Special Topic

Labia Minora, Labia Majora, and Clitoral Hood Alteration: Experience-Based Recommendations

John G. Hunter, MD, MMM, FACS

Abstract

Aesthetic alteration of the genitalia is increasingly sought by women unhappy with the size, shape, and appearance of their vulva. Although the labia minora are usually the focus of concern, the entire anatomic region—minora, labia majora, clitoral hood, perineum, and mons pubis—should be evaluated in a preoperative assessment of women seeking labiaplasty. Labiaplasty is associated with high patient satisfaction and low complication rates. The three basic labia minora reduction techniques—edge excision, wedge excision, and central deepithelialization—as well as their advantages and disadvantages are discussed to assist the surgeon in tailoring technique selection to individual genital anatomy and aesthetic desires. We present key points of the preoperative anatomic evaluation, technique selection, operative risks, perioperative care, and potential complications for labia minora, labia majora, and clitoral hood alterations, based on a large operative experience. Labiaplasty competency should be part of the skill set of all plastic surgeons.

Accepted for publication April 13, 2015; online publish-ahead-of-print October 24, 2015.

Although ranked relatively low on volume lists of overall cosmetic surgery procedures in the United States, aesthetic alteration of the genitalia is increasingly sought by women unhappy with the size, shape, and appearance of their vulva. There was a 44% increase in labiaplasty procedures performed in the US between 2012 and 2013. Labia minora reduction is the most commonly requested and performed procedure on the female external genitalia.

It is estimated that greater than 90% of female genital procedures performed involve alteration of the labia minora. Although the labia minora are usually the focus of patients’ concerns, achieving a desirable cosmetic outcome often requires additional external genital alterations. It is therefore essential that the entire anatomic region—labia minora, labia majora, clitoral hood, perineum, and mons pubis—be evaluated in the preoperative assessment of women seeking labiaplasties.

Descriptions, reviews, and illustrations of female external genital anatomy and labiaplasty procedures and techniques are abundant, and readily available in the recent literature. Therefore, a discussion of vulvar anatomy or a detailed description of the various operative techniques available are not the focus of this paper. Rather, I offer what I have learned in performing over 600 labiaplasties. Key points of preoperative anatomic evaluation, technique selection, operative caveats, and perioperative care for labia minora, clitoral hood, and labia majora alterations are presented.

Female external genital cosmetic surgery procedures are viewed by many plastic surgeons and gynecologists as being technically simple operations. They often are. Many women, however, present with anatomic challenges that make achieving good aesthetic outcomes difficult. Labia majora redundancy, deflation and ptosis, vertical and/or
horizontal clitoral hood excess, and redundant labial tissue posterior to the introitus (in addition to unlimited labia minora size, shape, and pigmentation variations) may be present and require attention. Such women need more nuanced procedures to achieve aesthetically acceptable, natural-appearing outcomes. Simply reducing the labia minora in women with complex anatomic issues may result in unnatural-appearing genitalia and the perception of genital deformity as unintended consequences. Prominent lateral clitoral hood folds or labial remnants between the introitus and anus (Figures 1 and 2), proportional to large labia minora before surgery, may appear more unnatural after a simple labia minora reduction, regardless of the labiaplasty technique employed. Patient dissatisfaction and an augmented sense of genital embarrassment may occur.

Accurate evaluation of anatomic issues, surgical planning, and technical execution are essential in achieving optimal aesthetic outcomes. For labia minora reduction, reported patient satisfaction rates are remarkably high (greater than 90%) in published surveys involving various techniques. It therefore appears that, when competently performed, most labiaplasty techniques result in high patient satisfaction rates and low complication rates. Furthermore, to date no published operative technique has proven superior to the others described in the literature.

LABIA MINORA ALTERATION

As previously stated, reduction of the labia minora is by far the most commonly requested female external genital cosmetic procedure (Figures 3 and 4). Those seeking surgery, in my experience, have labia minora that, albeit large, fall within the normal minora size range. Very few women have minora that can be considered abnormally large. Female genital cosmetic surgery is overwhelmingly sought for aesthetic reasons. Although minor functional complaints (ie, irritation) are common, significant issues are rare. This experience mirrors the published findings of Crouch et al. They report that all women in their study had “normal-sized” labia, with the majority of complaints related to genital appearance or minor discomfort issues. The main indication for labiaplasty, therefore, is overwhelmingly the same as for other aesthetic procedures: patient preference. Although uncommon, one must be aware that underlying psychological issues may be present in those women presenting with major functional or sexual complaints (ie, disabling pain or severe irritation) out of proportion with observed genital anatomic findings. Veale et al found that labiaplasty patients did not differ from controls on measures of depression or anxiety, but reported a significantly greater frequency of avoidance behaviors.
Eighteen percent of women in their study met the diagnostic criteria for body dysmorphic disorder.

