

Geometric Incision Design for Reduction Nippleplasty

Wen-Chen Huang · Chia-Meng Yu ·
Yao-Yuan Chang

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Abstract

Background Nipple hypertrophy is a frequently encountered problem in Asian women. It may be congenital or caused by hormones, breast feeding, or gestation. The hypertrophy has been linked primarily to aesthetics. The nipples of Asian women usually are 6–10 mm in diameter and 5–8 mm in height, and women with nipples larger than 1.5 cm in diameter or height frequently ask for reduction nippleplasty.

Methods Women with nipple hypertrophy seeking reductive surgery at the authors' hospital between 2004 and 2009 were considered for nippleplasty. A new design consisting of three dermal flaps and sparing of the central column was used. This design can reduce the diameter, height, and most importantly, the basal shape of the nipple without compromising neurovascular supply and functions.

Results During the aforementioned period, 86 nipples of 43 patients were corrected with this method. All the patients were satisfied with the aesthetic results, preserved lactation, and sensory function. No major complications such as necrosis, infection, or numbness of the nipple occurred.

Conclusions This reduction nippleplasty method can be applied for all types of nipple hypertrophy to create a new

nipple of the desired height and diameter without significant complications.

Keywords Nipple · Nipple hypertrophy · Reduction nippleplasty · Surgical flaps

Nipple hypertrophy is a frequently encountered problem in Asian women that may cause them embarrassment and affect intimate relationships. Apart from aesthetic considerations, in Asian culture, nipple size and shape often are mistakenly seen as the presentation of sexual arousal.

A reduction in the circumference and height of hypertrophic nipples generally improves the aesthetic appearance of the breasts and reduces irritation of the skin [1].

Several methods of reduction nippleplasty were proposed in the past. Some methods reduced height only, whereas some claimed to reduce both height and diameter. However, these methods resulted in either oval or irregular nipples with varied basal shapes. It is extremely difficult to reshape nipples to an actual cylindrical form with the published methods.

We report on a new nippleplasty method that can be applied to all types of nipple hypertrophy to yield nipples of desired height and diameter while preserving lactation function.

W.-C. Huang · C.-M. Yu · Y.-Y. Chang (✉)
Division of Plastic Surgery, Department of Surgery, Mackay
Memorial Hospital, No. 92, Section 2, Chung-Shan North Road,
Taipei, Taiwan, R.O.C.
e-mail: alap1017@yahoo.com.tw

W.-C. Huang
e-mail: huang42@ms2.mmh.org.tw

C.-M. Yu
e-mail: a4332@ms7.mmh.org.tw

Methods and Operative Designing

Methods

From 2004 to 2009, women with hypertrophic nipples seeking revision nippleplasty at our hospital underwent the operative procedures described in the following section.

Operative Designing and Technique

1. A circle with the nipple at its center and with the desired radius (r) of the new nipple is drawn. The diameter of the new nipple is set at 8 mm.
2. Three columns with a width of $2r$ are drawn with dotted lines on the wall of the nipple centered at 4, 8, and 12 o'clock. According to geometric theory, the circumference of a circle is approximately equal to six times the radius ($\pi = 3.14$) (Fig. 1a).
3. The difference between the radius of the original nipple (R) and the desired nipple (r) is labeled as (r') at 2, 6, and 10 o'clock. With irregularly shaped nipples, the three r' lengths may not be equal.
4. Points b1, b2, and b3 are marked at 2, 6, and 10 o'clock at the base of the nipple. From b1, b2, and b3, an arrowhead with the arms connected to the column made in step 2 are drawn. The length of each arm is equal to r' .
5. Between the adjacent arrows, three flaps with the desired height (h) are marked. The width of the flaps is $2r$ as previously designed with dotted lines (Fig. 1b).
6. With the patient under local anesthesia, central column dissection is performed, beginning from the circle on top. The three arrow areas and the area above the new dome margin are excised after the dissection (Fig. 1c).

