

Radiofrequency resurfacing and revision of deepithelialized labia minora labiaplasty: review of literature and case study

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Abstract: The growing demand for Aesthetic Vulvo-vaginal Surgery (AVS), particularly elective and therapeutic labia minora plasty (labia minora reduction) procedures, has increased the risk of failed labiaplasties when performed by inexperienced or poorly trained surgeons. Inadequate labia minora reduction surgery may result in medical and functional complications as well as aesthetically unattractive results. Complications of a botched labiaplasty include bleeding, infection, delayed wound healing, iatrogenic asymmetry, and under or overcorrection. This case report illustrates the use of an innovative radiosurgical technique to repair poor anatomical outcomes of an unsuccessful de-epithelialized labia minora plasty. Revision surgery was achieved using a radiofrequency device that allows incision, micro-smooth cutting, and resurfacing of the vulva-vaginal region, including the labia minora and clitoral hood. Radiofrequency was found to be an effective tool for ironing rough surfaces, smoothing uneven edges, excising hypertrophic labial tissue, and sealing small blood vessels in a labia minora plasty revision surgery.

Key words: Labia minora plasty; Radiofrequency; Aesthetic vulvo-vaginal surgery (AVS); Female genital cosmetic surgery (FGCS); Clitoral hood reduction.

INTRODUCTION

Enlarged or irregular labia minora associated with chronic irritation, other physical discomfort, or an unsightly aesthetic appearance is a growing complaint of women seeking surgical treatment from gynecologic surgeons or cosmetic surgeons.¹ Labia minora (labia) plasty is the term for several female cosmetic genital surgical techniques to reduce the size and in some cases to alter the shape of hypertrophic, asymmetric, or protruding labia minora for aesthetic or functional purposes.^{1,2} Standard techniques for the reduction and reshaping of the labia minora include curved linear excision or simple amputation,^{3,4} central wedge resection,⁵ de-epithelialization,⁶ W-shaped labial resection (zigzag technique),⁷⁻⁸ and laser labiaplasty in which a laser is used in place of a scalpel.¹ More recently, radiofrequency labiaplasty has been found to be beneficial due to its precision and safety in the clitoral area.⁹ In a small case series, posterior wedge resection was found to be an effective technique for aesthetic labiaplasty.¹⁰ Deepithelialized labiaplasty recently has gained popularity because of its purported safety combined with its ability to preserve the natural free edges and neurovascular supply of the labia minora.¹

A combination of labia minora plasty techniques, including 5-flap Z-plasty, reportedly can produce optimal surgical outcomes for labia minora reduction, depending upon the patient's individual needs.¹ Labia minora plasty procedures are minimally invasive surgeries that do not typically lead to significant surgery-related complications.³ However, there is a risk for serious adverse effects resulting from labia minora reduction procedures if a surgeon is not adequately trained and experienced in Aesthetic Vulvo-vaginal Surgery (AVS). Complications of labiaplasty such as bleeding, infection, iatrogenic asymmetry, poor wound healing, and either under or overcorrection may require medical intervention, revision surgery, or both.¹

In this case report we describe an innovative surgical technique involving the use of monopolar high frequency radiofrequency (RF) energy for revision of labia minora labiaplasty. The patient was a 32 year-old Caucasian gravida 3, Para 2 female who had undergone a labia minora labiaplasty under general anesthesia in a plastic surgeon's office surgery center before consulting our office. The surgeon claimed to have previously performed vaginal cosmet-

ic procedures, but provided no credentials or photographic documentation of expertise in labiaplasty.

Approximately two weeks after her surgery, the patient noticed holes in what appeared to be "de-epithelialized" areas of the labia. Seeking a "Barbie Appearance" to correct an unsatisfactory surgery, the patient requested a consultation one month after her operation and then sent our office photos of the postoperative results. The "Barbie Look" is a colloquial term for external genitalia characterized by either no or only minimal labia minora tissue that extend beyond the labia majora. The vertical vaginal orifice appears simply as a fine line. The patient was advised to postpone an appointment with our office until two months after surgery to allow maximum time for normal wound healing. When no improvement occurred, she visited our office one month after initially contacting us. Her operative report suggested that the plastic surgeon had performed a de-epithelialization labiaplasty in which strips of skin were removed from both sides of the labia minora. An inverted U clitoral hood reduction was also performed with the labia minora labiaplasty (Figure 1).



Figure 1. – After de-epithelialization labiaplasty. Following botched de-epithelialization labiaplasty the minora reveal rough elevations, uneven edges, and large flaps of skin connecting minora and majora.



Figure 2. – Pre-op revision. Front view pre-op revision shows protrusion of minora beyond majora, with the clitoral hood topped by a hardened painful scar. Multiple holes are present.

