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SUPERIOR MEDIAL PEDICLE: OBVIATES NEED OF NIPPLE GRAFT IN THE MANAGEMENT OF GIGANTOMASTIA

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ABSTRACT

Background: **Gigantomastia is a debilitating condition that has been shown to affect quality of life for patients. Management of this condition has been predominantly by reduction mammoplasty followed by free nipple graft. We share our experience with the use of superior medial pedicle for massive gigantomastia with no free nipple graft.**

Objective: **To determine outcome of patients with massive gigantomastia managed with superior medial pedicle.**

Design: **This was a prospective longitudinal study.**

Setting: **Kenyatta National Hospitals and other selected Hospitals in Nairobi, Kenya**

Subjects/Participants: **Patients who underwent reduction mammoplasty between Jan 2015 and Dec 2025 managed with superior medial pedicle. Gigantomastia was defined as resection weights of more than 1500 grams per breast. Outcomes measured were sternal nipple distance, resected weights, viability of the nipples and post-operative complications.**

Results: **A total of 68 patients (131reduction surgeries) were followed during the study with the mean age of the patients being 37.5 years with a range from 14 to 54 years. The mean sternal nipple distance was 36.5 with a range from 34 to 56 cm. This was reduced to a mean of 24.5 cm with a range from 21 to 27. Average weight excised per breast was right 1990 g and left 1970 grams with a range from 1500 to 4250grams. One patient who had post-surgical sepsis had total nipple loss with one partial nipple necrosis.**

Conclusion: **Superior medial pedicle is a reliable pedicle for patients requiring massive breast reduction. With this pedicle there is high likelihood of salvaging the nipple and thus improving on patient's quality of life.**

INTRODUCTION

Gigantomastia refers to patients with large breast with expected excision of more than 1500 grams of breast tissue . Gigantomastia poses a great physical and psychological affliction to women (1). There is evidence that breast reduction surgery not only causes an improvement in the physical activity , but also on symptoms such as neck and shoulder pains. (2). Further a woman's self-esteem and psychological well being is improved by removing the functional limitations caused by gigantomastia (2,3). Majority of women with macromastia opt to undergo reduction mammoplasty in view of these health benefits. Breast reduction surgery can be done using various techniques with each having advantages and disadvantages (4).

While it is standard practice to preserve nipples in small to medium breasts (less than 1000g) most authors seem to prefer free nipple grafts in gigantomastia (5-7). The reason for this is the assumed likelihood of venous congestion due to the long pedicle leading to nipple necrosis. There is however little evidence to support this (8). Free nipple grafts on the other hand are associated with complications such as cellulitis, lack of sensations, inability to breast feed, poor graft take and hypertrophic scaring with an overall poor quality of breast life (9).

There is no consensus on what is the ideal pedicle for reduction mammoplasty. Among the commonly used pedicles are the superior medical and inferior pedicle. Superior medial pedicle relies on perforators from the internal thoracic artery predominantly from the 2nd to the 4th intercostal spaces. It is presumed to have better blood supply especially when the Wurringer septum is preserved. However, its use to support vascularity of the nipple in large breasts has not been fully authenticated. In this series we share our experience and suggests its role in the management of massive breast reduction.

MATERIALS AND METHODS

Study design: Prospective longitudinal study of patients operated on with gigantomastia between January 2015 and Dec 2025.

Study setting: Kenyatta National Hospital and selected private hospitals in Nairobi

Sampling Procedures: Patients admitted for breast reduction and consented for the study were followed up. Patients' bio-data including age, clinical presentations and any underlying medical or surgical conditions were taken.

