Aesth Plast Surg (2024) 48:2002–2009
https://doi.org/10.1007/s00266-023-03750-z

Simultaneous Surgery of the Clitoral Hood–Labia Minora Complex with the Central Neurovascular Pedicle Retained

Bing Liu[1] · Di Wang[1] · Senkai Li[2] · Wen Chen[3]

Received: 11 June 2023 / Accepted: 26 October 2023 / Published online: 29 November 2023
© Springer Science+Business Media, LLC, part of Springer Nature and International Society of Aesthetic Plastic Surgery 2023

Abstract

Background Hypertrophy of the labia minora with clitoral hood redundancy always occurs simultaneously and should be considered in its entirety. This study investigated a new simultaneous procedure for the clitoral hood–labia minora complex (CLC) that retains the central neurovascular pedicle.

Methods This retrospective observational study, conducted between January 2021 and August 2022, included 29 patients with labia minora hypertrophy and clitoral hood redundancy who underwent a surgery wherein procedures on the CLC were performed simultaneously. A divisional design to separate the medial and lateral labia minora and to remove the skin and subcutaneous tissue asymmetrically, while retaining the central neurovascular pedicle and the natural margin of labia minora, was employed. Postoperatively, all patients were followed up via the Internet or at the outpatient clinic. The follow-up included observing postoperative outcomes and any complications and completing the satisfaction questionnaires.

Results All the patients who underwent surgery showed good wound healing without discomfort of thread friction. Postoperatively, the labia minora had a natural appearance and retained sexual sensitivity. The scarring on the surgical incision was not evident. Hematoma and evident bilateral asymmetry occurred in one patient each. The satisfaction rate within 14 days and after 3 months of surgery was 96.6% and 92.6%, respectively.

Conclusions This method uses a hidden incision, to remove the hypertrophic tissue and retain the natural edge and shape of the labia minora. Qualitatively, the patients were highly satisfied. This method was safe, effective, and easy to implement.

Level of Evidence IV This journal requires that authors assign a level of evidence to each article. For a full description of these Evidence-Based Medicine ratings, please refer to the Table of Contents or the online Instructions to Authors www.springer.com/00266.

Keywords Clitoral hood–labia minora complex · Simultaneous surgery · Central neurovascular pedicle · Labiaplasty

Introduction

Female genital cosmetic surgery ("FGCS") is one of the world's fastest-growing plastic surgeries, with labiaplasty ranking first [1]. Surgical indications are mainly hypertrophy of the labia minora with aesthetic or functional damage and bilateral asymmetry [2, 3]. Since clitoral hood redundancy and the labia minora hypertrophy always occur simultaneously, and as they share close anatomical relationship, they are known as "the clitoral hood–labia minora complex (CLC)" [4, 5]. Solo-labiaplasty may lead to a disharmony of the hypertrophic clitoral hood or even the appearance of a penis-like malformation, leading to patient

✉ Wen Chen
chenwencw@163.com

[1] Department of Plastic and Reconstructive Surgery, Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100144, China

[2] Department of General Plastic Surgery, Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100144, China

[3] Department of Facial and Neck Cosmetic, Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, NO. 33 Badachu Road, Shijingshan District, Beijing 100144, China

dissatisfaction [6]. In pursuing harmony and balance among the anatomical subunits of the vulva, the importance of a simultaneous CLC approach has been recognized by plastic surgeons.

In histoembryology, the lateral folds of the labia minora and clitoris hood belong to the same tissue, whereas the medial and lateral tissues of the labia minora originate from different developmental cell lines [7, 8]. At 7–8 weeks of embryonic development, the bilateral urogenital folds do not fuse, forming the labia minora. The bilateral outer folds of the labia minora fuse above the clitoris to form a clitoral hood covering the clitoris, with the outer folds often being brownish black with loose skin. The bilateral inner folds of the labia minora converge at the midline forming frenulum and attach to the underside of clitoris glans. The inner folds are pink, short, straight, and tense [9, 10]. Hart's line delineates the medially keratinized skin tissue of the labia minora (derived from the urogenital fold) and the nonkeratinized mucosal tissue of the vestibule (derived from the urogenital sinus), the positions of which vary from person to person [11]. Cao [12] discovered that the clitoral hood has the same source of blood supply as the labia minora, the superficial pudendal artery branches that nourish the clitoral hood during its course toward the labia minora, which can be considered as the anatomical basis of the related function of the CLC.

