Trends in Breast Reduction Technique

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ABSTRACT: **Background:** There are two main approaches to breast reduction surgery today: the traditional long scar ("Wise-pattern") technique and the more recent short ("vertical") scar technique, which is becoming more popular. During the last two decades there has been a gradual shift between the two techniques, including at our institute.

Objectives: To evaluate the evidence behind this obvious trend.

Methods: We retrospectively collected data from archived hospital charts of all patients who underwent breast reduction surgery during the period 1995–2007. Epidemiological, clinical and postoperative data were analyzed and compared between patients in whom the short scar vs. the long scar techniques was used.

Results: During the study period 91 patients underwent breast reduction surgery in our department: 34 with the Wise-pattern breast reduction technique and 57 with the short-scar procedure. There was no significant difference in operative and postoperative data, including length of hospital stay. In some of the categories there was even a slight advantage (but not statistically significant) to the former. The only significant difference was the size of reduction, with a tendency to prefer the long scar technique for larger reductions; however, with experience gained the limit for short scar reductions was gradually extended to a maximum of 1470 g.

Conclusions: We noticed a sharp increase in the safe and uneventful practice of the short scar technique in breast reduction of ≤ 1400 g – especially in young women without extreme ptosis. This observation, together with other advantages, namely, reduced scar length, prolonged shape preservation and better breast projection, support the use of this technique.

IMAJ 2012; 14: 304–306

KEY WORDS: breast reduction, short scar, long scar, vertical scar, inverted T scar, complications

Breast hypertrophy is a condition with social, physical and psychological implications. The two main surgical approaches in breast reduction surgery today are the inverted T (long scar) technique [1] and the short scar technique [2-7]. After the short scar technique was introduced, many surgeons adopted it as the main modality for breast reductions over previous techniques, while the inverted T scar technique is still reserved for reductions of greater mass [8].

In this article we reflect upon this trend through the prism of our experience in one medical center and show how it has influenced the evolution of our current approach to breast reduction surgery. We also demonstrate how the indication for using the short scar technique has gradually widened to include resections of greater mass that were once considered feasible only through an inverted T scar.

PATIENTS AND METHODS

In this retrospective study the records of all patients who underwent breast reduction in our institute during the period 1995–2007 were collected and reviewed for age, marital status, chronic diseases and regular medications, surgical technique, size of reduction, length of operation, length of hospital stay, and perioperative complications – using Excel software (Microsoft., Redmond, WA, USA). All data were analyzed using the same software after stratifying statistics according to year of presentation using the Fisher exact test.

RESULTS

Between the years 1995 and 2007 a total of 91 patients underwent breast reduction surgery at our institute. The average age at presentation was 43 years (range 17–66), the average duration of surgery was 3.5 hours (range 2–5.45 hours) and the average hospital stay was 6 days (range 1–21 days). The average amount of tissue removed was 888 g (range 50–3500 g). Data regarding the choice of surgical technique and the actual size of reduction was stratified according to the year of presentation. In the short scar (vertical) group (57 cases) the Lejour technique (superior pedicle) was used in 12 cases and the Hall-Findlay technique (superomedial pedicle) in 45 cases, whereas in the long scar (Wise pattern) group (34 cases) the free nipple technique was used in 8 cases, the inferior pedicle technique in 16 cases and the superior pedicle technique in 10 cases. The stratification showed no statistically significant differences ($P > 0.05$) in terms of patients' age (41 vs. 44 years), duration of operation (3.24 vs. 3.21 hours) and hospital length of stay (6 vs. 5.75 days) between the long scar and the short scar groups. The only statistically significant difference between each technique was the size of reduction [Table 1], with an average reduction

Table 1. Distribution of long and short scar breast reduction over the years, and the average weight of breast removed

Year	No. of cases	Long/ Short	Average breast weight with long scar (g)	Average breast weight with short scar (g)
1995–97	7	6/1	578 (270–1070)	675 (675)
1998	9	7/2	1448 (1105–2420)	407 (400–413)
99-01	10	8/2	1273 (847–1570	603 (457–750)
2002	10	6/4	1428 (130–2800)	870 (541–1090)
2003	9	1/8	1378 (1378)	475 (125–810)
2004	8	3/5	1863 (1250–2600)	560 (220–1060)
2005	13	2/11	1500 (1500)	741 (220–1290)
2006	18	1/17	3500 (3500)	557 (220–1400)
2007	7	0/7	–	405 (200–835)

mass of 1470 g in the long-scar group compared to 586 g in the short scar group ($P < 0.05$).

