Improving pseudoptosis in Robbins reduction mammoplasty

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The problem of the high nipple is frequently observed after reduction mammoplasty. Our hypothesis was that this deformity could be avoided with proper nipple-areolar complex (NAC) placement. The original Robbins inferior pedicle reduction mammoplasty was modified by the placement of the NAC intraoperatively at the completion of the breast mound construction. One hundred and fifty-three consecutive patients were followed after reduction mammoplasty. Pseudoptosis, defined as a NAC above the inframammary fold while the breast tissue appeared to have descended, was graded as mild, moderate or severe. Individuals were classified by two independent observers. Frequency and degree of pseudoptosis in the original technique was significantly greater than in the modified group. In both groups there was no relationship between number of years postoperative or amount of breast excised and pseudoptosis. Incidence of pseudoptosis was related to breast type and possibly pregnancy in both groups. We conclude that pseudoptosis is likely a result of an initial improper NAC placement as opposed to an expected result of reduction mammoplasty.

Key Words: *Nipple areola placement modification, Pseudoptosis, Reduction mammoplasty*

Amélioration de la pseudoptose dans la réduction mammaire par la technique de Robbins

RÉSUMÉ : On observe souvent après une réduction mammaire un problème de mamelon trop haut. Selon notre hypothèse, cette difformité peut être évitée par un positionnement adéquat du complexe mamelon-aréole. La technique de Robbins originale de réduction mammaire a été modifiée par le positionnement du complexe mamelon-aréole durant l'opération à la fin de la reconstruction du sein. Cent cinquante-trois patientes consécutives ont été suivies après leur réduction mammaire. La pseudoptose, définie comme un complexe mamelon-aréole au-dessus du pli inframammaire, alors que le tissu mammaire semble avoir descendu, a été classée selon qu'elle était légère, modérée ou grave. Les cas à l'étude ont été classés par deux observateurs indépendants. La fréquence et le degré de la pseudoptose accompagnant la technique originale étaient nettement supérieurs à ceux qui accompagnaient la technique modifiée. Dans les deux groupes, on n'a noté aucun lien entre le nombre d'années post-opératoires ou la proportion de sein excisé et la pseudoptose. L'incidence de la pseudoptose a été liée au type de sein, et possiblement à la grossesse dans les deux groupes. Nous en concluons que la pseudoptose résultait probablement plus du positionnement initial inadéquat du complexe mamelon-aréole que de la réduction mammaire.

There are currently many reduction mammoplasty techniques available and each has its strengths and limitations. Different techniques have rarely been compared in any objective fashion (1).

Here we examine pseudoptosis, where the nipple remains above the inframammary fold but the lower quadrants of the breast appear to have descended (2). This results in an apparent superior migration of the nipple-areolar complex (NAC). We compare the original Robbins inferior pedicle technique (3) with a modified version.

METHODS

All patients who underwent reduction mammoplasty by the senior author between 1977 and 1991 were initially considered in the study. Only patients who had at least one follow-up visit after one month were included (n=153). The original Robbins inferior pedicle technique (3) was used in the first 27 cases, and a modification in 126 cases.

The modified procedure consisted of an intraoperative placement of the NAC. The keyhole of the Wise pattern was left uncut until the T portion of the reduction was sutured. The operating table was then tilted upward, the apex of the breast mound located, and the NAC marked. The location was never more than 4.5 cm from the inframammary crease.

Pseudoptosis was assessed by the same observer at each follow-up visit without knowledge of previous evaluations. There were four classifications possible: normal, or no

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Figure 1) Normal post-reduction mammoplasty breast, lateral view. This was classified as an optimal result. The nipple-areolar complex lies over the inframammary fold and is centred over the breast apex

Figure 2) Mild pseudoptosis, scored as 1 in the study. The areola is slightly displaced superiorly with the nipple directed upward

pseudoptosis (Figure 1); minimal, where the areola covered the apex of the breast but the nipple lay superiorly (Figure 2); moderate, where the edge of the areola abutted the breast apex (Figure 3); or severe, where the entire NAC lay on the superior breast surface (Figure 4).

Pseudoptosis was scored from 0 (normal) to 3 (severe). Photographs were taken and pseudoptosis scored a second time by an independent observer.

Additional data collected included age at operation, amount of breast tissue excised, patient's weight, duration of follow-up, breast type and number of pregnancies. Breast type was classified according to clinical appearance and describes the relationship between mass and support (Table 1) (1,4).

Data were analyzed using an Excel spreadsheet and an SPSS statistical package.

RESULTS

All 153 patients were followed postoperatively for periods between one month and 14.76 years, resulting in a collection of 288 sets of observations. Average follow-up was 2.5 years ($n=238$) in the modified group (MG) and 4.2 years ($n=50$) in the unmodified group (UG).

All patients had photographs taken at follow-up ap-

pointments, but only 125 patients had photographs of sufficient quality (including two views, appropriate angulation, and adequate lighting) to score for pseudoptosis by an independent observer. When these were compared to the original scores, the Pearson coefficient of correlation was 0.71.