In recent years, some scholars have proposed new methods for the simultaneous surgery of the CLC; however, most of them process the labia minora and the clitoral hood separately where complex incisions and procedural designs may lead to unnatural shape and color changes after labia minora surgery [13–15].

We believe that the lateral folds of the labia minora and clitoris hood should be designed for surgery as a whole, while the internal and external folds should be addressed separately due to the differences in tissue origin and anatomical characteristics. Therefore, we aimed to propose a new simultaneous surgical method for the CLC, which retains the central neurovascular pedicle and removes an adequate amount of the tissue while preserving the natural edge and shape of the labia minora.

Materials and Methods

This retrospective, observational study included data from 29 patients with hypertrophy of the CLC (50 sides, 21 bilateral sides and 8 unilateral sides), aged 18–39 years. All patients underwent surgery where the simultaneous aspects of the CLC were addressed during a single procedure by the same surgeon from January 2021 to August 2022.

Patients had various reasons for wanting to undergo the surgery. Sixteen patients (55%) complained of labia minora hypertrophy with functional damage. Ten patients (34.5%) complained of poor aesthetic appearance, and 12 patients (41.4%) complained of bilateral asymmetry. This study was performed in compliance with the ethical principles of the World Medical Association Declaration of Helsinki. The study was approved by the ethics committee of the authors' institution and informed consent was obtained from all participants. Patients were followed up for 3–12 months postoperatively. We evaluated the 29 patients in terms of patient satisfaction and postoperative complications and evaluated the safety and effectiveness of the new method described in this study.

Safety of the procedure was evaluated by the complication rate. The surgical outcomes were assessed by patients' satisfaction with the aesthetic results, improvement in sex life, and discomfort and were evaluated using a questionnaire.

Surgical Technique

Operation principle: Overall design of the clitoral prepuce and labia minora simultaneous operation; internal and external partition design of the labia minora.

Step 1: Shaping the Medial Labia Minora

First, the wedge resection range on the inner side was designed according to the patient's requirements and the natural morphology of labia minora. The surgery design was crafted ahead of the surgery as follows: Point A at the labia-vestibular junction, line AB parallel to the outer margin of the labia minora, and point C at the posterior union of the labia minora, were located. The tongue-like middle elongated labia minora (if present), points B and C at the upper and lower edges of the middle elongated tissue, respectively, were also located. Lines AB and AC were made equal in length, and after peeling, the length of the labia minora margin was at least 5 mm longer than the vertical distance between the clitoral head and the labial frenulum (Fig. 1a).

Infiltration anesthesia (0.5% lidocaine plus 1:200,000 epinephrine) was administered subcutaneously into the operative area. Using ophthalmic scissors, an incision was made in the previously marked line of submucosa, ensuring a sharp separation via the loose space in the submucosal tissue, until points B and C reached the free edge of the labia minora. After electrocoagulation, the wound was closed. A 6–0 absorbable suture was used to close the full-layer incision, and the width of the retained medial labia minora was about 1cm. The resected medial mucosal tissue accumulated naturally at the free margin (Fig. 1b).