Labia minora size and shape show almost unlimited variations. Surgical procedures must be tailored to individual anatomy and preference. Labia thickness, pigmentation, and pigment variation, if present, must be considered. Clitoral hood redundancy, in either a vertical (hood too long) or horizontal (redundant lateral folds) dimension, should be addressed if present. Significant pigmentation variation from the labia free edge inward, if present, may warrant edge preservation. This situation is most often encountered in women of color. Excising the pigmented edge in this cohort may result in unnatural-appearing labia. Many women, however, have hyper-pigmented, irregular, and/or thickened labial edges that they find aesthetically undesirable. Edge excision techniques are preferable for these patients. Prominent lateral clitoral hood folds and redundant labial tissue posterior to the introitus, when

Figure 3. (A) Preoperative photograph of a 25-year-old woman with large labia minora. (B) Postoperative photograph obtained 3 months after bilateral labia minora reduction (edge excision).

Figure 4. (A) Preoperative photograph of a 29-year-old woman with large labia minora and right lateral clitoral hood fold. (B) Postoperative photograph obtained 3 months after bilateral labia minora reduction (wedge excision) and right clitoral hood fold excision.
present, should be excised (Figure 5). Failure to do so may yield an unacceptable result.9,15

Labiaplasty technique selection should be based on the patient’s unique anatomy and aesthetic preference. Generally, the minora should remain at least one centimeter in length from free edge to base (inter-labial sulcus) in its central portion.4 The three most widely employed labia minora reduction techniques (and their various iterations)—edge excision,2,7,12,13 wedge resection,14,18 and central deepithelialization/excision19—each have advantages and disadvantages (Table 1).

Edge excision, with its many variations, was the first popularly reported labiaplasty technique.12 Its major advantage is its technical simplicity and adaptability to virtually any labial size or shape. Overzealous resection, however, is possible, and can result in labial amputation: a disastrous outcome. Excision of the minora edges can result in unnatural-appearing labia in women with significant pigmentation variation. Although commonly reiterated in the literature, but rarely, in my opinion, observed in clinical practice, edge excision techniques can be complicated by tender scars or scar contractures. Edge scalloping may also occur and, if significant, compromise the aesthetic result. It has been suggested that it may be mitigated by minimizing tension when tying sutures.2 Minor wound dehiscences, usually as a consequence of edema or hematoma, occasionally occur, but rarely require operative treatment. The clitoral frenula, if detached during excision, should be reapproximated during closure to avoid frenula remnant protrusion, and possibly anterior/cephalic migration of the clitoral hood.10

Table 1. Labia Minora Reduction Techniques: Advantages and Disadvantages

<table>
<thead>
<tr>
<th>Reduction Technique</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
| Edge Excision       | • Technical simplicity  
                  | • Adaptable to all labial sizes and shapes  
                  | • Wound dehiscences rarely require revision  
|                     |            | • Removes labial edge  
                  |            | • Overresection possible  
                  |            | • Edge scalloping may occur  
                  |            | • Edge scarring may occur rarely  
| Wedge Excision      | • Preserves labial edge  
                  | • Eliminates possibility of edge scalloping or scarring  
|                     |            | • Steep learning curve  
                  |            | • Wound dehiscences require revision  
                  |            | • May shorten introitus  
                  |            | • Labial edge issues, if present, not addressed  
| Central Excision/ Deepithelialization | • Preserves labial edge  
                  | • Eliminates possibility of edge scalloping or scarring  
|                     |            | • Multiple incision lines on labium  
                  |            | • Can thicken labium  
                  |            | • Prolonged edema  
                  |            | • Inclusion cyst formation  
                  |            | • Limited ability to make labium small (1 cm) |

Wedge excision techniques, first described and popularized by Alter,14,18 preserve labia edges and edge pigmentation. As previously stated, this is often desirable in those women with significant pigmentation variation from the free minora margins inward. Wedge excision, if overzealously
performed, can cause constriction of the introitus/vagina. Incision line dehiscence, usually a consequence of excess tension, can be problematic. When it occurs, repair is required to avoid notching of the labium with persisting deformity. Wedge excision techniques also frequently require modification to adequately address clitoral hood issues or other anatomic variations.\textsuperscript{18}