Analysis of the data in Table 1 shows a general increase in the number of breast reductions performed at our institute since 1995. A second trend is observed around the year 2003, with a shift towards preferring the short scar technique over the traditional long scar approach in 85% of all patients since that year (47/55) in comparison to 25% of cases (6/36) between the years 1995 and 2002 ($P > 0.05$). Another trend observed was the successful experience in larger breast mass reductions during those years using the short scar technique (≤ 1400 g of reduction mass recorded), which has increased the popularity of this technique even more [Table 1].

Comparing the postoperative complications of both techniques [Table 2] shows a favorable yet statistically insignificant tendency towards the short scar in the rate of partial nipple loss (5.3% vs. 5.9% in the long scar group), the rate of hematoma formation (1.8% vs. 5.9% in the long scar group), and the prevalence of pneumonia (0% vs. 2.9% in the long scar group). The long scar technique was found to be favorable when comparing the rate of infection (5.9% vs. 10.5% in the short scar group), the rate of seroma formation (0% vs. 3.5% in the short scar group), and the prevalence of pulmonary emboli (0% vs. 1.8% in the short scar group); again, the differences were statistically insignificant ($P > 0.05$). The only statistically significant difference ($P < 0.05$) is the higher rate of local wound dehiscence (very minor and conservatively treated in most cases) in the short scar group (28% vs. only 11.8% in the long scar group).

When comparing the prevalence of revision surgical procedures between the two groups of patients, there was hardly any tendency or trend, let alone any statistically significant difference, in terms of scar revision procedures (3/57 for the short scar compared to 2/34 for inverted T), wound debridement (1/57 for the short scar compared to 1/34 for inverted T), or secondary reduction procedures requested by the patient (2/57 for the short scar compared to 0/34 for inverted T).

Table 2. Rate of complications (significance calculated using Fisher's exact test)

	Technique		
Complication	**Inverted T**	**Short scar**	***P* value**
Infection	2/34	6/57	NS*
Partial nipple loss	2/34	3/57	NS*
Hematoma	2/34	1/57	NS*
Wound dehiscence	4/34	16/57	0.049
Seroma	0/34	2/57	NS*
PE	0/34	1/57	NS*
Pneumonia	1/34	0/57	NS*

*NS defined by a *P* value › 0.05

DISCUSSION

We found that throughout the years there has been a shift in preferring the short scar technique over the long scar technique for breast reduction surgery in our institute. We also found that with time, bigger reductions were attempted using the short scar technique. Analyzing the data collected throughout the years has not uncovered any significant increase in the rate of complications as a result.

Plastic surgeons who use the short scar technique assume that it has aesthetic advantages in long-term shape preservation and in avoiding long hypertrophic scars in moderate-size reductions, and they consider it generally not recommended for gigantomastia

The advantage in scar length is self-evident, and the choice of superior or superomedial dermogladular pedicle gives a more lasting improved result with less late pseudo-ptosis as compared to the common choice of inferior pedicle in the long scar technique [Figure 1]. The risk of box-shaped deformity is also avoided with this technique.