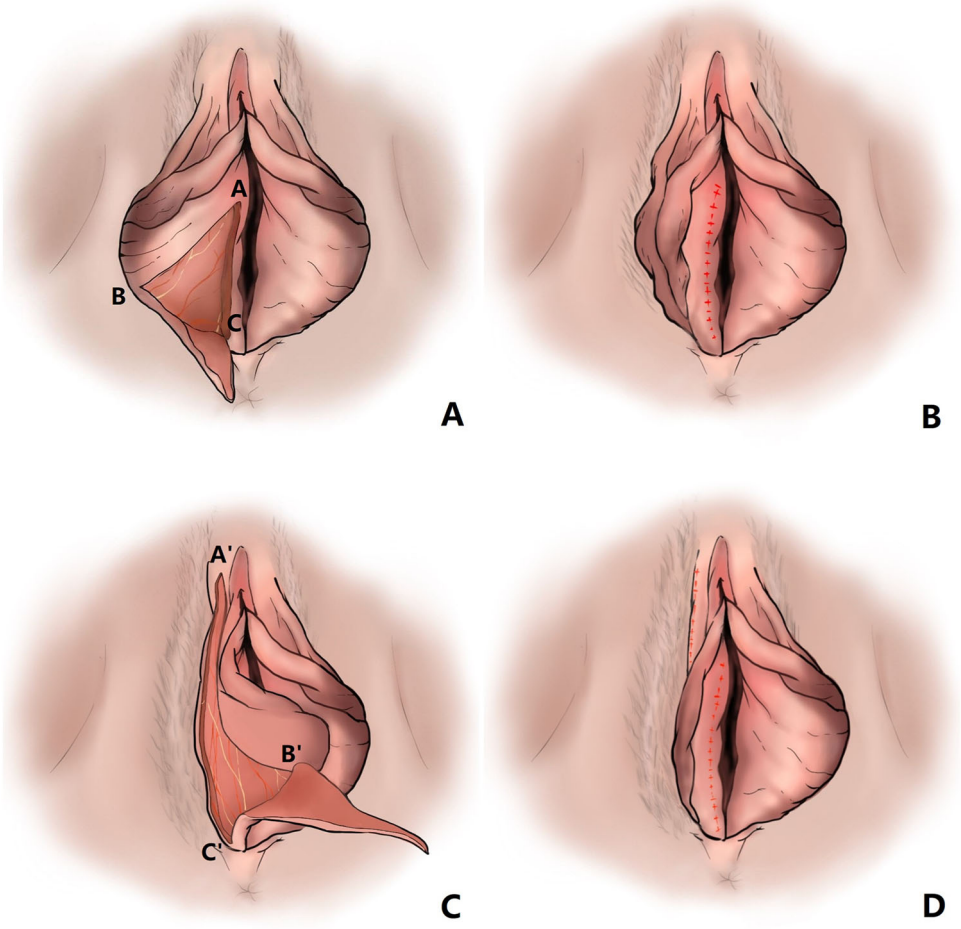

Fig. 1 Schematic diagram of the surgical procedure: **A** The wedge resection range on the inner side, ensuring a sharp separation via the loose space in the submucosal tissue, until points B and C reached the free edge of the labia minora. **B** After shaping the medial labia minora, the width of the retained medial labia minora is about 1cm. **C** The resection range of the lateral labia minora and clitoral hood, ensuring a sharp separation via the subcutaneous lax tissue to preserve the central thin neurovascular pedicle. **D** Unilateral labia minora plastic completion

Step 2: Resection of the Lateral Folds and Clitoral Hood

After shaping the medial labia minora, the resection range of the lateral labia minora and clitoral hood was designed. The A′C′ incision was first marked along the labial sulcus, ensuring that point A did not cross the midline of the clitoral hood, and point C′ coincided with point C of inner side. Then, the A′B′ curved incision was designed using a pinch test, which was based on the accumulation of skin between the outer labia minora and clitoris. The width from top to bottom was determined by the degree of hypertrophy of the labia minora–clitoris hood. The lateral tissue of the A′B′ incision was expected to preserve a good labia minora–clitoris hood morphology.

After infiltration anesthesia, a cut was made along the design line from point A ' ensuring a sharp separation via the subcutaneous lax tissue to preserve the central thin neurovascular pedicle (Fig. 1c). A 6–0 absorbable suture was used to close the full-layer incision, with a free incisal margin ensuring no tension on the suture. It is recommended that the interlabial sulcus incision hangs deep tissue on each needle to restore the shape of interlabial sulcus (Fig. 1d).