Central deepithelialization or excision procedures are, in my opinion and practice, less commonly utilized than either edge excision or wedge resection techniques.\textsuperscript{19} The major advantage, as with wedge resection, is the preservation, when desired, of the minora edge. The procedures have several shortcomings. They result in multiple incision lines (medial and lateral surfaces of the labia) and prolonged postoperative minora edema. Inclusion cyst formation, as a consequence on incomplete deepithelialization, can occur. Central deepithelialization can increase labia minora thickness, which, in my experience, is usually undesirable. Furthermore, it is difficult to make the minora as small as is possible with the other, aforementioned labiaplasty techniques.

**CLITORAL HOOD ALTERATION**

Clitoral hood redundancy, when present, may be in the horizontal or vertical planes, or both. Horizontal excess, in the form of extra hood folds parallel and lateral to the central portion of the clitoral hood, is most commonly observed (Figure 6). Clitoral hood folds may be unilateral or bilateral, and result in a widened appearance. Multiple and/or asymmetric folds may be present. Vertical excess manifests as a ptotic, elongated clitoral hood.

When present, clitoral hood redundancy should be dealt with during labiaplasty. Not doing so may yield unnatural-appearing genitalia.\textsuperscript{9,10} In my experience, failure to address clitoral hood folds and redundant labial tissue posterior to the introitus are the most common motivators for labiaplasty revision.\textsuperscript{9} Horizontal redundancy is treated by vertically-oriented excision of lateral clitoral hood folds. Excision is generally oriented parallel to the sulcus between the clitoral hood and the labia majora (Figure 7A). Vertical hood excess is addressed by transverse excision of a portion of the hood, usually as an inverted V wedge, across its full width. Excision is usually done cephalic to the free margin of the hood (Figure 7B).\textsuperscript{9,10} In case of very elongated hoods, significantly overhanging the clitoral glans, the hood may be conservatively shortened by excision at the free margin itself. In no circumstance, in my opinion, should the clitoral glans be exposed (if covered) or further exposed (if partially covered). Doing either will result in an unpredictable, and perhaps undesirable, effect on clitoral sensation. In all cases, excision must be superficial.

**LABIA MAJORA ALTERATION**

Labia majora alteration is sought by women bothered by puffy, prominent majora at one extreme, and deflated,
sagging majora at the other (Figure 8). Fatty fullness without skin redundancy may occasionally be effectively treated by liposuction. Improvement is usually modest. Small diameter cannulas (<3 mm) should be used, and superficial plane maintained. Prolonged postoperative edema is common.

Women with flat majora, or deflated majora with minimal skin excess, may seek augmentation. It is easily achieved utilizing standard autologous fat grafting techniques. Usually several grafting sessions are necessary to achieve the desired result. In general, no more than 20 cc of fat should be injected into each labium at one sitting.4 One must use caution in augmenting majora with significant skin redundancy, as an unacceptable degree of bulging and labial prominence may result.

Ptotic, deflated labia majora, in my opinion, are best treated by reduction rather than augmentation. Surgical excision of redundant majora, in my experience, yields consistently excellent results and high patient satisfaction. Although others suggest that excision should be from the central portion of the majora20 or laterally at the vulvathigh crease,5 I disagree. I see no benefit in placing the resulting excision scar in the thigh crease or on the labia majora itself. I always resect the medial segment of the majora. The medial incision is in the sulcus between the minora and majora, with the lateral incision in the majora. Cresenteric excision of the redundant width of the majora is performed. The resulting scar, located within the interlabial sulcus, is virtually imperceptible.4,21 The extent of resection should be conservative to avoid pulling the introitus/vaginal orifice open. It is therefore determined with the patient supine in maximum frog leg position. Pinching of redundant majora, without tension on the introitus, is done. The lateral incision line is then marked. In my experience, up to 50% of the horizontal width of the majora may be safely excised in women with marked majora ptosis or redundancy (Figures 9 and 10). Resection should always be in a superficial plane: skin and subcutaneous tissue only.

**Figure 7.** Photographs of a 27-year-old woman with digitally-added clitoral hood alteration markings. (A) Lateral vertically-oriented excision markings for horizontal excess, with digitally-added wedge excision minora reduction markings (patient’s left labium) and edge excision minora reduction markings (patient’s right labium). (B) Horizontally-oriented “inverted V” excision markings for vertical clitoral hood excess.

