Techniques in Cosmetic Surgery

Central Wedge Nymphectomy with a 90-Degree Z-Plasty for Aesthetic Reduction of the Labia Minora

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The labia minora or nymphae of the vulva are two cutaneous-mucosal refolds located between the labia majora, the internal aspect of which is separated by the interlabial cleft. The enlargement of the labia minora may be attributable to several factors, most commonly congenital. Although some women require surgical reduction for functional reasons, most seek reduction of their labia minora because of psychological concerns. The authors describe a modified plastic surgery procedure for functional and aesthetic reduction of the labia minora. (Plast. Reconstr. Surg. 113: 1820, 2004.)

The labia minora or nymphae of the vulva are two cutaneous-mucosal refolds located between the labia majora, the internal aspect of which is separated by the interlabial cleft. They are triangular in shape, with a nearly 3-cm-long base corresponding to the vaginal bulb, and have a convex, pigment-free border, varying in height from the base. The free border extends from the clitoris to the posterior commissure of the labia majora. The internal mucosal wall is shiny and pink, whereas the external cutaneous wall is usually dark. The most prominent part of the labia minora is its anterior (ventral) two thirds.

During childhood and in many adult virgins, these cutaneous refolds are not outwardly visible, although they may occasionally become enlarged, resulting in different degrees of exposure between and beyond the labia majora. This enlargement of the labia minora may be attributable to several factors, most commonly congenital, and different histologic changes have been seen on biopsy examination. Acquired causes include mechanical irritation through excessive manipulation and intercourse, chronic irritation and inflammation as a consequence of local infections, dermatitis secondary to urinary incontinence, vulvar lymphedema, and myelodysplastic disease. Tissue expansion resulting from early sexual relations and multiple pregnancies may also account for some cases of large labia minora. Other less common causes include exogenous androgen hormones and stretching with weights (Hottentot apron). Although some women require surgical reduction for functional reasons, most seek size reduction of their labia minora because of psychological concerns.

In this report, we describe a modified plastic surgery procedure for functional and aesthetic reduction of the labia minora. The procedure itself is an adaptation of that described by Alter, but with the incorporation of three main advantages: (1) it is still a very simple and straightforward technique; (2) only the most prominent central part of the tissues is removed, without morphologic alteration of the labia; and (3) there is minimal aesthetic and functional morbidity.

**Patients and Methods**

From April of 1996 to October of 2002, we treated 15 patients who sought aesthetic reduction of their enlarged labia minora for psychological reasons.
Operative Technique: Central Wedge Resection of the Labia Minora with a 90-Degree Z-Plasty

The patient is placed in the supine surgical position with the hips and knees flexed and the soles against each other. It is not necessary to shave the vulva. The operation is performed under local anesthesia (bupivacaine 0.25% and epinephrine 1:50,000 solution). First, a 3-0 silk traction suture is inserted into the free border of the labia minora just at the top of its central third. Using predesigned templates made from radiographic plates, two 90-degree Z-plasties are then drawn, one in front of the other, on the internal and external surfaces of both labia minora. These “Zs” converge from the free border of the central third of the labia toward a common origin at the base of each labium (pointing to the ventral part of the meatal introitus), thus delimiting the irregular wedge-shaped labial tissue to be resected. Complete transsection of the labial wedge located between both 90-degree Z-plasties is then undertaken, with careful hemostasis of the fine vessels (Fig. 1). Finally, the borders of the resection are directly approximated by means of single stitches with 4-0 Vicryl suture. Postoperative instructions include personal hygiene of the external genitalia after urinating, maintaining the vulva and the surgical wounds dry, and topical application of iodine on the wounds using a cotton bud and placement of a dry sterile gauze between the labia minora for approximately 2 weeks.

RESULTS

From April of 1996 to October of 2002, we undertook 15 aesthetic reductions of the labia

FIG. 1. (Above, left) Hypertrophy of the labia minora. (Above, right) A, Illustration showing the design of the technique. 1, Clitoris; 2, vagina; 3, redundant tissue of the central third of the labia minora; the bilateral paired 90-degree Z-plasties delimit the wedges of tissue to be resected, converging toward the ventral portion of the urinary meatus (*). B, Reduced labia minora after nymphenectomy and direct closure with a 90-degree Z-plasty. (Below, left) Clinical design of the wedge nymphenectomy. (Below, right) Nymphenectomies and templates.
minora by means of our method of central wedge resection of the labia minora with a 90-degree Z-plasty. The mean dimension of the removed specimens was 1.5 (free border) x 2.8 cm (wedge length). Seven had congenital genital malformations (adrenogenital syndrome and vaginal agenesis) and eight had large labia as a consequence of other simple or combined factors. The mean age of the patients was 34 years (range, 22 to 45 years), and the mean postoperative follow-up period was 30 months (range, 6 to 80 months). Written informed consent to our modification of the labial reduction was given by each patient.

In 13 patients, the wound healed uneventfully, and in two there was minimal dehiscence of the surgical borders of the internal mucosal surface, although it epithelialized completely after following the postoperative recommendations for 2 weeks. In no patient was there scar retraction or pain, alteration of the free border of the labia, or sexual dysfunction caused by stretching at the perimeter of the vaginal introitus. All of the patients were fully satisfied with both the appearance of the external genitalia, with no bumps between the labia majora, and with the genital cosmetic rejuvenation resulting from having smaller and finer labia minora. Although the postoperative psychological benefits reported by the patients were not analyzed on any scientific scale, all of the patients stated that their problems of discomfort and anxiety had resolved and that they felt greater self-esteem and confidence socially and in their personal relations. Representative cases are shown in Figures 2 and 3.