An antibiotic ointment and sterile gauze were applied to the incision after surgery. Oral antibiotics were administered for 3–5 days postoperatively. All the patients were recommended to clean the perineal area daily for 1 week after surgery by sitting in a bath of potassium permanganate solution (1:5000). The stitches were removed 10 days later. The patients were instructed to avoid intense exercise, heavy straddling movements, and intercourse and to keep the bowels emptied regularly for 1 month after the procedure. Subsequent follow-up was conducted using social media or at an outpatient clinic.

Results

Simultaneous surgery of the CLC where the central neurovascular pedicle was retained was performed in 29 patients

The mean operation time was 63.1 ± 14.8 min (range 42–103 min). The incisions healed normally in 29 patients

within 14 days after surgery, no patients complained about discomfort of thread friction. Only one patient developed a unilateral hematoma after surgery; she recovered completely after conservative treatment. In total, 27 cases were followed up for 3–12 months and two patients were lost to follow-up. In all cases, the free edges of the labia minora had a good blood supply, the shapes of the labia minora were natural, the sensitivity of the skin remained unchanged, and the function of genitalia was improved. One patient complained of bilateral labia minora asymmetry and a corrective surgery was performed to repair the deformity.

The satisfaction rate within 14 days postoperatively was 96.6% (28/29), and the main reason for short-term dissatisfaction was postoperative hematoma. A total of 92.6% (25/27) of patients were satisfied with their genital appearance and function 3 months after surgery (Figs. 2 and 3). There was one patient who was unsatisfied based on the asymmetry of bilateral labia minora and one patient who felt that she postoperatively developed hypertrophy of bilateral labia minora; the two patients underwent a secondary corrective surgery. The responses of questionnaires are summarized in Table 1.

Discussion

With increased media publicity and open-mindedness, female genital rejuvenation has attracted widespread attention [16]. While the number of vulvoplasty procedures is growing rapidly, patient demand for surgery to improve vulvar function and aesthetics has reached an unprecedented level. There is increased pressure on female vulvar plastic surgeons. In the vulva, the clitoris and labia minora are the most important sexually sensitive areas for females and are integral to sexual arousal [10, 17]. Surgical management of the CLC should be holistic, considering both functional and aesthetic improvements.

Female vulva shapes vary widely, and there is no universally acknowledged ideal appearance for the labia

Fig. 2 Photographs of one 35-year-old woman underwent bilateral labia reduction: **A** Preoperative view of hypertrophied labia minora. **B** Complete the reduction of the right hypertrophic labia minora. **C** Postoperative view at 10 days. **D**, **E**, **F** Postoperative view at 6 months with an excellent cosmetic appearance; there were no noticeable scars

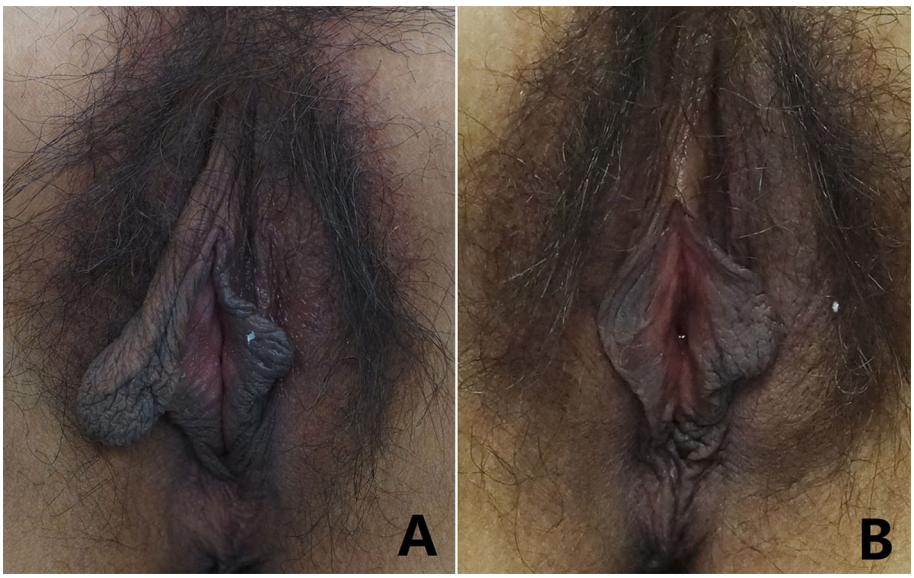

Fig. 3 Photographs of a 30-year-old woman who underwent unilateral labia reduction: **A** Preoperative view. **B** Postoperative view