7. After debulking of the central column and thinning of the three dermal flaps, a new nipple with the desired height and diameter is created with 5-0 Dexon and nylon (Fig. 1d).
8. A donut dressing is applied in the early postoperative period to prevent nipple compression by the brasserie. Stitches are removed 10–14 days postoperatively.

The diameter and height of the new nipple (initially set at 8 and 6 mm, respectively) are changed according to individual preferences.

Results

From 2004 to 2009, 86 nipples in 43 patients were corrected with the described method. The patients ranged in age from 25 to 56 years. The original nipple diameters ranged from 16 to 25 mm, and the nipples had varied heights and basal shapes.

The new cylindrical nipples created were 8–11 mm in diameter and 5–8 mm in height. The follow-up period ranged from 4 months to 5 years. Some nipples developed superficial sloughing of skin flaps and healed within 2 weeks, but no major complications such as necrosis, infection, numbness of the nipple, or loss of lactation

Fig. 1 Schematic diagram of the operation (view at 6 o'clock). **a** Three columns with a width of $2r$ were drawn with dotted lines on the wall of the nipple at 4, 8, and 12 o'clock. **b** Three flaps with a width of $2r$ and a height of h were designed. **c** Excision of skin. **d** Final result

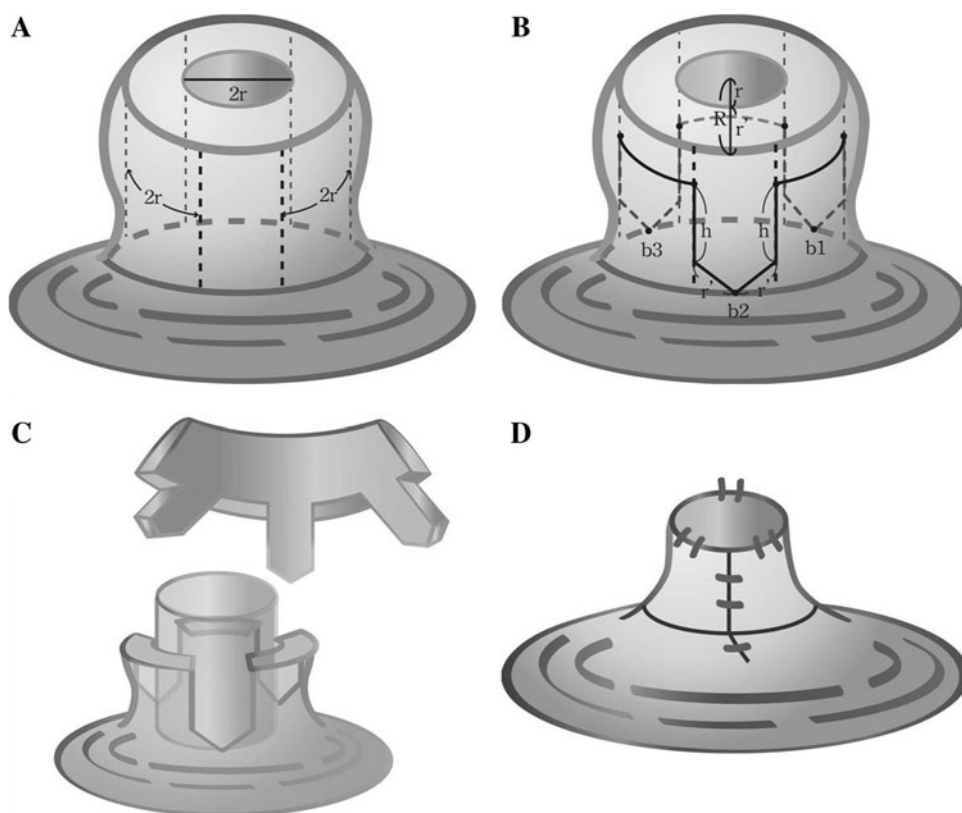
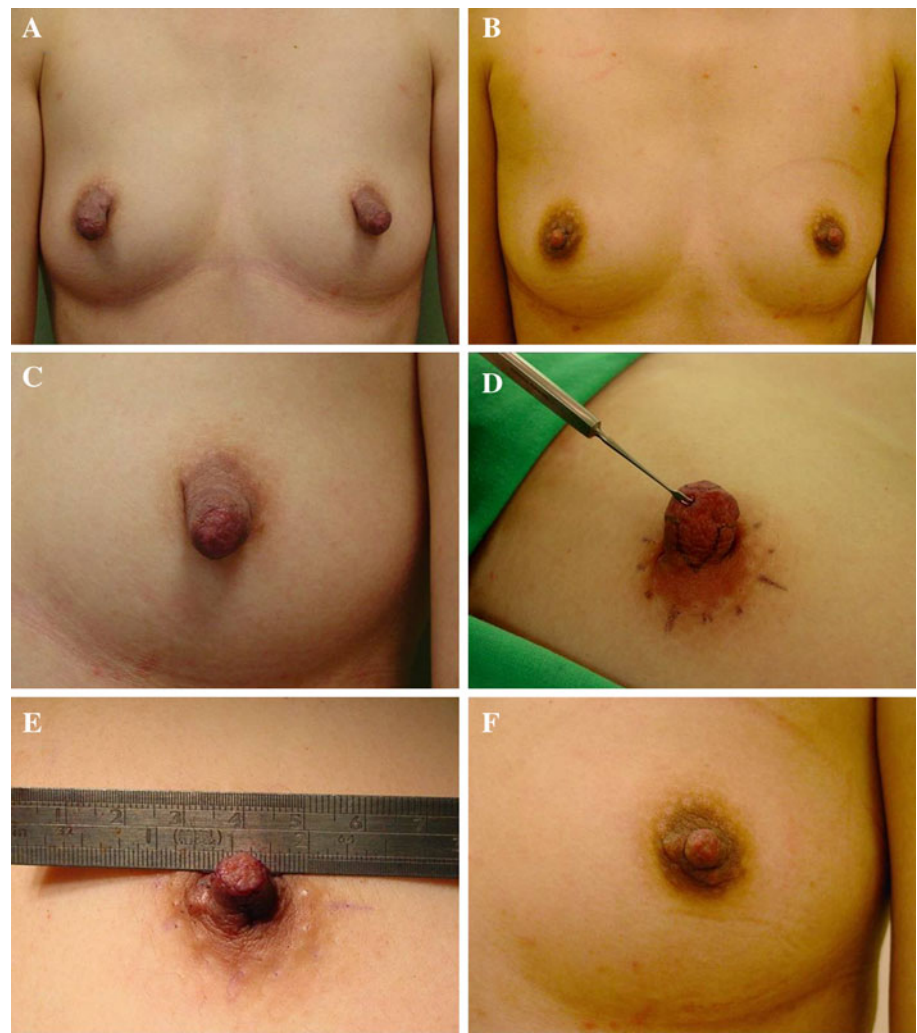


Fig. 2 Cylinder-shaped nipple hypertrophy. **a** Preoperative view. **b** Postoperative view at 2 years. **c** Preoperative view of the left nipple. **d** Incision design. **e, f** Postoperative view of the left nipple at 1 month



occurred. Two patients reported unequal size of erect nipples, and thinning of flaps was performed. All the patients were satisfied with the aesthetic result after the operation (Figs. 2, 3, 4, 5).

Discussion

Nipple hypertrophy is sometimes familial, often appearing after the onset of adolescence or after pregnancy, and persists through menopause. It usually is bilateral, and no pain or discharge is associated with it [2].

There is no standard definition for nipple hypertrophy. However, the normal nipple diameter is suggested to range from 5 to 8 mm [3] or 10 mm [2, 4] and the normal nipple height from 6 to 8 mm [3, 5]. Van Wingerdern reported that the average nipple diameter measured 28% of the areola diameter (i.e., a ratio of 1:3.6) [6]. In our series, these reference ratios, diameters, and heights were used in

the design of the new nipples, with some variation based on individual preferences.

