



Reliability and versatility of the Wise pattern, medial pedicle for breast reduction in South Africa

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ABSTRACT

Background: Breast hypertrophy is a condition of abnormal enlargement of the breast which may continue until each breast weighs more than 1.5 kg (macromastia) or even more than 2 kg (gigantomastia). Supporting such heavy weights leads to cervical and upper thoracic back pain, costochondritis, and fungal infections in the mammary folds, making reduction mammoplasty essential. However, there is a lack of consensus among plastic surgeons as to the best technique. This study reports the results of reduction mammoplasties in South African women using the Wise pattern, minimally undermined with a medial pedicle.

Methods: A retrospective record review of the reduction mammoplasties was conducted over a 1-year period. Patient records were assessed for early complications related to vascular reliability.

Results: One hundred and fourteen Wise pattern minimally undermined, medial pedicle techniques were performed on 57 consecutive patients in the 1-year period at the NetCare Rand Clinic in Berea, Johannesburg, South Africa (EN). The patients' sternal notch to nipple distances ranged from 28 to 52 cm. The volume of breast reduction ranged from 345 g to 3300 g per breast. The overall complication rate was 9.7%, consisting of fat necrosis (3.5%), infection (1.7%), dehiscence (3.5%), and nipple epidermolysis (0.9%).

Conclusion: The minimally undermined Wise pattern medial pedicle breast reduction technique proved to be a reliable technique for breast reduction in the South African population. Safety in pedicle breast reduction with sternal notch to nipple distances of up to 50 cm, as well as reliability and versatility in a wide range of breast sizes, was demonstrated.

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1. INTRODUCTION

Breast hypertrophy is a condition of abnormal enlargement of the breast beginning at puberty which may continue until each breast weighs more than 1.5 kg (macromastia) or even more than 2 kg (gigantomastia) [1]. Many causes of gross enlargement have been proposed: increased sensitivity to hormones (estrogen, progesterone, prolactin), growth factors, and drugs (which include penicillamine and antiretrovirals) as well as obesity [2]. Supporting a heavy weight on the anterior chest leads to cervical and upper thoracic back pain, costochondritis, as well as fungal infections in the mammary folds. Patients also suffer from psychosocial stresses, such as severe embarrassment both physically and sexually. A therapeutic reduction mammoplasty becomes essential to relieve these symptoms, to reduce the breast size, and to reposition the “sagging” breast higher up on the chest.

The patient must be assessed as a whole where adequate medical workup and intra- and postoperative planning follow on from the consultation. Measurements specific to breast reduction surgery include a physical record of patient height, weight, and body mass index. Breast measurements of sternal notch to nipple (N-N) distance, the nipple to inframammary fold distance, as well as nipple-areola sensitivity must be documented. The breasts must also be assessed for symmetry, masses, skin changes, and ptosis which are commonly present in large “sagging” breasts.

There are 4 key operative elements in breast reduction surgery, namely, the design must incorporate a pedicle that preserves the vascularity and innervation to the nipple-areola complex (NAC), excess breast tissue is removed to accomplish the desired volume reduction, the excess skin envelope must be reduced, and the result should be attractive, with the nipple on top of a conical breast with good projection [2].

Necrosis of the NAC is an undesirable complication, and thus, pedicle choice is dictated by the need to preserve adequate vascularity. Other complications related to vascularity include fat necrosis, skin flap necrosis, and wound healing problems. Sensation to the nipple is an important variable which evolves in the first 6 months to a year postoperatively [2].

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The aim in breast reduction surgery is to carry the NAC to its desired location on a well-vascularized pedicle. The evolution of breast reduction surgery was initially guided by vascular reliability followed by functional and cosmetic outcomes.

In 74% of people, there is a perforator from the anterior intercostals to the NAC, and in 70% of people, a perforator from the lateral thoracic artery is also present. In 20% of people, the lateral thoracic artery is dominant, and 12% of people have equal contribution from these arteries and their perforators [3]. A desire to maintain NAC vascularity thus guides the pedicle choice.

The medial pedicle has several advantages over other pedicle choices used in reduction mammoplasty. This technique not only preserves the principal perforator associated with the superomedial method but also incorporates anteromedial intercostal perforators [3]. Importantly, the medial pedicle technique preserves multiple perforators to the breast. This enhances vascular reliability allowing for increased pedicle length with NAC perseveration and a reduction in indication for free nipple grafting. An additional feature of this medial pedicle technique is the emphasis on minimal undermining. The pedicle is designed to retain as much of its natural attachment to the chest as possible. Beyond the fascia around the pectoralis major, the pedicle is tapered toward the NAC as cosmetically desired. Minimal parenchymal disruption allows for medial fullness preservation and less reliance on the skin envelope for future shape. Basing the pedicle medially enables preservation of this key functional and cosmetic area.