Table 1 Results of follow-up questionnaires in 29 patients. Simultaneous surgery of the clitoral hood–labia minora complex with the central neurovascular pedicle retained

	Within 14 days (%)	After 3 months (%)
No.	29	27
Postoperative appearance		
Much better	21 (72.4)	23 (85.2)
Moderately or slightly better	8 (27.6)	4 (14.8)
Same	0	0
Worse	0	0
Preoperative discomfort (n=23)	23	21
Resolved	7 (30.4)	10 (47.6)
Significantly improved	14 (60.1)	10 (47.6)
Moderately or slightly improved	2 (8.7)	1 (4.8)
Not improved	0	0
Worse	0	0
Postoperative discomfort	9 (31.0)	4 (14.8)
Sex life (n=24)	–	22
Significantly improved	–	5 (22.3)
Moderately or slightly improved	–	11 (50.0)
Not improved	–	6 (27.3)
Worse	–	0
Partner's satisfaction (n=24)	24	22
Very satisfied	11 (45.8)	12 (54.5)
Satisfied	12 (50.0)	10 (45.5)
Dissatisfied	1 (4.2)	0
Overall satisfaction	29	27
Very satisfied	18 (62.1)	20 (77.8)
Satisfied	10 (34.5)	5 (18.5)
Dissatisfied	1 (3.4)	2 (7.4)
Discomfort	3	1
Appearance	1	2
Complication	1	0
Six life	–	1

minora and the clitoral hood [1, 3, 12]. Surgeons and patients should respect and accept the diversity of the vulva. Therefore, the traditional concept of labiaplasty is worth examining. The edge resection method is simple and can remove the dark edge of the labia minora; however, this may also leave an obvious scar on the reconstructed edge as well as sharp color changes between the inside and outside of the incision. Moreover, when there is hypertrophy of the base, the reconstructed labia minora may be bloated and unnatural [18]. The wedge resection method retains the natural edge of the labia minora, but causes significant damage to the central neurovasculature, and there may be complications such as wound dehiscence and color jump [19]. De-epithelialization prevents damage to the central neurovasculature; however, this operation is difficult, tissue removal is insufficient, and the suture shape is poor [20].

The inner structure of the labia minora resembles a sandwich, with mucosal tissue as the inside lining and the skin tissue as the outside linings. The subcutaneous tissue is composed mainly of connective tissue with no adipose tissue. In the central area, there are mostly thick nerve stems with myelin sheath and concomitant blood vessels [11, 12]. This new procedure was first simulated on three fresh cadavers. The simulations showed that separation via the subcutaneous loose tissue space could avoid damage to the blood vessels and nerve bundles in the central region (Fig. 4). The nerve structure in the center of the labia minora plays an important role in the sexual arousal of the labia minora [11]. The central area is rich in blood vessels and elastic fibers, adapting to engorgement with blood during sexual arousal. Therefore, the central neurovascular bundle are an important anatomical basis for the labia minora to function during sexual activity [8, 10]. The authors proposed that the medial and lateral skin and subcutaneous hypertrophic tissues could be excised separately without affecting the blood supply and nerve innervation in the distal labia minora. Protection of the central neurovascular pedicle during the operation and the prevention of traction injuries are the key to the success of this procedure. The central neurovascular and natural edges of the labia minora are preserved and the hypertrophic tissues are removed, while reducing the impact on the function and natural morphology of the labia minora.