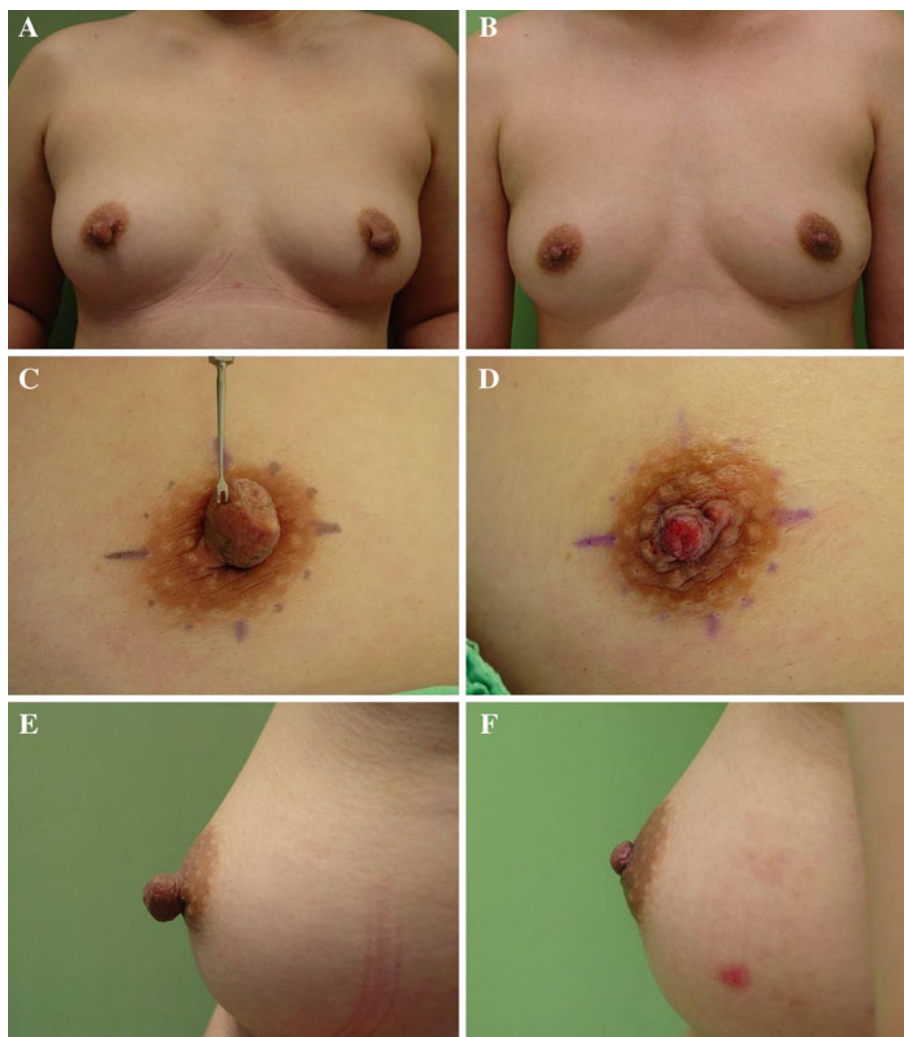
Several methods of nipple reduction have been published. Some methods reduce the nipple height only [4, 7–11], whereas other methods reduce both the height and diameter of the nipple [2, 12, 13]. However, these methods do not change the basal shape of the nipple to a desired round shape, and they produce scars on the nipples.

The method described by Cheng et al. [1] prevents disruption of the lactiferous ducts and avoids the removal of circumferential portions of the dermis. However, this method may cause nipple inclination.

Basile and Chang [5] reported a triple-flap nipple reduction technique. But the tips of the lactiferous ducts were destroyed, leading to impaired lactation.