**Figure 8.** Photograph of a 29-year-old woman with deflated, redundant labia majora.
The labia majora are very vascular. Absolute hemostasis prior to closure is essential to avoid hematoma formation.

LABIA ALTERATION: PERIOPERATIVE CONSIDERATIONS

Although many recommend general anesthesia, I perform virtually all labiaplasty procedures, including combined majora and minora reductions, using local anesthesia, with mild oral sedation (10-20 mg of diazepam). Topical anesthetic ointment or cream is applied at the same time oral sedation is administered. Approximately half of women undergoing minora procedures will not experience injection pain if 45 minutes elapse between topical anesthetic application and injection. Anesthetic buffering with sodium bicarbonate, if utilized, will further reduce infiltration discomfort. One dose of a cephalosporin oral antibiotic (or clindamycin for Beta-lactam allergic patients) is taken 2...
hours preoperatively. Procedures are performed with the patient supine, in frog leg position. Lithotomy position, although commonly recommended by many authors for labiaplasty procedures, should be avoided in my opinion, as external genital anatomy can be distorted. All surgical markings must be made before local anesthetic injection. Deviation from markings should be avoided. Incision lines are injected with 2% lidocaine with epinephrine 1/100,000 mixed 50:50 with 0.5% bupivacaine. Tissue distortion should be avoided. Adequate time should be allowed for vasoconstriction to occur. Twenty minutes is ideal for maximum effect, but a minimum of 10 minutes is suggested.

In combined labiaplasty procedures, the majora should be done first. For labia minora edge excision techniques, use of a traction suture placed in the most prominent portion of the labium is helpful. Clitoral hood folds, if present, should be excised first, followed by minora excision. Resection of redundant labial tissue posterior to the introitus may occasionally be difficult with the patient in frog leg position. It can be facilitated, if necessary, by placing gauze pads between the buttocks (posterior to the anus) to separate them and increase visualization of the posterior perineum. The operating table may also be placed in a slight Trendelenburg position if further exposure is needed. I perform the procedures using number 15 scalpel blades and a needle-point electrocautery. Absolute hemostasis is essential. A single-layer closure with interrupted 4.0 Vicryl Rapide (Ethicon, Somerville NJ) in a “close as you go” fashion is advised. For wedge resection techniques, a two-layer closure is suggested to reduce incision dehiscence risk. I recommend 4.0 Monocryl (Ethicon, Somerville NJ) for the subcutaneous layer.

Labia majora excision defects are also closed in two layers: 4.0 Monocryl interrupted sutures for the deep dermis and 5.0 Prolene (Ethicon, Somerville NJ) continuous sutures for skin. The skin sutures are removed 1 week after surgery. Aesthetic Surgery Journal 36(1)

Aftercare is similar for both labia majora and minora procedures: minimal ambulation, ice packs, and narcotic analgesia for the first 2 days and topical antibiotic ointment application and sanitary pads as dressing for 1 week. Daily tepid showers are permitted. Routine follow-up visits occur at 1 week, 2 weeks, 4 weeks, and 12 weeks. Vicryl Rapide sutures, if still present, are removed at 2 weeks. Vaginal penetration is not permitted for 4 weeks.

**LABIAL ALTERATION: COMPLICATIONS**

Labiaplasty procedures have low complication rates. Most complications are minor and self-limited. Hematoma and wound dehiscence are most commonly reported. In a recent study of 113 women undergoing labiaplasty, only one (0.8%) experienced a complication (bleeding). Self-limited postoperative edema, bruising, and/or pain, resolving within 2 weeks of surgery, were reported in 13.3% of patients in that study. In my experience, wound dehiscence rarely requires repair after labial edge excision, but usually must be corrected after wedge resection to avoid minora notch deformity. Underreduction of the minora, or postoperative labial asymmetry, may also occur. Lista et al reported a 3.5% revision rate for persisting labial excess. Unaddressed clitoral hood redundancy and labial remnants posterior to the introitus, as indicated earlier, may also motivate revision requests. Prolonged edema and inclusion cyst formation, as previously indicated, can complicate central deepithelialization technique procedures. Overzealous resection with partial or complete amputation of the labium, although rare, is perhaps the most dreaded complication observed. Labial edge scalloping, usually minor, can occur after edge excision techniques. Scar contracts, although reported, are very rare.

Persisting postoperative dyspareunia is extremely rare. I have never observed it. This has also been the experience of others. Rouzier et al, in a study of 163 labiaplasties, however, reported a 1.8% incidence of dyspareunia persisting greater than 1 month postoperatively.

**REFERENCES**