Surgical Technique: Suprasternal notch to the nipple distance were measured prior to surgery with the patient standing and arms adducted. Markings for breast reduction were done using a wise key resection pattern (Figures 1 and 2). Superior medial pedicle was marked with the vertical limbs ranging from 8 to 11 cm. The nipple was placed on midclavicular line approximately 8cm from suprasternal notch at the 'Pitanguay point 'determined by using infra-mammary fold as the reference point. Nipple diameter ranged from 5 to 7cm as per the patients' preference for either a small or large Nipple areolar complex. Excision of the breast tissue was done with surgical diathermy after infiltration with lidocaine and adrenaline at 1;1000000 dilution. The thickness of the pedicle was kept between 2.5 to 3 cm. The wurringer septum was sorted for and were identified preserved with its neurovascular structures. Post-surgery excised tissue was measured in grams. Only patients with weights more than 1500 grams were followed up. Variables measured were suprasternal to nipple distance, excised breast weights, new nipple position, and complications including nipple necrosis. Post-operative drains were used and left *in situ* for 2 to 3 days or once drained less than 30 cc.

Data Analysis: Data was analyzed by SPSS V 25 and the information gathered were summarized for mean, median, variance, ranges and standard deviations of the weights and distance before and after reductions .

Ethical Considerations

Ethical approval was received from KNH and University of Nairobi ethics committee. All patients included in to the study gave written informed consent.

RESULTS

A total of 96 patients were operated on with the authors during the study period. Of these 68 patients (131surgeries) had resections weights of more than 1500 grams and were followed up in the study. The mean age was 31 years ±with a range from 13 years to 56 years.

Figure 1: Age distribution of patients operated on

The mean weight of tissue resected was 1980 grams, right breast was1990grams and the left breast was 1970 grams

Figure 2A: Patient with gigantomastia, with wise key pattern with superior medial pedicle

Figure 2B: Patients in Figure 2A, after excision of breast tissues

Figure 3A: Patent with gigantomastia with suprasternal notch to nipple distance of 38cm

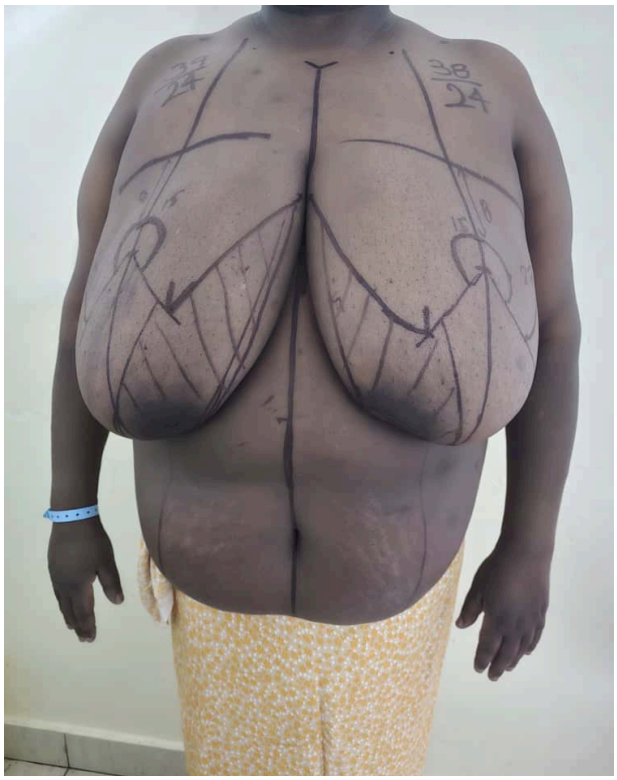

Figure 3B: Patients with new Nipple distance at 24 cm

Table 1: Descriptive statistics of resected breast tissue.

	Right Breast resected tissue(g)	Left Breast resected tissue(g)	Total resected breast tissue wt.(g)
Mean	1990	1970	3960
Std. Error of Mean	232.61	168.32	371.10
Median	1700.00	1754.00	2840.00
Std. Deviation	1932.16	1398.20	3082.56
Variance	3733257.04	1954957.16	9502179.33

The average preoperative sternal notch nipple distance was 37.8 cm with a range from 33 to 56 cm, post-

surgical nipple sternal distance was 24.5 cm with a range from 22 to 25.7 cm. One patient had nipple loss due to post-surgical breast sepsis in a lactating mother, with another partial nipple loss. Overall complication rate was about 7% with wound dehiscente at T junction in 5 patients.