Our method is based on the geometric theory that the circumference of a circle is approximately three times its diameter. By use of this simple geometric theory, the three dermal flaps of a certain width will wrap fittingly around

Fig. 3 Oval-shaped nipple hypertrophy. **a** Preoperative view. **b** Postoperative view at 1 year. **c** Incision design. **d** Immediate postoperative view of the left nipple. **e** Preoperative lateral view of the left nipple. **f** Postoperative lateral view of the left nipple. Note the good nipple projection, minimal scar, and nipple–areolar ratio



the central column. The r' portion of the original nipple wall will “lie down” and become the areolar portion of the new nipple–areolar complex. A new nipple cylindrical in shape with the desired base shape, diameter, and height can be created.

During the operation, the designs are marked with the help of a compass. The nipple is held by the left hand, and the excision can be performed easily with a scalpel held by the right hand. After excision, a hook is used to stabilize the nipple and facilitate the dissection.

This novel method we propose can preserve the ducts, will not induce neurovascular complications, and will result in minimal scarring. Easy to perform, can be

applied to any type of nipple hypertrophy with excellent results.

Conclusion

We describe a simple geometric design that can reduce both the height and diameter of hypertrophic nipples to create a cylindrical nipple of aesthetically pleasing size and shape. This method can be applied to either round or irregularly shaped nipples. In this study, it resulted in high patient satisfaction and was not associated with any complications.

Fig. 4 Oval-shaped nipple hypertrophy. **a** Preoperative view. **b** Postoperative view at 6 months. **c** Preoperative view of the left nipple. **d** Postoperative view of the left nipple. **e** Preoperative lateral view of the left nipple. **f** Postoperative lateral view of the left nipple at 6 months. Note the change in the basal shape of the nipples