DISCUSSION

Psychological concerns are the most important reason for women to have the size of their labia minora reduced. Protuberance of these genital structures beyond the labia majora is often considered to be aesthetically and socially inconvenient, not only when the woman is naked but also when wearing tight-fitting clothes. Even after she has been assured that it is simply congenital and that enlargement of the labia minora normally has no clinical significance, many women remain dissatisfied and suffer psychological distress. Current fashion tends toward regular body contour lines, even for the genital area, so that it is often difficult for women to face comments from others regarding the noticeable bump in the vulva. This can also be particularly embarrassing both socially (wearing a swimsuit) and professionally (models and actresses). A further very important reason for seeking labia minora reduction derives from a woman hearing jokes made at her expense, especially by her partner or during oral sex. This can logically result in lack of self-confidence, loss of self-esteem, feelings of belittlement, and diminished libido, with the consequent psychological repercussions. Mechanical inconveniences may also be valid reasons for surgical consultation, with problems concerning difficulty in vaginal penetration, use of indwelling urethral catheters, maintaining hygiene, the requirement for lateral accommodation of the labia minora when wearing tight clothes, or pain when riding a bicycle or a horse.

Several methods for reduction of enlarged labia minora have been described, most designed just to result in smaller nymphae. However, these techniques have not always taken into account the final aesthetic and functional results of the remnant tissue. For instance, some patterns of partial removal of the labia minora eliminate a large part of the central tissue, preserving the free border as a more or less narrow bipedical flap, so that the final result generally fails to provide a well-innervated and sensitive free border of the labia. This potential lack of sensitivity at the top of the nymphae could give rise to important concerns during sexual relations. Malinovsky et al. reported an evaluation of sensory nerve endings in hypertrophy of the labia minora, concluding that there are several different groups of free endings that are involved in sexual sensitivity. Taking into account the functional relevance of conserving the sensitive pudendal nerves, others have designed a method of reducing the labia minora by means of deepithelialization of the central part of both surfaces of each labium, followed by direct closure. Although this technique preserves sensitivity of the free border and reduces the vertical dimension, it fails to shorten the length of the free border, which appears redundant and festooned. Furthermore, it has the disadvantage that the width of the labia is enlarged as, when undertaking the closure of the deepithelialized surfaces, the central parenchyma is retained, which bulges and increases the width at the base.

Other techniques exist to shorten the vertical dimension of the labia minora by means of resection of the top tissues, including the er-
tire free border, and oversewing the amputated labial borders. Although there is no doubt about the efficacy of these methods in reducing enlarged labia minora, this pattern of resection often fails to take into account the concepts of aesthetics and function, which are so important in present-day plastic surgery.

The method described in this article is a variant of that of Alter but is designed to reduce enlargement of the labia minora while at the same time preserving the following: (1) the aesthetic appearance of the labia minora with minimal if any morphologic changes, maintaining postoperatively the entire anatomy of the labia minora (two well-defined internal and external surfaces, and a natural, pigmented, nonredundant free border from the clitoris to the introitus, without scar retraction); and (2) the functional outcome of the newly formed labia minora as an important erogenous structure, retaining as far as possible the pudendal innervation of the remnants of labial tissue used for reconstruction after partial amputation.

Fig. 2. (Above, left) Preoperative aspect with enlarged labia minora. (Above, right) Right labium reduced. (Below, left) Aesthetic appearance of the labia minora 1 month postoperatively and (below, right) 2.5 years postoperatively.
The procedure reduces the final volume of the new labia minora and preserves the aesthetic appearance, because it uses a wedge resection of the most redundant and visible portion, ensuring minimal, if any, deformity at the free border with the use of a 90-degree Z-plasty to assemble the labia minora. This latter modification also permits a nontense suture line by interdigitation of two rectangular flaps, thereby avoiding not only potential wound problems derived from direct approximation closure of the mucocutaneous vertical borders, as may occur with the simple wedge in Alter's technique, but also any potential tightening of the vaginal introitus, as pointed out by Maas and Hage. In addition, sexual function of the nymphae is preserved because tissue removal is undertaken without violation of the base of the labia minora, thereby conserving the site of entrance of the main distal branches of the superficial perineal nerve. The only inconvenience of this method is a possible difference in color on each side (cranio-caudal) of the suture line of the free border of the labia minora. This problem, however, can be considered minimal compared with the chessboard appearance seen after the use of techniques based on amputation and oversewing of the mucosa (light) and cutaneous (dark) borders.

**Conclusions**

The advantages of the method described in this article for reduction of the labia minora are as follows: (1) it remains a simple, safe, and
reproducible technique; (2) there is genital rejuvenation of the labia minora, which become smaller and finer; (3) there is minimal morbidity of the remnant labial tissue, with no impairment of sensation or sexual dysfunction; (4) there is no alteration of the morphology of the free border; and (5) there are no defects or painful, retractile scars on the surfaces of the labia minora.

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ACKNOWLEDGMENTS

The authors thank Ian Johnstone for editorial assistance with the English language version of the article, and are grateful for the surgical assistance of José M. Martínez-Narbona, Rosana G. Maldonado, María García, and José A. Moreno.

REFERENCES