The lateral folds of the labia minora and clitoris hood are derived from urethral folds, which are homologous to the penile skin–foreskin. The loose and redundant clitoris hood adheres to the tight albuginea and forms furrowed folds. It was found that there are abundant nerve endings and sensory bodies on the inner side of the labia minora, with nerve density increasing gradually from the inside to the outside [21]. "The labia minora are highly innervated along their margins and are extremely important for sexual responses" [8, 22]. The authors considered that the internal and external labia minora should be regarded as asynchronous hyperplasia in different positions, the resection range divisional during surgery, and the natural labia border preserved to maintaining sensitivity [23].

Hypertrophy of CLC leads to seemingly disorderly accumulation of skin wrinkles, which results in complicated surgical design. Some scholars process the labia minora and clitoral hood separately, and this may increase

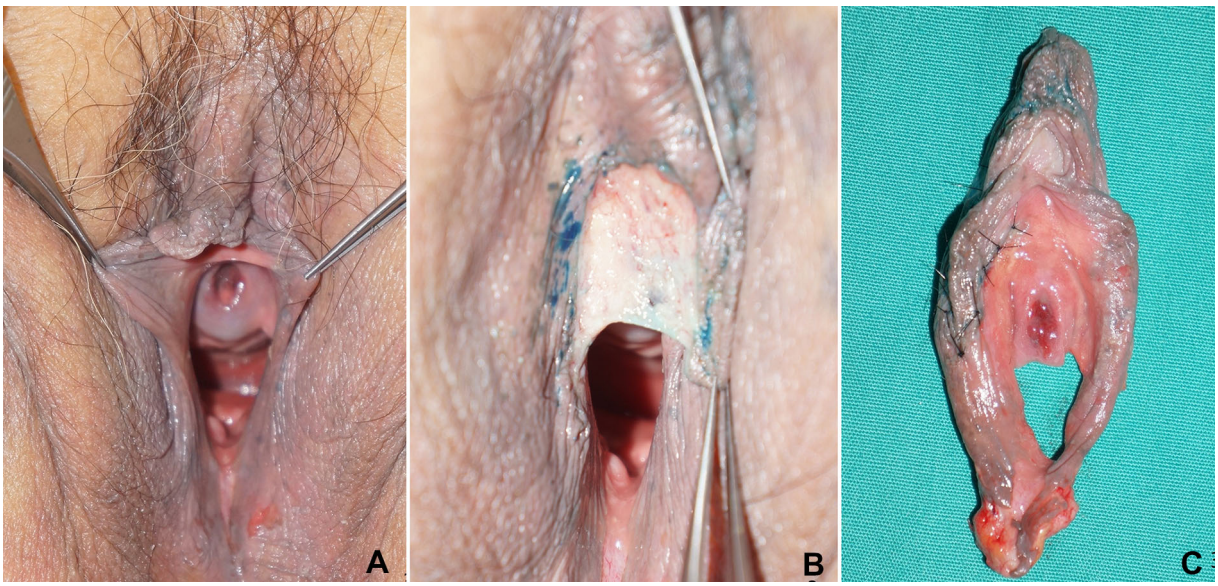

Fig. 4 Photographs of a 76-year-old fresh cadaver which underwent unilateral labia reduction: **A** Preoperative view. **B** The central neurovascular pedicle after removing the dermis and a small amount of subcutaneous tissue of the inner and outer labia minora. **C** Postoperative view of the removed labia minora

surgical difficulty and uncertainty. However, based on the knowledge of anatomy and embryology, the authors simplified the surgery and facilitated intraoperative operation, which makes it easier for surgeons to master the procedure.

Our method enabled the design of the medial resection range first, adopting the cutting concept to achieve a perfect medial morphology and structure. After satisfactory medial shaping, the redundant lateral folds and clitoral hood were removed to reshape the lateral labia, and an incision was designed in the interlabial sulcus. The incision was sutured after stripping and stretching the remaining skin tissue, as done in the root circumcision of the penis. The accumulation of the medial hood could be solved by greater excision of the lateral hood. In our method, the wedge resection range on the inner side was designed according to the patient's requirements and the natural morphology of labia minora, with flexible design and wide range of adaptation. Notably, when dealing with the interlabial sulcus, each stitch should be fixed to the deep tissue to restore the natural interlabial sulcus. This method adjusted the horizontal and vertical hypertrophy of the labia minora and removed redundant clitoris hoods simultaneously and has a flexible incision design and is suitable for different types of CLC hypertrophies.

