OPEN

PRS GLOBAL OPEN

CASE REPORT

Breast

Combining Breast Reduction Techniques to Treat Gigantomastia in Ghana

Melody F. Scheefer, MD*
Pius Agbenorku, MD†
Paa Ekow Hoyte-Williams, MD‡
Boutros Farhat, MD§
Isak A. Goodwin, MD¶
W. Bradford Rockwell, MD‖

Summary: In this presentation of 2 consecutive cases of symptomatic juvenile breast hypertrophy in Ghana, we review the patient presentation, workup, and discuss outcomes following a combined technique of inferior pedicle stump with free nipple graft reduction mammoplasty. Surgical goals for treatment of gigantomastia were 2-fold: to resect adequate tissue to obtain symptomatic relief with improved quality of life, while avoiding a flat, boxy-appearing breast shape.
(Plast Reconstr Surg Glob Open 2018;6:e1673; doi: 10.1097/GOX.0000000000001673; Published online 15 February 2018.)

INTRODUCTION

Juvenile breast hypertrophy is characterized by breast enlargement without masses, with histologic findings of stromal and ductal hyperplasia.[1] Although the exact mechanism of overgrowth is unknown, as there is no elevation in serum levels of hormones or increase in the number of hormone receptors, there may be an increased response at the receptor level.[2] When severe, breasts can grow to be 13–23 kg, leading to a significant physical and mental health burden.[3] Hypertrophy at this extreme, termed gigantomastia, reduces quality of life.[4] Symptomatic hypertrophy is treated surgically because the symptoms of back and neck pain, shoulder grooving, and poor posture are known to improve following breast reduction.[5,6]

In this review Ghanaian juvenile breast gigantomastia cases, we illustrate a successful intervention to a challenging surgical problem. Both women presented with gigantomastia, and physical and psychosocial distress. Surgical goals for treatment were 2-fold: to resect adequate tissue to obtain symptomatic relief, and to avoid the flat, boxy-appearing breast shape typical of free nipple graft reductions.[7] These goals were accomplished by augmenting a Wise pattern free nipple graft technique with an 8-cm long, 10-cm wide deepithelialized inferior pedicle breast reduction to add central projection.

*From the *Division of Plastic Surgery, University of Utah Health, Salt Lake City, Utah; †Reconstructive Plastic Surgery and Burns Unit, Komfo Anokye Teaching Hospital, School of Medical Sciences, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, Africa; ‡Reconstructive Plastic Surgery and Burns Unit, Komfo Anokye Teaching Hospital, School of Medical Sciences, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, Africa; §Reconstructive Plastic Surgery and Burns Unit, Komfo Anokye Teaching Hospital, School of Medical Sciences, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, Africa; ¶Division of Plastic Surgery, University of Utah Health, Salt Lake City, Utah; and ‖Division of Plastic Surgery, University of Utah Health, Salt Lake City, Utah.*
Received for publication October 27, 2017; accepted December 21, 2017.

DOI: 10.1097/GOX.0000000000001673

METHODS

In 2015 and 2016, 2 consecutive similar cases performed at the Komfo Anokye Teaching Hospital in Kumasi, Ghana. Photo consent was part of the surgical consent obtained for this case series.

Case 1

A healthy 16-year-old female presented with gigantomastia of her bilateral breasts. Rapid breast enlargement started postmenarche, and her size had been stable for 2 years duration. She suffered from severe neck and back pain, poor posture, and recurrent intertrigo of the inframammary folds (Fig. 1). Her breast size had been associated with social embarrassment, and she had dropped out of school. Testing included normal hormonal assays, and ultrasound showed hypertrophic breast architecture and no masses of concern.

An 8-cm long by 10-cm wide inferior pedicle stump was deepithelialized to centrally augment the Wise pattern breast reduction flaps. The distal end bled well during the case. The lateral and medial pedicle walls were sutured to the lateral and medial breast pillars to augment central fullness. The thick Wise pattern flaps covered the pedicle stump and created a pleasing round contour with very good projection. The resection pathology of 3.65 kg from the left, and 3.8 kg from the right breast returned, "Fibro glandular tissue of breast origin. No malignancy

Disclosure: *The authors have no financial interest to declare in relation to the content of this article. The Article Processing Charge was paid for by the authors.*

Fig. 1. Case 1 examination was notable for: "a normal body mass index with grossly enlarged breasts extending below the umbilicus and multiple striae."

found." On postoperative follow-up, social confidence was improved; she was very satisfied with the new breast appearance and size, and her back and chest pain were progressively improving. She did not have subsequent regrowth of breast tissue (Fig. 2).

Case 2

A 24-year-old G_0P_0 otherwise healthy female presented with a progressive increase from macromastia to gigantomastia of bilateral breasts following menarche at the age of 16 (Fig. 3). She was no longer able to cope with severe back and neck pain, nor the embarrassment of her appearance. She wore double brassieres for satisfactory support, was unable to exercise, could not find appropriate clothing, and experienced inframammary maceration with recurrent intertrigo. Preoperative testing was unremarkable. The same surgical technique described in case 1 was used. The well perfused inferior pedicle stump provided central bulk and projection. There was some epidermolysis of the free nipple-areola grafts early postoperatively with full reepithelialization (Fig. 4). Specimens of 4.2 kg from the left and 3.5 kg from the right were sent to pathology, confirming benign mammy hyperplasia. The patient had relief of physical and psychological symptoms. As with case 1, she did not have subsequent regrowth of mammary tissue.

DISCUSSION

Breast projection may be achieved by different techniques during breast reductions using free nipple grafts. Thick Wise

Fig. 2. Case 1 postoperative appearance.

