figures 2 and 3). The medial, lateral and superior breast tissue is then resected, leaving the pedicle plus a single, superiorly based dermoglandular flap (Figures 4 and 5). The new hole for delivery of the NAC is incised and the underlying cylinder of breast tissue is removed (Figures 6 and 7). The NAC is inset and layered closure is undertaken after placement of drains (Figures 8 and 9).

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Figure 1) The new nipple-areolar complex position is marked at the anterior projection of the native inframammary fold or just superior to this level. The horizontal line 6 cm below the new nipple-areolar complex position will be the new inframammary fold

Figure 2) A 6 cm inferior pedicle is marked

Some of the key points to be emphasized include the following:

1. The amount of skin between the new IMF and the most inferior portion of the new NAC position must be a minimum of 6 cm; otherwise, the final position of the NAC will be too low (Figure 1).
2. The circular skin excision for delivery of the NAC through the superior flap should not exceed 3 cm in diameter. When this tissue

Figure 3) The pedicle is de-epithelialized

Figure 4) The pedicle is dissected down to the chest wall

Figure 5) The superior skin flap is developed so that it is a uniform thickness of 3 cm to 4 cm. Here it is shown retracted superiorly

is removed, it stretches significantly and the resultant hole will be too large if the 3 cm measurement is exceeded.

3. Another important technical point is that the pedicle width should not be excessively wide. A wide pedicle will make approximation of the skin during closure too tight due to the bulk of the underlying tissues. A pedicle width of 6 cm is sufficient in the majority of cases.
4. The most critical step in maintaining projection during the horizontal breast reduction is the closure. Due to the fact that the

Figure 6) The new nipple-areolar complex hole is outlined

Figure 7) A cylinder of tissue is removed in preparation for delivery of the nipple-areolar complex

Figure 8) The nipple is positioned

central skin of the upper flap is preserved, there is a significant mismatch in terms of the length of the superior skin flap and the lower IMF fold incision. The tendency is to accommodate for this by evening out the discrepancy along the entire length of the incision to prevent medial and lateral standing cones. Although the standing cones may, in fact, be prevented by this technique, it is a critical error resulting in a flat breast with loss of projection. All of the skin excess must be taken up in the central one-third of the incision to prevent standing cones formation, create a pleasing

Figure 9) Drains are placed

Figure 10) A lateral standing cone is avoided by aggressively 'sweeping' the superior skin flap medially so that all of the excess skin is limited to the central one-third of the inframammary fold

Figure 11) The same technique is illustrated medially

breast contour, both medially and laterally, and to maintain breast projection.

The placement of the two critical sutures in the closure is illustrated in Figures 10 and 11. A single suture is placed in the upper skin flap and pulled medially as far as necessary to prevent a lateral (and medial) standing cones. Placement of these sutures 'sweeps' the skin and underlying breast tissue toward the centre of the breast, thereby

Figure 12) The appearance of the horizontal incision along the inframammary fold after final closure. Note the central 'bunching' of the skin but maintenance of breast projection

Figure 13) The appearance of the inframammary scar three months postoperatively. Note that the bunching or rippling of the incision flattens out completely. Further improvement in scar quality can be expected with time

providing the desired projection and the natural lateral and medial aesthetic curves of the breast mound (Figure 12). As a result of this manoeuvre, there is a significant 'bunching up' of skin in the central one-third of the incision. This requires careful placement of sutures to even out the mismatch centrally. Small gaps in the closure are common and of no long-term significance. The wounds heal well and the scar flattens out fully within one to three months in all cases (Figure 13). Breast shape and projection are well maintained and contribute to an aesthetically pleasing result (Figures 14 to 17).

DISCUSSION

All breast reductions result in scar formation. Final position and appearance of the scar are critical to the final aesthetic outcome from the surgeon's point of view but, more importantly, also from the patient's point of view. One of the major advantages of the horizontal breast reduction is the elimination of the vertical scar. The vertical scar is the most obvious to the patient when viewed in the mirror. One of the reasons that the horizontal technique has not become more popular is the perceived notion that there is a lack of breast projection postoperatively. This may be due to the fact that the lateral and medial standing cones are not more aggressively managed. In the senior author's experience, selected candidates can benefit significantly from this technique as long as certain technical steps are closely followed. Most importantly, all excess skin must be taken up in the central one-third of the incision as described.

Figure 14) A 38-year-old woman three months after undergoing a horizontal breast reduction, anteroposterior (top), oblique (middle) and lateral (bottom) views. Photos show adequate breast projection and shape

One of the drawbacks of the technique includes the fact that not all patients are candidates. Their measurements must meet certain criteria in terms of NAC position to qualify for a horizontal reduction. Also, patients with higher body mass indexes and significant excess of skin preoperatively are not good candidates. The resulting mismatch between upper and lower skin incisions is too great to accommodate without delayed healing or shape issues.

Figure 15) A 42-year-old woman three months after undergoing a horizontal breast reduction, anteroposterior (top), oblique (middle) and lateral (bottom) views. Note the lateral extension of the inframammary incision seen on lateral view. This is a drawback of this technique

CONCLUSION

There are many breast reduction techniques available, each with their virtues and drawbacks. Although the horizontal breast reduction is not applicable in all cases, it deserves a 'revisit' because the resulting scar pattern can be very beneficial to patients. As long as careful attention is devoted to management of the medial and lateral standing cones, breast shape and projection can be very well maintained.

Figure 16) A 55-year-old woman three months after undergoing a horizontal breast reduction, anteroposterior (top), oblique (middle) and lateral (bottom) views. Note the 'boxy' shape of the lower lateral breast pole apparent on the anteroposterior view

Figure 17) A 48-year-old woman three months after undergoing horizontal breast reduction, anteroposterior (top), oblique (middle) and lateral (bottom) views

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