Average age at operation was 34.5 years (34.5 years in the MG and 34.4 years in the UG). Ages ranged from 12 to 74 years. Combined amount of breast tissue excised was 1366 g in the MG and 1570 g in the UG.

The MG and UG were compared on the basis of age, amount excised, number of pregnancies, and breast type and no differences were apparent. There was a significant difference in the length of follow-up. Mean pseudoptosis scores were 0.17 for the MG and 1.16 for the UG, which were significantly different ($P<0.005$). Incidence of pseudoptosis of any degree was 13% in the MG and 57% in the UG (Table 2).

In order to control for the difference in length of follow-up, a cohort was computer selected from the MG which was matched for length of follow-up, age, breast type, amount of tissue excised, and pregnancy. When this group was compared to the UG there was no difference in the variables except for pseudoptosis ($P>0.05$).

The larger MG was divided into one-year postoperative

Figure 3) *Moderate pseudoptosis, scored as 2. The edge of the areola abuts its ideal position resulting in a cosmetically compromised result*

intervals and the mean pseudoptosis scores and frequencies compared. Across time, there was no significant increase in either of these parameters.

The MG was divided on the basis of age (greater or less than the average of 34 years), amount of breast tissue excised (the mean mass was used as a dividing point), breast type, or postoperative pregnancies, and in each case the two ensuing groups were compared. There were no statistically significant differences between pseudoptosis incidence or average score in the groups divided by age or magnitude of reduction. Although average score was comparable across breast type groups, there was a trend to increased incidence in types 2 and 3. Women with pregnancies ($n=11$) had an increased incidence of pseudoptosis but the difference in average score was not significant ($P>0.05$).

Pseudoptosis incidence and average score were examined in the UG. There were no significant differences in groups based on number of years postoperative (greater or less than the mean of four years), amount of tissue excised (with the mean mass used as a dividing point) or pregnancy. Breast type varied with age in this small group (type 1 in younger patients and types 2 and 3 in older) so these two variables could not be analyzed independently. Both incidence and

Figure 4) *Severe pseudoptosis, scored as 3. The entire nipple-areolar complex lies on the superior breast surface and appears grossly malpositioned*

average score was significantly higher in the over 35-year-old group and in type 3 breasts ($P<0.001$).

DISCUSSION

Patient satisfaction following reduction mammoplasty is generally very high (5,6); however, Hughes and Mahoney recently found that 20% of patients had complaints about the shape and position of the NAC immediately following surgery (6). Obviously, NAC placement is of utmost importance in the cosmetic quality of the final result of this type of surgery.

The problem of the high nipple after reduction mammoplasty has received attention with respect to cause and correction (7-9). Current concepts relate faulty intraoperative NAC position to superiorly migrating NAC (10). Additional factors are thought to be variations of skin type at various breast locations secondary to the pattern of skin reduction used in the operation, resulting in thinner skin surrounding the nipple (10).

Many opinions regarding correct NAC placement exist, but one of the most enduring is Strombeck's idea that ideal location is coincident with the inframammary fold (11). The difficulty with marking this location preoperatively involves the degree of skin stretch above the nipple. It is difficult to assess the degree of skin stretch preoperatively since it de-

TABLE 1: Breast type

Type	Description
1	Hypertrophy with normal skin support
2	Hypertrophy with lax skin support
3	Normal bulk with lax skin support

TABLE 2: Pseudoptosis scores for modified and original Robbins reduction mammoplasty

Score	Modified group Number of breasts (n=476)	Original group Number of breasts (n=100)
Normal	416	42
Mild	40	20
Moderate	18	15
Severe	2	22

depends not only on breast mass but also on the individual's skin characteristics. Reliably predicting the degree of skin stretch to be expected postoperatively is impossible. Once a large resection is completed, the clavicle to nipple distance contracts to a variable extent. With the modified Robbins technique described, the clavicle-to-nipple distance does not change, allowing more accurate NAC location.

In this study, patients undergoing the original Robbins technique showed a high degree of pseudoptosis early in the postoperative period. Older women, thought to have more lax skin (12), and those with breast types characterized by lax skin support had more severe pseudoptosis, supporting our

contention that skin stretch at the time of surgery has a major role in the development of this deformity

When the operative technique is modified to ensure initial proper NAC placement, the incidence of pseudoptosis is reduced. There was little apparent influence by any of the parameters; pregnancy and breast types associated with lax skin support had a slightly greater frequency of pseudoptosis, although not statistically significant. Unfortunately, our pregnant group was too small to make any meaningful assessment.

CONCLUSIONS

Our findings in this large group of reduction mammoplasty patients demonstrate that pseudoptosis does depend on the technique used for reduction. When this technique is modified only for NAC positioning, pseudoptosis is much improved. When pseudoptosis does occur it is evident within months of the procedure and does not appear to worsen with time. As well, it is not more severe in large reductions, in different breast types, in older patients, or following postreduction pregnancies, but may be more frequent if the preoperative breast has poor skin support. This study suggests that pseudoptosis is related to operative technique and is not necessarily part of the natural history of reduction mammoplasty.

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