1.1. Aim. This research investigated the versatility and reliability of the minimally undermined Wise pattern medial pedicle in a wide range of breast reductions, focused on the South African population.

1.2. Research Objectives To describe the analysis of the study variables.

- To assess the predictive ability for the presence/absence of any complications (related to the breast) using the resection weight, the N-N distance, and the NAC translocation.

2. METHODS

After obtaining an ethics clearance certificate with number: M170616 from the University of the Witwatersrand Human Research Ethics Committee (medical), a record review was conducted of all the consecutive breast reductions using only the Wise pattern medial pedicle technique performed by 1 plastic and reconstructive surgeon (EN) at the NetCare Rand Clinic in Berea, Johannesburg, South Africa, over the period of 1 year. Because only 1 surgical technique was used regardless of breast size or weight, no patient selection criteria were necessary. Preoperative breast measurements, intraoperative reduction and nipple translocation, as well as postoperative complications were recorded.

Anonymous, unidentifiable patient photographs were only taken upon consent.

2.1. Description of the Technique. Symptoms of hypertrophy were noted: upper thoracic backache, brassiere (bra) straps causing grooving in the shoulder skin, breast pain, and rashes beneath or between the breasts.

Psychological factors such as embarrassment, bra size, difficulty in finding clothing, and how well clothes fit the patient were recorded [4].

The breasts were assessed for scarring, size, and glandular ptosis and palpated for any masses. Mammography and ultrasonography of the breasts were performed to exclude inframammary pathology. Important measurements recorded were the sternal N-N distance (cm) as well as the nipple to inframammary fold (IMF) distance.

The breasts were marked with the patient standing (Figs 1 and 2). The midline was marked, as well as the breast meridian on each side. The breast meridian is a point halfway between the sternal notch and the acromioclavicular joint. The new location of the NAC was marked at the level of the IMF. The Wise keyhole was marked with its apex at the level of the IMF.

The IMF was marked with the breasts partially supported. The markings were completed only once the patient was under anesthesia. The medial pedicle was marked with the patient supine and was centered over the medial limb of the Wise keyhole (Figs 3 and 4).

2.2. Minimal Undermining. The excess breast tissue caudal to the pedicle was excised, and the pedicle itself was left attached to the pectoral muscle. The pedicle was minimally undermined to preserve as many intercostal perforators as possible. The intercostal perforators are minor perforators, which serve to augment the main blood supply from the internal mammary perforators. This procedure allowed the operation to be performed for patients with greater sternal N-N distances.

2.3. Vascularity. The minor perforators that augment the internal mammary perforators were not routinely visualized but, when visible, were preserved. The existence of these minor perforators has been confirmed by several cadaveric and computed tomography angiographic studies [5,6].

2.4. Wound Closure. The rest of the operation was carried out, with completion of pedicle dissection and resection of breast tissue in the superior and lateral quadrants. The pedicle was rotated, and the nipple areola complex was translocated and inserted into the Wise keyhole. The immediate benefits of this technique were the ease of rotation when compared to the superomedial pedicle, enhanced medial fullness, and less reliance on the skin envelope for preservation of shape.



Fig 1. Example of frontal (left) and left lateral markings (right) showing midline, breast meridian, and Wise keyhole.



Fig 2. Example of left medial pedicle markings (left) and right medial pedicle markings (right).

2.5. Data Collection

2.5.1. Sample Size

Sample size estimation was based on the key research objectives/question(s) to be answered, namely, the estimation of the predictive ability for the presence/absence of any complications based on resection weight, N-N distance, and NAC translocation or any combination of these (Table 4). Based on an anticipated ratio of presence/absence of complications of 1/10, 80% power, the 5% significance level, and an expected area under the curve (AUC) of 0.70, a sample size of 204 breasts was required. The actual sample size of only 114 breasts means that a more discriminating variable, corresponding to an AUC of 0.76 or more, would be statistically significant, which might be a limitation in this study.

