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Two Crossed Dermal Flaps for Prevention of Bottoming out after Breast Reduction

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Abstract

Introduction: Breast reduction is one of the most prevalent plastic surgery procedures in Syria and the world, bottoming out on the other hand is one of the most happened disadvantages after breast reduction with inferior pedicle technique. Different techniques were used to prevent this deformity after inferior pedicle. In this study we tried to prevent bottoming out by using two crossed dermal flaps suspending the inferior pedicle to the periosteum of the 2nd rib. **Methods and materials:** 32 patients had breast reduction surgery using inferior pedicle technique at Almowassat University Hospital in Damascus. We divide them into 2 groups, 16 patients each. First group we used crossed dermal flaps with the inferior pedicle and the second group was without these flaps, the dermal flaps had a base on the side of the inferior pedicle base, crossed anterior to it in the middle point between the lower edge of the areola and the IMF and then sutured to the periosteum of the 2nd rib on each side. **Results:** Preoperatively, the average distance between the inframammary fold and areola was 14.5 cm (range, 11 - 18 cm) in the first group without dermal flaps and 14 cm in the second group with dermal flaps. The average amount of breast parenchymal resection was 790 g (range, 140 - 1600 g). The average distance between the inframammary fold and the lower border of the areola was 8.5 cm (range, 7.5 - 9 cm) on the postoperative first-year measurements in the group with flaps and 10.2 cm (8.6 - 11.4 cm) in the other group. **Conclusion:** Inferior pedicle suspension using crossed dermal flaps has a real role in preventing bottoming out, without using any allogenic or alloplastic materials, making it one of the considered ways in preventing bottoming after breast reduction.

Keywords

Breast Reduction, Bottoming out, Crossed Dermal Flaps

1. Introduction

Breast hypertrophy is a major underappreciated problem which includes physical problems such as neck, back and shoulder pain, recurrent intertrigo between and under the breasts, and restriction of many physical activities. On the other hand there are social and psychological problems associated with large breasts like the unwanted increased attention to the large breasts while walking in the street which is so annoying and embarrassing to women with large breast [1].

Because of these problems associated with breast hypertrophy, breast reduction surgery has a considerable role in increasing the quality of life for these women, that's also to explain the high satisfaction rate this surgery has on patients and surgeons [2].

Many breast reduction techniques were described through the history of plastic surgery with advantages and disadvantages for each technique, but the inferior pedicle technique and its variations are still one of the most popular techniques around the world today [3] [4] [5].

Loss of upper pole fullness, flattened breast shape, pseudoptosis (bottoming out) and upwards rotation of the nipple (star gazing nipple) are the most important disadvantages of the inferior pedicle technique in breast reduction that occur due to a downward movement of the breast parenchyma and laxity of skin envelope [6].

Many suspension techniques combined with the inferior pedicle have been reported to protect the breast shape and avoid bottoming out in the surgical literature [7] [8] [9] [10].

In this study we used 2 dermal flaps combined with the inferior pedicle, whose bases are on the sides of the base of the pedicle, then we crossed them in front of the pedicle to protect the new breast shape for a longer period of time by preventing bottoming out and flat appearance of the upper pole.

2. Methods and Materials

32 female patients have had breast reduction surgery with inverted T scar inferior pedicle technique through the period of 1/2018 till 12/2020 at almwassat university hospital in Damascus.

We took the ethical approvement from the ethics department in faculty of medicine in Damascus University, and an informed consent was signed from every patient before the surgery.

All patients were followed up through a whole year postoperatively, the average age of the patients was 37.8 y/o (range, 21 - 52 years) and the average body mass index BMI was 27.9 kg/m² (range, 22.8 - 34.5 kg/m²).

All patients with previous breast diseases or surgeries were excluded from the study, also all other techniques of breast reduction except for the inverted T scar inferior pedicle technique.

16 patients were operated in the traditional inverted T inferior pedicle technique and the other 16 we add to it our new technique in inferior pedicle sus-

pension.

Markings measurements and photographs were taken before surgery in the standing position, new nipple position was marked on the midclavicular line by the projection of the inframammary fold IMF on it. The distance between the sternal notch and the new nipple position was 21 - 23 cm.

All patients were marked for inverted T scar and inferior pedicle technique and the vertical scar between lower areolar edge and the IMF was meant to be 6 cm.

In 16 patients 2 dermal flaps were designed vertically on both sides of the inferior pedicle, basing from the IMF and the same long as the inferior pedicle and 2cm width. These 2 flaps were crossed anterior to the inferior pedicle at the center where they were sutured to themselves and to the pedicle.

The after crossing the dermal flaps were suspended to the periosteum of the 2nd rib at both sides of the pedicle (**Figure 1**).

The other 16 patients were operated on by the traditional inferior pedicle inverted T scar breast reduction technique without any dermal flap suspension.

The diameter of the new areola was designed to be 4.5 cm by a special surgical ring.

All surgeries were done under general anesthesia, started by deepithelization of the inferior pedicle and the dermal flaps in 16 cases, and only the inferior pedicle in the other 16.

Then we did the parenchymal resection, and lastly we crossed the dermal flaps and fix them to the inferior pedicle and the 2nd rib periosteum with prolene 2.0 sutures.

Suction drains were placed on each breast and with appropriate skin closure according to the inverted T scar, operation was ended (**Figure 2**).

3. Results

We compared and analysed the resultsn using t test formula and considered the diffirence statistically significant when p value was >0.005.

