ALINSOD INSTITUTE
for AESTHETIC VULVOVAGINAL SURGERY

Red M. Alinsod, M.D., FACOG, FACS, ACGE

Dr. Red Alinsod completed medical training at Loma Linda University Medical Center in 1990. He served a 12-year Air Force career with 4 active duty years at George and Nellis Air Force Bases. He has practiced in Southern California and now in Texas and Nevada

Red has built a thriving cosmetic urogynecology following. He is the Director and founder of South Coast Urogynecology and The Alinsod Institute for Aesthetic Vulvovaginal Surgery (an educational center) and Gynflix (Online e-Learning).

His International teaching program is the first of its kind to combine both pelvic reconstructive and aesthetic principles together. He has trained many of the world's leading doctors and instructors in cosmetic gynecology and has presented his techniques worldwide for over 27 years.

He is co-editor of *Female Cosmetic Genital Surgery, Concepts, Classification and Technique*, the seminal textbook for plastic surgeons and gynecologists in this rapidly growing field. He is the Founder and Chairman of CAVS (Congress on Aesthetic Vulvovaginal Surgery), the oldest and longest running Congress dedicated to Female Cosmetic Genital Surgery. It is now incorporated into The International Society for Cosmetogynecology, the Grand Daddy of the field.

He is the inventor of the "Barbie Look" and "Hybrid Look" Labiaplasty, Medial Curvilinear Labia Majoraplasty, Central and Lateral Clitoral Hood Reduction, In-office No-IV Labiaplasty, Perineoplasty, Vaginoplasty, Micro Tumescent Labial Block, Pudendo-Levator Block. He is the inventor and patent owner of the Lone Star APS Vaginal Retractor, APS Surgical Table, Alinsod Scissors, and various pelvic reconstructive devices and techniques such as *Sling with Bladder Support* and *Implants and Procedures for Treatment of Pelvic Floor Disorders*.

Dr. Alinsod is the inventor and patent owner of ThermiVa and Genital Predictive Permeation. He is the inventor of amniotic fluid use for overactive bladder with AmDrop and co-developer of O2Vasc for improvement in genital bloodflow. He is also the originator of exosome use for genital conditions.

Dr. Alinsod specializes in non-surgical feminine restoration, treatment of stress incontinence, overactive bladder, atrophic vulvovaginitis, orgasmic dysfunction, vulvar dystrophy, and modern management of menopausal symptoms.

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Cosmetic Urogynecology

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PRESENT POSITION	5/23 – Present	**Alinsod Institute, PLLC** **Women's Wellness Institute of Dallas** **With Dr. Wesley Brady** 8201 Preston Road Suite 520 Dallas, TX 75225 Phone: 214-442-0055 Fax: 214-442-0056
		Alinsod Institute Las Vegas, NV **Aesthetic Revolution** **With Dr. Ed Zimmerman** 9130 W Post Road, Suite 100 Las Vegas, NV 89148 Phone: (702) 360-6686
	11/22 - Present	**Alinsod Institute Irvine, CA** **Wei Aesthetics with Dr. Judy Wei** 16300 Sand Canyon Avenue #800 Irvine, CA 92618 Phone: 949-499-5311 Fax: 949-499-5312
		Gynflix e-Learning Founder, Director, Owner Email: red@gynflix.com
	6/13 - Present	**Specialty Surgery Center of Irvine** 15825 Laguna Canyon Road Irvine, CA 92618
	1/05 – Present	**South Coast Urogynecology, Inc.** President, Director, Owner 8201 Preston Road, Suite 520 Dallas, TX 75225

PREVIOUS POSITIONS	2004 – 2006	**UCLA Urogynecology, Harbor Fellowship** Surgical Attending for Augmented Repair
	2006 - 2015	**Congress on Aesthetic Vaginal Surgery** Founder, Director, Program Chairman ISCG Honorary Fellow
	9/94 – 12/04	**Facey Medical Group, Partner** 11333 N. Sepulveda Blvd. Mission Hills, CA 91345
	9/91 – 8/94	**Chief of Gynecologic Services** 554 Med Group, Nellis AFB Las Vegas, NV
	7/90 – 8/91	**Chief of Gynecologic Services** 35th Medical Group, George AFB Victorville, CA
EDUCATION	7/86 – 6/90	Internship and Residency, OB/GYN **Loma Linda University Med. Center** Loma Linda, CA 92350 Fellowship: Gynecologic Oncology Yale University SM USAF Active Duty
	7/82 – 6/86	**Loma Linda University Medical School** Loma Linda, CA 92350 MD, BS Human Biology Scholarship: USAF Health Professions Activities: Chief Photographer
	09/78 – 6/82	**Pacific Union College, Angwin, CA** BS, Biochemistry
CERTIFICATION STATUS		**Board Certified, ABOG & ACGE #20** **TX, NV, CA Medical License** **DEA License** **Fellow of ACOG, ACS, ASLMS** **Associate Fellow AACS**
PROFESSIONAL SOCIETIES		ACOG, ACS, AUGS, IUGS, ICS, ISPP AAGL, AAOCG, AACS Felix Rutledge Fellow 1988
PERSONAL		Married, 3 children Skiing, Dobermans, Golden Retrievers Photography