Sample size calculations were carried out in the R environment of the ROC (Receiver Operating Characteristics) statistical package, pROC, used to build ROC curves, with reference: Xavier Robin, Natacha Turck, Alexandre Hainard, Natalia Tiberti, Frédérique Lisacek, Jean-Charles Sanchez and Markus Müller (2011). pROC is an open-source package for R and S+ to analyze and compare ROC characteristic curves (BMC Bioinformatics, 12, page 77) [7].

Data on 57 female patients (57 right and 57 left breasts) who had undergone breast reduction surgery at the NetCare Rand Clinic in the period March 2013–February 2014 were collected:

- Sternal N-N distance per breast (cm)
- New NAC (same measurement for right and left breast)
- NAC translocation (same measurement for right and left breast)
- Nipple to inframammary fold distance per breast
- Weight of tissue resected (g) per breast
- NAC viability
- Complications per breast: presence/absence and type

2.5.2. Data Analysis

Continuous variables were summarized by mean, standard deviation, median, and interquartile ranges as tabulated in Table 1. Categorical variables were summarized by frequency and percentage tabulation as in Table 2.

The assessment of predictive ability for the presence/absence of complications related to resection weight, N-N distance, and NAC translocation was carried out by receiver operating characteristic curve analysis as indicated in Table 4. The natural logarithm of each of the 3 variables was used to transform the data to (approximate) normal distributions and thereby meet the assumptions of the technique. Cut points were chosen to maximize both sensitivity and specificity. The results were compared to commonly used cut points for resection weight and N-N distance.

Data analysis was carried out using SAS version 9.4 for Windows. The 5% significance level was used, where $P \leq .05$ indicates statistical significance.

3. RESULTS

Figures 3 and 4 are the before and after photographs of patients A and B.

3.1. Descriptive Analysis of the Study Group. The univariate statistics for each of the study variables are given in Table 1, and the subdivisions of patients by N-N distance and weight reduction are listed in Table 2.

Of the total number of patients requiring breast reduction, 38.6% had sternal to nipple distances greater than 37 cm. This is important because



Fig 3. Patient A before (left) and after (right) breast reduction.



Fig 4. Patient B before (left) and after (right) breast reduction.

37 cm has been suggested as the safe maximum for use of the superomedial pedicle [8].

3.1.1. N-N Distance

Of all the patient measurements, 61.4% of breasts had an N-N distance of ≤ 37 cm, whereas 38.6% had larger distances. It was evident that a large percentage of South African women have elongated sternal N-N distance compared to their Western counterparts.

3.1.2. Nipple to IMF Distance

Of the 114 breasts, data on 46 patients (40.4%) regarding the nipple to IMF distances were available. Data were missing in the other 68 patients (59.6%). The number of missing data on the nipple to IMF distance exceeded 30% of the total. Thus, this variable could not be analyzed and is therefore not included.

3.1.3. New NAC

The mean new NAC level was 21.6 cm, with very few patients having a new NAC of greater than 22 cm.

3.1.4. NAC Translocation

The median NAC translocation was 14 cm, identifying the distance the NAC had to be elevated to restore it to the normal position on the chest wall.

The NAC translocation is a reflection of the distance that the nipple areolar complex had to be elevated in order to restore it to the correct anatomical position on the chest.

3.1.5. Reduction of Breast Weight

The median breast weight reduction in 39.5% of breasts was in the 500- to 1000-g category.

3.1.6. NAC Viability

A significant finding was that 98% of the patients had a viable NAC. One patient only suffered partial thickness loss in a single breast.

3.1.7. Complications

The total complication rate was 9.7% as shown in Table 3. With respect to risk of complications, the only significant variable was the N-N distance, and complications were more likely at distances of 50 cm

or more. The NAC translocation distance was not a statistically significant predictor of complications ($P = .057$). Likewise, reduction of breast weight was not a significant predictor of complications ($P = .051$).

4. DISCUSSION

4.1. Complications in Breast Reduction Surgery. Complications of breast reduction surgery may be classified as early or late. Early complications include delayed wound healing, poor nipple vascularity, hematoma, skin flap necrosis, deep vein thrombosis/pulmonary embolus, fat necrosis, and infections. Late complications are seroma, scars, shape, nipple position, asymmetry, and changes in nipple sensation [9]. Because the medial pedicle is infrequently used in South Africa, a decision was taken to focus on early complications, especially related to vascularity, to demonstrate vascular reliability and versatility across various breast sizes and shapes. This study therefore did not take late complications into account. Complications were reported up to 3 weeks postsurgery beyond which patients were not followed up. Information regarding late complications is therefore not available.