Fig. 3. Case 2 examination was notable for normal body mass index, severe shoulder grooving, symmetrically pendulous pear-shaped breasts with striae, and ptosis to her groin crease.

pattern flaps may be sutured together in the breast meridian to achieve moderate projection. In our cases, an 8-cm length of well-perfused inferior pedicle was preserved to add central fullness deep to the flaps. We made the decision preoperatively to perform a free nipple graft based on the very large breast volumes. The inferior pedicle stump had an estimated volume of 200–300 cc and was added to improve projection.

One description, by Al-Shaham[8], advocates intraoperative observation with select conversion to free nipple graft when gangrene is impending. This author analyzed

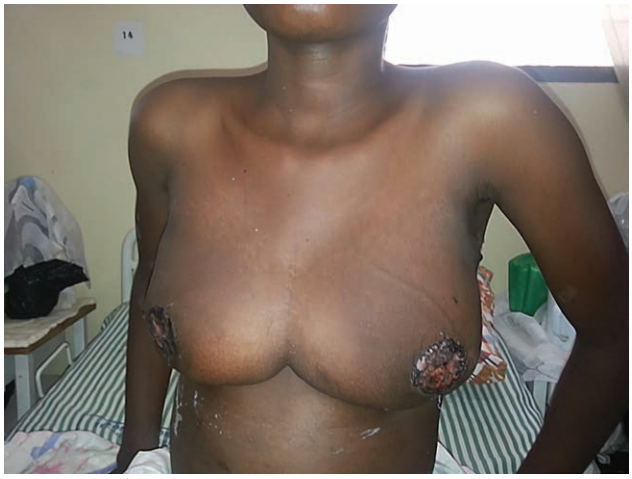

Fig. 4. Case 2 postoperative epidermolysis of the free nipple grafts with subsequent full reepithelialization.

preoperative and postoperative measurements, finding that 3% (n = 66) required free nipple graft when Wise pattern reductions with inferior pedicles of 8–10 cm wide and 23–25 cm long were performed. Reductions ranged from 1,950 to 2,250 g. This added 1–1.5 hours to the cases and required intraoperative serial debridement of nonviable inferior pedicle back to perfused tissue.[8]

Other publications describe similar techniques. Sim et al.[9] presented 63 patients with average resection masses of 823 g per breast and inferior pedicles measuring 5 × 5 cm. There were no major complications, and projection was improved by suturing the upper point of the inferior pedicle to the pectoralis fascia.[9] Koger et al.[7] described a similar technique on a female patient with bilateral gigantomastia, with breast specimens of 2,224 and 2,240 g. The pedicle width at the inframammary fold measured 9 cm. Once the free nipple-areolar grafts were harvested, the inferiorly based parenchymal pedicles were deepithelialized, and a glandular pyramid was developed by obliquely incising tissue to the level of the pectoralis fascia.[7] These techniques can be helpful to achieve vascularized projection when free nipple-areolar grafts are employed for large reduction mammoplasties.

CONCLUSIONS

In Ghanaian culture, "the thicker and heavier, the richer and more attractive a woman is," large breasts represent health and fertility.[10] More volume and projection is considered aesthetically pleasing, and modifications to reduction mammoplasty become necessary to align patient aesthetics and goals of treatment. Our gigantomastia technique maintains projection and vascularity via the inferior pedicle stump. The Wise pattern flaps are sufficiently thick to add generalized fullness and are sufficiently vascularized to support the free nipple-areolar grafts. Physical and psychological symptom relief is achieved, and the reduced breasts are aesthetically and culturally acceptable.

Pius Agbenorku, MD, PhD
Reconstructive Plastic Surgery and Burns Unit
Department of Surgery
Komfo Anokye Teaching Hospital
School of Medical Sciences
College of Health Sciences
Kwame Nkrumah University of Science and Technology
PO Box 448
KNUST-Kumasi
Ghana, Africa
E-mail: pimagben@yahoo.com

REFERENCES

1. Chang DS, McGrath MH. Management of benign tumors of the adolescent breast. *Plast Reconstr Surg.* 2007;120:13e–19e.
2. Jabs AD, Frantz AG, Smith-Vaniz A, et al. Mammary hypertrophy is not associated with increased estrogen receptors. *Plast Reconstr Surg.* 1990;86:64–66.
3. Neinstein LS. Breast disease in adolescents and young women. *Pediatr Clin North Am.* 1999;46:607–629.
4. Kerrigan CL, Collins ED, Striplin D, et al. The health burden of breast hypertrophy. *Plast Reconstr Surg.* 2001;108:1591–1599.
5. Singh KA, Losken A. Additional benefits of reduction mammaplasty: a systematic review of the literature. *Plast Reconstr Surg.* 2012;129:562–570.
6. Agbenorku P, Agamah G, Agbenorku M, et al. Reduction mammaplasty in a developing country: a guideline for plastic surgeons for patient selection. *Aesthetic Plast Surg.* 2012;36:91–96.
7. Koger KE, Sunde D, Press BH, et al. Reduction mammaplasty for gigantomastia using inferiorly based pedicle and free nipple transplantation. *Ann Plast Surg.* 1994;33:561–564.
8. Al-Shaham A. Pedicle viability as the determinant factor for conversion to free nipple graft. *Can J Plast Surg.* 2010;18:e1–e4.
9. Sim HB, Yoon SY, Nam SJ. Breast reduction using free nipple graft. *J Korean Soc Plast Reconstr Surg.* 2007;34:88–92.
10. Frederick DA, Forbes GB, Anna B. Female body dissatisfaction and perceptions of the attractive female body in Ghana, the Ukraine, and the United States. *Psihologijske teme.* 2008;17:203–219.