DISCUSSION

Breast reduction surgery is no longer considered an aesthetic surgical procedure. Many studies have demonstrated a consistent improvement in the patient's quality of life including physical, psychosocial and sexual well-being (1,2,4,). Reduction mammoplasty is thus now considered part of care for not only physical but emotional and psychosocial effects of abnormal development of the breast. As a result of this many insurance companies have now accepted to cover for these procedures with many considering reductions weights of more than 500 grams therapeutic.

WHO organizations define macromastia as reductions of greater than 600 grams with gigantomastia as reductions of more than 1500 grams. Controversies still exist on what could be the ideal surgical procedures for both conditions. For macromastia, the debate has mainly focused on skin resection pattern and the type of pedicle that could give long lasting results. The focus for gigantomastia on the other hand has been on whether a viable nipple could be achieved after reduction mammoplasty that could allow for nipple sensation and breast feeding. Many authors suggests that the blood supply to the nipple in gigantomastia is too precarious to support its viability and a free nipple graft should thus be considered from the onset of surgery (5,6,7). However, there is hardly any evidence to show that nipple survival is actually reduced in patients who undergo reduction mammoplasty in gigantomastia compared to those for macromastia or any other surgeries (8,12). Further whether patients' factors or surgical techniques could influence nipple viability.

In our series of over 130 gigantomastia reduction surgeries we had only one patient with total nipple loss giving an overall nipple loss of less than one percent. This particular patient had post-surgical sepsis that could have affected blood supply to the nipple. The mean reduction weight per breast was1980 grams. Sternal to nipple distance was moved from an average of 37.8 cm to 24.5 cm. These findings strongly suggest that sparing the nipple during reduction mammoplasty in patients with gigantomastia is a safe procedure with the much-dreaded nipple loss not as common as was previously feared.

Our findings correlated well with other studies that looked at outcomes of nipples in patients operated on for gigantomastia. Zelko *et al* in systemic review of publications on gigantomastia without free nipple graft reported nipple loss in only 1.7 % of the cases (10). Talwar AA *et al* in another study comparing outcomes of gigantomastia patients operated on with extended pedicle flap and free nipple grafts noted better Breast Q scores for patients with extended pedicle flaps and higher incidence of complications in patients with free nipple graft. Patients with free nipple grafts had cellulitis rates of about 20 percent (9). Anlatici R *et al* in another study on the use of superior medial pedicle in the management of gigantomastia had an average resection weight of about 1800 grams. They had no incidence of nipple loss. They however had three patients with `compromised Nipple areolar complex circulation which was managed by Negative pressure therapy and hyperbaric oxygen (11). Gerzenshtein *et al* on comparison on the use of inferior pedicle flap for patients with gigantomastia and macromastia did not report a higher incidence of nipple necrosis in the gigantomastia group.(12)

Though not clear whether the choice of pedicle could have influenced our outcomes, a number of studies have demonstrated superior medial pedicle to have good long-term outcomes compared to inferior pedicle (13,14). It is argued that superior medial pedicle has a robust blood supply from the 2nd to the 4th perforators from the internal thorcaic vessels that contributes to about 60 percent of blood supply to the breast. This pedicle therefore seems to be more reliable than other types that have got less blood supply. This blood supply could be augmented further by preservation of the wurringer septum that has been shown to supply the nipple areaolr complex. Patients' factors that could have contributed to good outcomes included a relatively young patient population as well as low history of cigarette smoking in our population.

CONCLUSION

In conclusion, gigantomastia can safely be operated on without free nipple graft. Massive excision of up to 4 kilograms as demonstrated in this study can be safely done with the use of superior medial pedicle. This pedicle has a reliable blood supply that could be augmented further by sparing the wurringer septum during surgical excision (15). The incidence of nipple necrosis is much less than previously thought and there is high patient satisfaction with a better quality of life as compared to free nipple graft. However, proper patient selection and meticulous surgical techniques are paramount in ensuring consistent

surgical outcomes. However, this being only a one center longitudinal prospective study , there is need for multicenter or randomized control study to conclusively determine whether free flaps are not necessary in the management of gigantomastia.

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