4.2. Early Complications

4.2.1. Delayed Wound Healing

The commonest complication after breast reduction surgery is delayed wound healing, which may be due to systemic disease like diabetes, smoking, excess tension on the wound closure, underlying pressure on the wound from hematoma or seroma, or flap necrosis. The typical locations for wound breakdown are at the 3-way intersection of the horizontal and vertical incisions, the T-junction: the junction of the areola and vertical incision and along the vertical incision. Small wound dehiscence may be allowed to heal secondary, whereas a larger defect may be resutured or skin grafted [4]. In this study, there were 2 episodes of wound breakdown in our study, with 1 occurring at the T-junction and the other along the IMF along the lateral flap. Both of these complications were treated conservatively with wound dressings only and healed without any further surgical intervention.

4.2.2. Poor Nipple Vascularity

Nipple necrosis may occur to varying degrees, ranging from superficial epidermolysis to frank necrosis. Nipple loss can be the most devastating complication post breast reduction; however, superficial

Table 1
Univariate statistics for each of the study variables

Variable	N	Mean	SD	Median	Interquartile range	Minimum	Maximum
N-N distance	114	35.9	5.4	35	32 40	28	52
Nipple to inframammary fold distance	46	18.1	4.1	18	16 20	11	28
New NAC	57	21.6	1.6	22	21 22	18	25
NAC translocation	57	14.6	4.2	14	12 17	8	29
Reduction of breast (g)	114	1058.7	526.3	1000	725 1350	345	3300
Total reduction (g)	57	2116.9	1053.6	1985	1449 2479	715	6590

Table 2
Subdivision of patients by N-N distances and weight of reduction

Variable	Category	n	%
N-N distance (n = 114 breasts)	≤37 cm	70	61.4
	>37 cm	44	38.6
Reduction of breast (n = 114 breasts)	≤500 g	18	15.8
	501–1000 g	45	39.5
	1001–1500 g	31	27.2
	>1500 g	20	17.5

epidermolysis may resolve without sequelae. It is important to monitor the nipple closely for the first 48 hours postsurgery, as nipple vascularity may be compromised by poor vascularity to the pedicle or secondary to compression by a hematoma or seroma.

Clinical assessment may include rubbing the free edge of the pedicle or pricking the nipple areola complex to identify bleeding and hence an adequate vascular supply. Any doubt regarding nipple vascularity should prompt conversion to a free nipple graft [4]. In this study, there was 1 case of partial/superficial nipple necrosis. This was managed conservatively and resolved without nipple loss.

4.2.3. Hematoma

Hematoma following breast reduction surgery is a possible complication occurring within the first postoperative hours or up to 3 weeks postoperatively and requires immediate drainage [2]. In the current study, there was 1 hematoma which presented within 24 hours postsurgery and was evacuated in the operating theater. There was no further sequela post hematoma evacuation.

4.2.4. Skin Flap Necrosis

The design of the medial pedicle means that if flap necrosis occurs, it will most mostly be localized to the lateral flap, as the medial skin flap is attached to the pedicle and is not undermined. Small areas of wound breakdown may be debrided and closed primarily. Extensive flap necrosis is usually managed conservatively, with healing by secondary intention. Skin grafting should be considered only for large defects [4]. In this study, there was 1 episode of lateral flap partial thickness necrosis (epidermolysis), which was treated conservatively with dressings and resolved completely.

4.2.5. Deep Venous Thrombosis

Deep venous thrombosis is a serious, life-threatening complication of breast reduction surgery mostly due to the patient habitus (obesity) and the long operating time. Any shortness of breath or decrease in oxygen saturation must be considered a pulmonary embolus until proven otherwise [4]. No incidence of deep vein thrombosis or pulmonary embolus occurred in the current study. The importance of prophylactic anticoagulation is emphasized.