32 patients underwent breast reduction surgery with at least 1 year follow up period. The average amount of resection was 793 g (range, 140 - 1600 g), 16 patients had traditional inverted T inferior pedicle technique and 16 had the same technique plus crossed dermal flaps suspension (**Figure 3, Figure 4**).

At postoperative year 1, the average distance between the areola and the inframammary fold (IMF) was 10.25 cm in the first group and 8.5 cm in the second group with dermal suspension (**Table 1**).

Table 1. Main results specifications.

Group	mean	range	SD
With crossed flaps	8.5 cm	7.5 - 9 cm	1.34
Without flaps	10.25 cm	8.6 - 11.4 cm	0.94

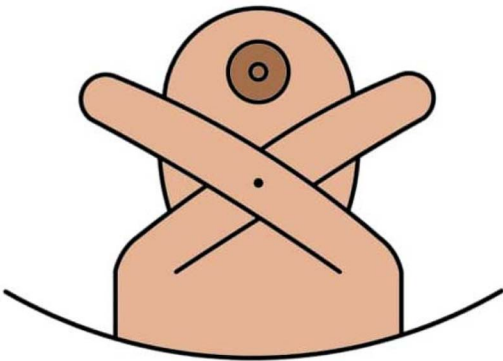


Figure 1. Crossed flaps suspension illustrated.



Figure 2. Crossed dermal flaps at surgery.



Figure 3. Pre and 1 year post operatively breast reduction with crossed dermal flaps suspension.



Figure 4. Pre and 1 year postoperatively breast reduction without crossed dermal flaps.

One partial areola necrosis happened in one patient and the most happened complication was wound healing dehiscence in 12 patients which were treated conservatively.

All patients were satisfied with the results with their preoperative symptoms reduced. Long term follow up of the patients is still going on.

4. Discussion

Breast reduction surgery is a safe and reliable procedure with a high level of patient satisfaction [8]. Its main aim is to eliminate the physical and psychological problems of the patients and protect the new breast shape for a long period of time.

Inferior pedicle technique was first defined during the mid 1970s and is still one of the most popular breast reduction techniques used today [11].

A survey was done by us during the conference of the annual Syrian plastic surgery association in 2019, we found that 73% of Syrian plastic surgeons use the inferior pedicle technique and 78% of them use the inverted T scar in breast reduction surgery.

Good vascularity of the pedicle and protection of sensation of the nipple areola complex make this technique safe even for the cases with huge reduction amounts [11].

There are some disadvantages of the inferior pedicle technique, though, the most importance of them is development of bottoming out and inability to protect breast shape in the long term due to loss of fullness in the upper pole [12].

With inferior pedicle technique, the most breast volume is provided by the inferior pedicle and the skin envelope gives the ultimate shape. So a few months after surgery due to skin envelope laxity, bottoming out and upper pole flattening start to appear [13].

These difficulties to repair deformities are important for the surgeon and the patient. The application of vertical scar methods helps to reduce bottoming out, [14] [15] and also other pedicles (superior, medial, lateral, ...) may reduce bottoming out, but there are application difficulties in these techniques with large volume breast reductions where the inferior pedicle is preferred [16].

In order to prevent the bottoming out seen with the inferior pedicle, many suspension techniques have been described through the years. Suspension of the pedicle with internal sutures, suspension with dermal flaps, fascia and muscle flaps, dermal strips and fascia lata, and suspension with allogenic or alloplastic materials are examples of these techniques [16] [17] [18]. Especially suspension methods with dermal flaps and strips are very popular.

Aydin *et al.* [19] have described a suspension technique that provides an internal bra effect by fixing the triangular dermal flaps created on the pedicle edges to the pectoralis fascia.

Widgerow [20] has described a suspension technique performed with superiorly based dermal fascial flaps prepared from the medial border of the inferior

pedicle. In this technique dermal fascial flaps with 5 cm length, 1 - 1.5 cm width were created at least 2 cm inferior the areola border to not distort the areola, and these flaps were secured to the pectoralis fascia. In this study 25 patients, vertical scar length 7 cm. at 1 year postoperatively widgerow has declared 92% success rate with this technique.

Pennington [21] has used a technique combining pedicle suspension and pedicle plication to prevent bottoming in 500 patients. The pedicle was suspended in midclavicular direction, then plication with superficial sutures was performed to the anterior surface of the inferior pedicle. In this study revision surgery for bottoming out was not needed for any patient.

Perez macias [22] has combined inferior pedicle reduction with hammock technique. It was performed for 623 patients, 318 of them were evaluated retrospectively and successful results were reported.

Goes [23] obtained good long-term esthetic results with a technique that creates internal bra effect by using polyglactine and polyester mesh. But it has the risk of infection and fibrosis and difficulty in imaging for breast cancer. So Brown *et al.* [24] proposed using alloderm instead of a polyglactine or polyester and declared successful results.

As a result, although many suspension techniques have been described with successful results, prevention of bottoming out over very long period may not be possible all the time. In this study we tried to suspend the breast tissue with crossed dermal flaps made from dermal tissue that is discarded during traditional breast reduction surgery. Disadvantages of this study were the inadequate number of patients and the lack of long term follow up (more than 1 year).

On the other hand this technique doesn't require pedicle plication or allogenic or alloplastic materials, so it's cost effective and doesn't include alloplastic materials disadvantages like the risk of infection or palpation or imaging difficulties.

Besides these advantages, this technique is easy to perform and learn and doesn't increase the time or complications of the operation.

For all these reasons we think this technique can be an effective method for breast suspension.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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