CASE REPORT

Our pelvic exam revealed that the patient's minora was connected to the majora via unattractive flaps of labial tissue with strands of skin. A painful firm scar was observed on top of the clitoral hood. The labia showed rough, bumpy and irregular areas, uneven edges, and an asymmetric pattern that was more pronounced in the postoperative physical exam than in the pre-operative photos (Figure 2). The blood supply had been compromised, thus preventing full healing at the labial edges. Since the labia minora is usually thin, removal of strips of skin on the medial or lateral side can leave an extremely narrow strip of tissue with vasculature that subsequently easily becomes impaired. This defect can result in holes appearing in the de-epithelialized segments.⁹ Additionally, clitoral hood reductions performed on the anterior surface of the clitoral hood can form thickened and painful scars. A scar may appear unsightly as a pale but visible and palpable firm strand traversing the surface of the clitoral hood.

The patient requested a revision surgery to achieve a Barbie Look and signed the appropriate consent form. The Surgitron® Dual RF™ S5 with Pelleve™ equipped with a handpiece (Radiowave technology, Ellman International, Oceanside, NY, USA) was used to perform sutureless RF labial resurfacing and revision in our in-office surgical suite. The patient was administered a topical and local anesthetic but no I.V. In lieu of conventional scalpel-based ablation, RF was utilized initially for excisional surgery to excise labial tissue that had detached from the vulva. The labial surface and edges were then resurfaced with RF to smooth and refine the tissue. A “feathering” technique was used in which multiple passes were made with the device until the desired smoothness and tissue shrinkage was achieved.⁹ Injured vasculature in labial tissue were coagulated with the Surgitron to seal small blood vessels. Finally, the thickened tender scar resulting from the clitoral hood reduction was resurfaced with RF (Figure 3). The patient achieved a full recovery within 8 weeks postoperative at which time she was able to have normal sexual relations (Figure 4). She expressed complete satisfaction with the results of the revision labiaplasty and remained satisfied at 3-year follow up.

COMMENT

The RF applications described in this case report include excisional labiaplasty techniques and the RF Pelleve procedure to correct the poor clinical outcomes of the patient's previous de-epithelialized labiaplasty. RF permitted maxi-



Figure 3. – Immediately after resurfacing revision. Immediately post-op revision shows that excess labial tissue has been trimmed from minora, edges evened, and clitoral hood prominence reduced with radiofrequency surgical technique of “flathering”.



Figure 4. – Post Op 3 Years. Resculptured labia minora at Post Op 3 years remain fully healed and aesthetically attractive with no hypertrophy, asymmetry, holes or rough surfaces.

imum smoothing of the edges of each labium minora to improve their aesthetic appearance while also decreasing labial bulkiness by shrinking the bumpy areas. Compared to lower frequency electrosurgery instruments, monopolar RF treatment is associated with decreased tissue resistance and maximum control in precision cutting as well as tissue tightening to smooth wrinkled skin.⁹ This technique is appropriate for corrective labiaplasty cases requiring delicate and meticulous repair of labial tissue and vasculature.

The versatility of radiosurgery with its detachable handpiece hair wire tips allows it to function in a multimodal capacity as an electrosection instrument for incision, micro-smooth cutting, resurfacing, and vascular repair. The individual variability of small blood vessels in the labia minora poses a challenge for restoration of function to damaged vasculature. However, the Surgitron enables precise microsurgical manipulation required to seal off open small blood vessels with minimal lateral thermal damage of 20-40 microns.⁹ By stimulating coagulation, the attachable ball electrode tips of the device promote soft tissue shrinkage and skin tightening. Monopolar RF surgery has been associated with less thermal destruction, thereby reducing burning or charring during techniques to excise or smooth vulvar skin.⁹

CONCLUSION

Revision of de-epithelialized labia minora labiaplasty utilizing RF is beneficial for the reversal or at least mitigation of poor postoperative results due to suboptimal healing in prior surgery. RF labiaplasty is a promising cutting-edge surgical technique for initial labiaplasty as well as for revi-

sion procedures of the female external genitalia.¹¹ The efficiency and effectiveness of radiosurgery in treating all of the adverse outcomes of the patient's previous "botched procedure" suggest that this device may be highly advantageous for revision labiaplasty requiring incision, resection, resurfacing, skin tightening, and/or small blood vessel repair. Future case series to further investigate the safety and efficacy of RF for revision surgery of failed de-epithelialized labia minora labiaplasty are warranted.

NOTES

Statement of Informed Consent.

A signed statement of informed consent was obtained from the patient to publish medical information pertinent to the case study as well as the photographs relating to her procedure.

Ethical approval: Not required.

Funding: None.

Conflict of Interest Statement.

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