Table 3
Total complications

Complications (n = 114 breasts)	None	103	90.4%	N-N (cm)
	Present	11	9.7%	
Complication type (n = 11)	1-cm wound break lateral flap	1	0.9%	41 cm
	Breakdown left T-junction	1	0.9%	37 cm
	Cellulitis	1	0.9%	41 cm
	Epidermolysis lateral flap and wound dehiscence	1	0.9%	41 cm
	Fat necrosis	1	0.9%	35 cm
	Fat necrosis lateral flap	1	0.9%	46 cm
	Fat necrosis upper pole	1	0.9%	44 cm
	Fat necrosis, with partial NAC loss	1	0.9%	37 cm
	Hematoma	1	0.9%	43 cm
	Vertical limb sepsis	1	0.9%	32 cm
	Wound breakdown (T-junction)	1	0.9%	51 cm

4.2.6. Infections

Infections may present at the wound edges or as cellulitis. Management consists of intravenous antibiotics and close follow-up with drainage of any collections. Abscess occurrence is rare but would require drainage and healing by secondary intention before any revision is planned [4]. In this study, 1 patient developed superficial infection along the vertical limb of the closure, resulting in wound dehiscence at this site. Frequent wound cleaning, dressings, and topical antibiotics finally allowed healing by secondary intention.

4.2.7. Fat Necrosis

Fat necrosis is a complication related to vascularity. It may occur at the tip of the pedicle or in the lateral flap. It presents as a local area of hard tissue, with delayed liquefaction or calcification. Palpable fat necrosis should be drained to confirm the diagnosis and hopefully prevent encapsulation. Any doubtful lesions require aspiration for appropriate microbial and cytological investigation [4].

4.3. Late Complications. Late complications are usually those of symmetry, scar formation, nipple malposition, and “bottoming” out of the breast. These complications are more intimately related to surgical technique than to vascularity and are not within the immediate scope of the current study.

4.4. Risk Factors for Complications. Age, smoking, previous radiotherapy, obesity, and smoking have been suggested as general risk factors for complications in breast reduction surgery [10]. Volumes of reduction, nipple translocation, and pedicle length have also been suggested as possible risk factors. Smoking is a recognized risk factor in plastic surgery and is a contraindication to breast reduction. Age > 50 years has also been suggested as an independent risk factor for complications, but a meta-analysis by Zhang et al (2016) has ruled this out as a risk factor [10].

Obesity is a recognized risk factor in plastic surgery, but the data in breast reduction surgery have been controversial. A meta-analysis has confirmed that there are increased complications in patients with a body mass index > 30 [10]. The most common complication is delayed wound healing, and many surgeons, even patients, feel that this is an acceptable risk with eventual healing, often without the need for revisions. One limitation of the current study is the failure to record body mass index of each patient.

Pedicle length, resection volume, and nipple translocation have also been proposed as local risk factors for complications. Reduction volumes were initially considered a risk factor for complications including nipple necrosis, but as the body of knowledge has increased, it is now recognized that what is left behind is more important than what has been removed in relation to incidence of complications. Various authors, including Chetty and Ndobe (2016) [1] and Nahabedian et al (2000) [11], have conducted successful pedicled breast reduction of

Table 4
Predictive ability for the presence/absence of any complications of resection weight, N-N distance, and NAC translocation

Model	Accuracy (%)	Sensitivity (%)	Specificity (%)	P value	AUC	Cutoff value
N	114	11	103			Value \geq cutoff: likely to have complications
N-N distance (as continuous measurement)	81 (72–87)	55 (23–83)	84 (75–90)	.029*	0.71	50 cm
N-N distance (>37 cm vs ≤ 37 cm)	62 (53–71)	55 (23–83)	63 (51–71)			38 cm
NAC translocation				.057	0.67	
Reduction of breast (g) (as continuous measurement)				.051	0.68	
Reduction of breast (g) (>500 g vs ≤ 500 g)	25 (18–34)	100 (72–100)	17 (11–26)			501 g
Reduction of breast (g) (>1000 g vs <1000 g)	56 (47–65)	55 (23–83)	56 (46–66)			1001 g
Reduction of breast (g) (>1500 g vs <1500 g)	80 (71–87)	36 (11–69)	84 (75–90)			1501 g

* $P < .05$ is statistically significant.

volumes greater than 1500 g [1,11]. Similarly, nipple translocation has also been suggested as a risk factor for complications. The median nipple translocation in the current study was 14 cm, which indicates that a significant percentage of the patients in our study had nipple translocation greater than 15 cm. No relation between NAC translocation and complications was found in this study.