Advocates of the traditional inferior pedicle approach claim that it has a steeper learning curve and is more suit-

Figure 1. [A] Before and **[B]** after breast reduction using a short scar, superomedial technique

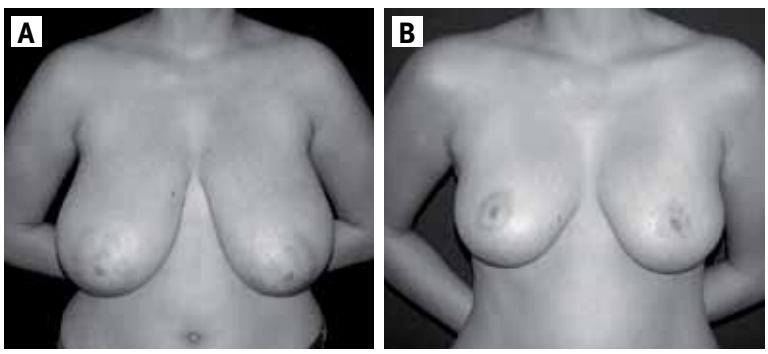
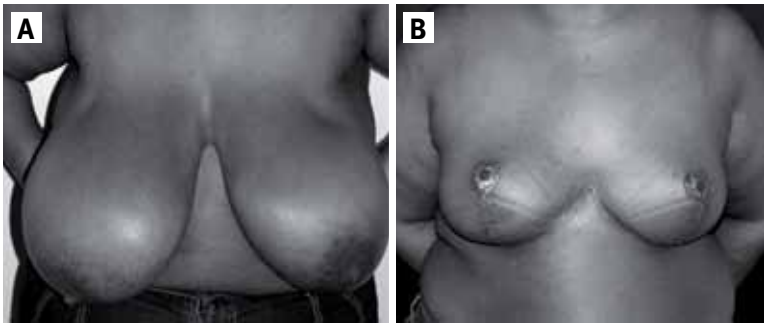


Figure 2. [A] Before and **[B]** after breast reduction using the Wise-pattern long scar technique



able for novice plastic surgeons. However, the presence of an unsightly horizontal scar (especially medially) and the common unwanted box-shaped results with late pseudo-ptosis make it far from ideal [Figure 2].

Our data illustrate how a worldwide trend [9,10] towards broadening the indication for a minimally scarring alternative procedure has influenced our team. According to our experience, performing larger reductions using the above mentioned technique is a sound choice. In that sense, it is a safe technique for reductions ≤ 1400g. Careful patient selection in the more extreme reductions, including only young candidates with good skin quality enabled us to widen the indication without paying any substantial price in complications other than limited scar revisions in the inferior edge of the scar in very few cases (as noted in the Results). Data on operation length and hospital stay are not discussed since our hospital is a teaching hospital and most cases were study cases for our residents – a fact that naturally had its toll on the length of operation. It is worth noting that 5 to 6 days of hospital stay, although longer than the duration in private settings, is still warranted by health insurance in public hospitals in our country – a fact that has a general bias effect on both groups.

Data regarding complication rates after breast reduction surgery and superior and superomedial pedicle techniques in particular have been inconsistent in recent years. Several studies attempted to identify a correlation between surgical technique and complication rates. One study [11] found an increase in the rate of seroma formation with superior pedicle, while others suggest that such a trend needs further study in order to be proven. In another study evaluating superomedial pedicle breast reduction, a rate of 5.9% of wound dehiscence and 1.28% of nipple areolar complex loss was calculated [12], which contradicts findings from our study (with 3 of 57 patients experiencing partial nipple loss and 16 of 57 with wound dehiscence) as well as previous studies that reported much higher rates of wound healing problems [13]. A strict and meticulous surgical technique and proper patient selection for each type of procedure have certainly influenced complication rates in each study, yet we speculate that the variability in reports can be explained to a large extent by the system of reporting, classification, and non-uniform identification of minor wound problems by physicians and patients in different clinical settings (inpatient vs. outpatient).

CONCLUSIONS

There has been a sharp increase in the use of short scar technique in breast reductions in the last few years. We have also observed the safety of this technique in larger breasts with up to 1400 g removed. The long scar technique remains the recommended technique for larger breasts expected to be reduced by > 1500 g.

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"If we make peaceful revolution impossible, we make violent revolution inevitable"

John F. Kennedy (1917-1963), 35th President of the United States, serving from 1961 until his assassination in 1963