This method is fundamentally different from the de-epithelialization or the central wedge labiaplasty [24, 25]; we peeled along the loose subcutaneous tissue and excised skin and subcutaneous hypertrophic tissues, which reduced the difficulty of the operation. The method preserves the central thin neurovascular and natural edges of the labia minora, which ensured the erectile function of the labia minora and sensitivity to sexual stimulation after surgery [10].

In our method, the CLC was treated as a whole, and the medial and lateral incisions were made at the hidden location of the vestibular margin and interlabial sulcus to avoid friction discomfort and scar hyperplasia caused by the exposed incisions. The incision position on the inner and outer sides of the labia minora was not on the same plane, which further reduced the destruction of the central blood supply and prevented the occurrence of distal necrosis of the labia minora, and dehiscence caused by poor wound healing [17]. Notably, this method did not improve the edge of melanin in the labia minora; however, some patients found that the color of the edge of the labia minora became lighter after surgery, which may have been due to the development of unfurled skin.

Conclusion

The proposed method of simultaneous surgery of the CLC, removing adequate hypertrophic tissue with a central thin neurovascular pedicle and natural edge retention, reduced the impact on the function and natural morphology of the labia minora. This method, with its hidden incision and high patient satisfaction, was found to be effective, safe, and easy to perform.

Funding The authors have no financial interest to declare in relation to the content of this article.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval This study was a retrospective review of patients who underwent surgery after review in our outpatient clinic. All procedures in this study adhered to the ethical principles of the World Medical Association Declaration of Helsinki. This study was approved by the Ethics Committee of the Plastic Surgery Hospital of the CAMS.

Informed Consent Informed consent was obtained from all participants included in the study. All data collected were made anonymous to preserve patient confidentiality. The collection of the data and the results of this study did not impact any aspect of patient management. Patient consent was obtained for the publishing of their medical photographs.

References

1. Skoda K, Oswald FE, Shorter L et al (2021) Perceptions of female genitalia following labiaplasty. J Sex Res 58(7):943–950. https://doi.org/10.1080/00224499.2020.1808563
2. Özer M, Mortimore I, Jansma EP et al (2018) Labiaplasty: motivation, techniques, and ethics. Nat Rev Urol 15(3):175–189. https://doi.org/10.1038/nrurol.2018.1
3. Clerico C, Lari A, Mojallal A et al (2017) Anatomy and aesthetics of the labia minora: the ideal vulva? Aesthet Plast Surg 41(3):714–719. https://doi.org/10.1007/s00266-017-0831-1
4. Xia Z, Liu CY, Zhang M et al (2022) Fused lateral clitoral hood and labia minora: new classification based on anatomic variation of the clitoral hood-labia minora complex and simple surgical management. Aesthet Surg J 42(8):907–917. https://doi.org/10.1093/asj/sjac039
5. Ahmad J (2017) Female cosmetic genital surgery: concepts, classifications and techniques. Aesthet Surg J 37(10):NP145-NP146. https://doi.org/10.1093/asj/sjx147
6. Eserdağ S, Anğın AD (2021) Surgical technique and outcomes of inverted-Y plasty procedure in clitoral hoodoplasty operations. J Minim Invasive Gynecol 28(9):1595–1602. https://doi.org/10.1016/j.jmig.2021.01.015
7. Baskin L, Shen J, Sinclair A et al (2018) Development of the human penis and clitoris. Differentiation 103:74–85. https://doi.org/10.1016/j.diff.2018.08.001
8. Puppo V (2013) Anatomy and physiology of the clitoris, vestibular bulbs, and labia minora with a review of the female orgasm and the prevention of female sexual dysfunction. Clin Anat 26(1):134–152. https://doi.org/10.1002/ca.22177
9. Hunter JG (2016) Labia minora, labia majora, and clitoral hood alteration: experience-based recommendations. Aesthet Surg J 36(1):71–79. https://doi.org/10.1093/asj/sjv092
10. Jackson LA, Hare AM, Carrick KS et al (2019) Anatomy, histology, and nerve density of clitoris and associated structures:

clinical applications to vulvar surgery. Am J Obstet Gynecol 221(5):519.e1-519.e9. https://doi.org/10.1016/j.ajog.2019.06.048
11. Ginger VA, Cold CJ, Yang CC (2011) Structure and innervation of the labia minora. Female Pelvic Med Reconstr Surg 17(4):180–183. https://doi.org/10.1097/SPV.0b013e318221f835
12. Cao Y, Li F, Li S et al (2021) A preliminary observational study on the vascular, nerve, and lymphatic anatomy and histology of the labia minora from cadaveric and surgical samples. Int Urogynecol J 32(5):1169–1176. https://doi.org/10.1007/s00192-020-04551-7
13. Xia Z, Liu CY, Yu N et al (2021) Three-step excision: an easy way for composite labia minora and lateral clitoral hood reduction. Plast Reconstr Surg 148(6):928e–935e. https://doi.org/10.1097/PRS.0000000000008589
14. Zhou Y, Li Q, Li S et al (2022) Trilobal methods for composite reduction labiaplasty. Aesthet Plast Surg 46(3):1472–1480. https://doi.org/10.1007/s00266-022-02841-7
15. Li F, Li Q, Zhou Y et al (2020) L-shaped incision in composite reduction labiaplasty. Aesthet Plast Surg 44(5):1854–1858. https://doi.org/10.1007/s00266-020-01867-z
16. Kalaaji A, Dreyer S, Maric I et al (2019) Female cosmetic genital surgery: patient characteristics, motivation, and satisfaction. Aesthet Surg J 39(12):1455–1466. https://doi.org/10.1093/asj/sjy309
17. Schober JM, Alguacil NM, Cooper RS et al (2015) Self-assessment of anatomy, sexual sensitivity, and function of the labia and vagina. Clin Anat 28(3):335–362. https://doi.org/10.1002/ca.22503
18. Hamori CA (2014) Aesthetic surgery of the female genitalia: labiaplasty and beyond. Plast Reconstr Surg 134(4):661–673. https://doi.org/10.1097/PRS.0000000000000516
19. Qiang S, Li F, Zhou Y et al (2021) A new concept for central wedge resection in labiaplasty. Gynecol Obstet Invest 86(3):257–263. https://doi.org/10.1159/000513402
20. Cao YJ, Li FY, Li SK et al (2012) A modified method of labia minora reduction: the de-epithelialised reduction of the central and posterior labia minora. J Plast Reconstr Aesthet Surg 65(8):1096–1102. https://doi.org/10.1016/j.bjps.2012.03.025
21. Kelishadi SS, Omar R, Herring N et al (2016) The safe labiaplasty: a study of nerve density in labia minora and its implications. Aesthet Surg J 36(6):705–709. https://doi.org/10.1093/asj/sjw002
22. Schober J, Aardsma N, Mayoglou L et al (2015) Terminal innervation of female genitalia, cutaneous sensory receptors of the epithelium of the labia minora. Clin Anat 28(3):392–398. https://doi.org/10.1002/ca.22502
23. Ju M, Wang W, Ma N et al (2019) Reduction of hypertrophic labia minora by posterior-lateral wedge resection with preservation of the central blood vessels and nerve bundle. Aesthet Plast Surg 43(3):742–749. https://doi.org/10.1007/s00266-019-01326-4
24. Alter GJ (2008) Aesthetic labia minora and clitoral hood reduction using extended central wedge resection. Plast Reconstr Surg 122(6):1780–1789. https://doi.org/10.1097/PRS.0b013e31818a9b25
25. Alter GJ (2009) Aesthetic labia minora and clitoral hood reduction using extended central wedge resection. Reply to letter to the editor. Plast Reconstr Surg 124:337–338. https://doi.org/10.1097/PRS.0b013e3181a8394d

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.