Pedicle length is also regarded as a limitation to safe breast reduction. In this study, data were analyzed with a predictive model (Table 4) to try to better define the safe maximum pedicle length using the medial pedicle. The technique used in this study included deliberate preservation of anterior intercostal perforators, which, although minor, may have enhanced pedicle reliability at distances longer than 37 and 44 cm reported by Landau and Hudson (2008) and Nahabedian (2000), respectively [8,11]. This study also demonstrated that the medial pedicle is a versatile reduction method and yields good results across a range of breast sizes. Using a predictive model (Table 4), it was possible to demonstrate that the risk of complications only become statistically significant in patients with preoperative sternal N-N distances >50 cm. This study population had a significant percentage (38.6%) of patients presenting for breast reduction with sternal N-N distances >38 cm: this demonstrates that pedicled breast reduction is a safe option in these patients. Similarly and of importance is the lack of increased complications in smaller breast reductions, which confirms the safety and versatility of the medial pedicle.

4.5. Complications of the Minimally Undermined Medial Pedicle Compared to Other Breast Reduction Techniques. When comparing the complication rates of this study with other published studies, the overall rates for complications have varied widely [12–14].

More recently, Chetty and Ndobe (2016) [1] published data on breast reduction in extreme gigantomastia, with inclusion criteria being a sternal N-N distance of greater than 40 cm. This population was expected to have a higher complication rate due to the longer pedicles used, but partial nipple necrosis occurred in only 11.5% and T-junction breakdown in 24.2% of patients [1]. Results of the study by Chetty and Ndobe et al (2016) [1] compare well to the study of Landau and Hudson (2008) which reported an incidence of 6.5% nipple necrosis and 18% T-junction breakdown, respectively, leading to their recommendation that a sternal N-N distance of 37 cm is a safe maximum [8].

It is difficult to directly compare the various breast reduction techniques because of the wide heterogeneity of populations and the divergent inclusion criteria. However, most of these studies seem to agree on an overall complication rate of 20% as an acceptable standard [10]. Very serious complications including nipple loss are rare and reported at $<1\%$. The total complication percentage in the current study was 9.7%. The complications which occurred in this study are tabulated in Table 3.

Of the 114 breasts, complications occurred in only 11, equaling a total complication percentage of 9.7% (Table 3). Two breasts had both

complications in 1 side. These complication results compare favorably to the published literature. This study had 0.9% cases of epidermolysis, 1.7% cases of infections, and 3.5% cases of fat necrosis in the 114 breasts, which compare well to the 1.2% cases of fat necrosis published by Finger et al (1989) [15]. Fat necrosis may be underreported in the literature because of the difficulty of diagnosis.

Of the 11 complications, 7 occurred in patients with preoperative sternal N-N distances of greater 37 cm. This however is not statistically significant when compared to the patients with sternal N-N distances less than 37 cm. It is important that patients are counseled and warned of all risks and complications that can occur across a range of breast sizes: this study shows that the estimated risk of complications using a predictive model (Table 4) only increases significantly at N-N distances of >50 cm.

In the current study, 1 patient developed a hematoma in a breast which had to be explored and surgically drained. Complications in the remaining patients were managed conservatively and resolved satisfactorily.

Further benefits of this minimally undermined medial pedicle technique include leaving the breast parenchyma undisturbed in the cosmetically important medial area of the breast. This results in less reliance on the breast skin envelope for the retention of shape and longevity of the surgery. Nipple translocation is also easy to complete, with the rotated nipple being supported by the retained breast parenchyma.

5. CONCLUSION

Breast reduction is a common plastic surgery procedure, with a variety of established techniques available to the surgeon. However, the minimally undermined medial pedicle is a versatile design that offers reliable results across a wide range of breast sizes. This study has a complication rate comparable to those in the published literature and has been able to extend the limits of safe pedicled breast reduction. This design is simple, reproducible across different breast sizes, easy to teach and learn, and cost and time effective, with a complication rate comparable to internationally reported studies conducted most commonly on smaller breast sizes than the breast sizes in this study. This study shows that the medial pedicle is a versatile and reliable pedicle to use in breast reduction.

Disclosures

Author Contributions. The authors confirm that all 4 of the authors made substantial contributions to all of the following:

- Conception and design of the study, acquisition, analysis, and interpretation of data
- Drafting the article and revising it critically for intellectual input

- Final approval of the submitted version
- Sound medical and scientific practice
- The manuscript, including the data, figures, and tables, has not been previously published.
- Data, figures, and tables have not been fabricated or manipulated in any way to support the conclusions.
- This submission is not representative of a study that has been divided into several parts to increase the quantity of submissions and submitted to various journals or to any 1 journal over a period of time.

Conflict of Interest

- The authors confirm no proprietary or commercial interest in the concept discussed in this article and also have no conflict of interest to declare.

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