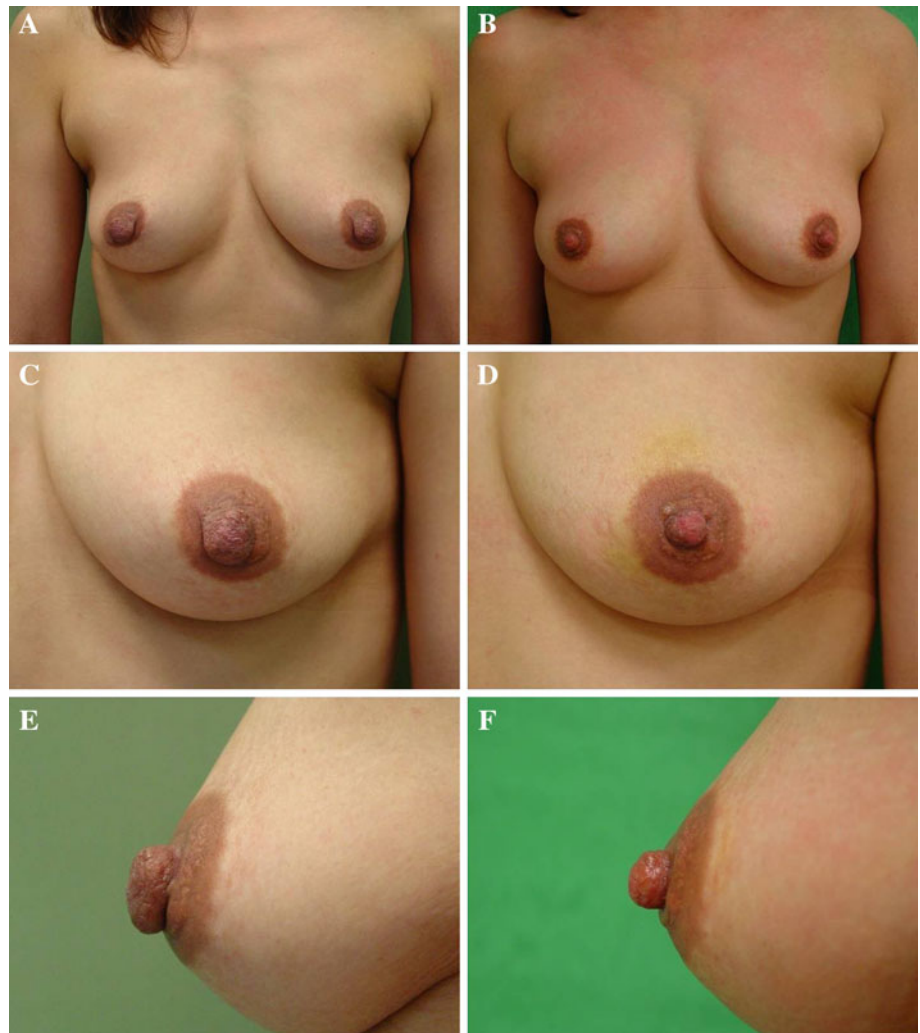
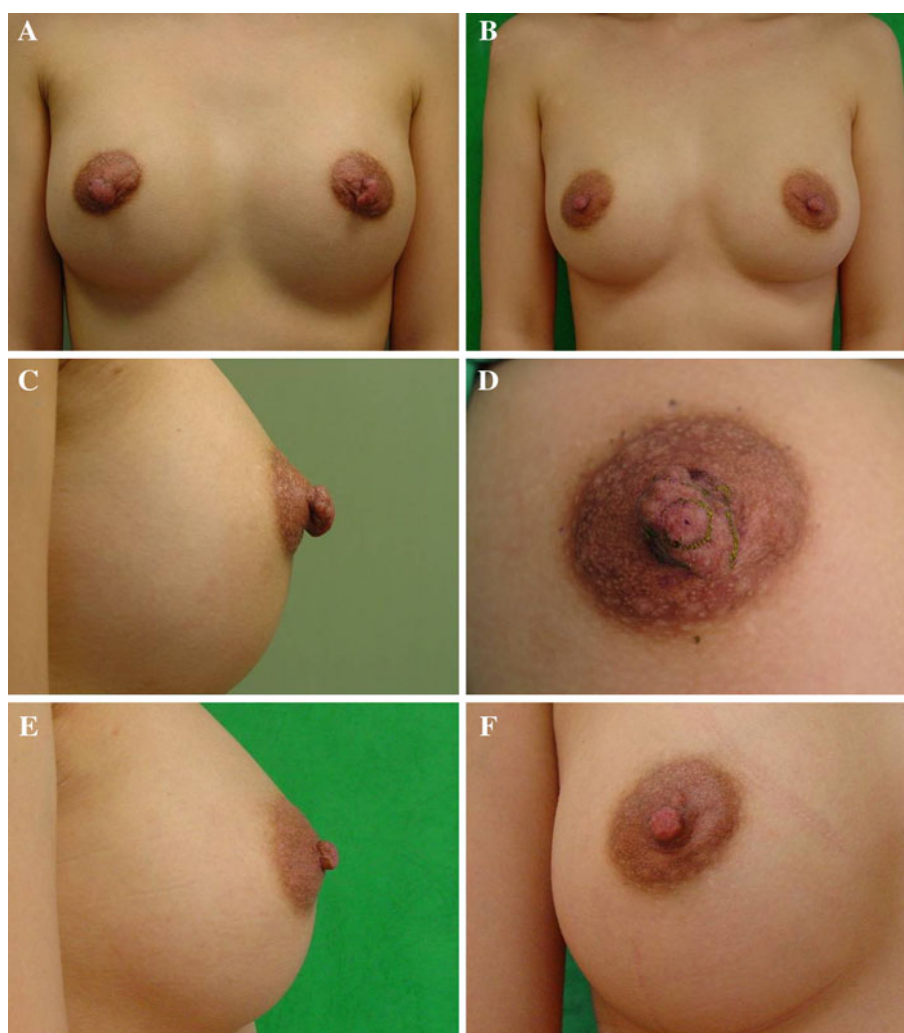


Fig. 5 Irregular shape with asymmetric nipple hypertrophy. **a** Preoperative view. **b** Postoperative view at 2 years. **c** Preoperative lateral view. **d** Incision design. **e**, **f** Postoperative view of the right nipple



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