SPECIALIZED SURGICAL SKILLS

Aesthetic Vulvovaginal Surgery
In-Office Awake No IV Surgery
- Labia Minora and Majora Plasty
- Clitoral Hood Reduction
- Vaginoplasty/Perineoplasty
- Hymenoplasty
- Non-Invasive Labial tightening

ThermiVa Feminine Restoration
Pelvic Floor Reconstruction
Incontinence Slings
Advanced Laparoscopy/Hysteroscopy
Aesthetic Lasers, Fillers, Botox
O-Shot, AmShot, Vampire Lift
Awake/In-Office Aesthetic Gyn Surgery

CLINICAL & INDUSTRY

ARMS Medical, Consultant & Designer
Thermi: ThermiVa Inventor
Cooper Surgical: LoneStar Inventor
Monarch Medical: Alinsod Scissors/Table
D-Moore/Vitality Concepts Consultant
Amnion LLC and Juventix Consultant
Intigen, Lumisque, and Joylux Consultant
Caldera Medical Consultant and Designer
FemXHA PRP + HA
Exosome for GYN

PATENTS & INVENTIONS

1 Lone Star APS Vaginal Retractor
2 ThermiVa RF
3 Sling with Bladder Support
4 Implants and Procedures for the Treatment of Pelvic Floor Disorders
5 Vulvuvaginal Predictive Permeation
6 Alinsod Surgical Table and Stand
Alinsod Scissors, Pickups, and Clamp
Alinsod Speculum for O-Shot

Barbie Look Labiaplasty
Hybrid Look Labiaplasty
Curved Medial Labia Majoraplasty
Lateral + Vertical Clitoral Hood Reduction,
RF Anal Skin Tag Excision and Shrinkage
RF Feathering and Grooving
Pudendo-Levator Block, Clitoral Block
Predictive Permeation for Gynecology
O2Vasc for genital bloodflow

LECTURES, PRESENTATIONS, PUBLICATIONS

Upon Requests

Red Alinsod, MD, FACOG, FACS

Loma Linda University School of Medicine
Major, US Air Force

Private Practice 1994 to Present

South Coast Urogynecology in Irvine, CA, and Dallas, TX, Las Vegas, NV (www.urogyn.org)

Alinsod Institute for Aesthetic Vulvovaginal Surgery (www.alinsodinstitute.com)

Gynflix Cosmetic Gynecology e-Learning (www.gynflix.com)

Founder: CAVS (Congress on Aesthetic Vulvovaginal Surgery, founded 2006)

Honorary Founder of Aesthetic Gyn Societies in Brazil, Paris, Germany, Poland, India, Philippines

Patents/Patent Pending and Equipment Developed

1. ThermiVa
2. Lone Star APS Retractor
3. Implantable Sling with Bladder Support
4. Implants and Procedures for Treatment of Pelvic Floor Disorders
5. Desara Incontinence Sling System
6. Ascend A and Ascend P Pelvic Reconstruction System
7. Brought first Ultra Lightweight Mesh to USA in 2005 (POP Mesh/Restorelle)
8. Alinsod Urogyn Table
9. Alinsod Scissors, Pickups, Clamps
10. Predictive Permeation/DEP Vulvovaginal Wand

Procedures Developed

1. Radiofrequency Surgical Techniques for Aesthetic Gynecologic Surgery In-Office
    a. First to treat vulvovaginal tissues with non-surgical RF energy
    b. Feathering Technique for Resurfacing Revision surgery
    c. Micro Tumescent Labial Block
    d. Pudendal-Levator Block
2. In-Office RF Labiaplasty
    a. Barbie Look
    b. Hybrid Look
    c. Vertical and Lateral Clitoral Hood Reduction and Hoodoplasty
    d. Lateral Curvilinear Clitoral Hood Reduction
    e. Grooving Technique for Labial Creation
3. In-Office Awake No IV Vaginoplasty and Perineoplasty
4. Medial Curvilinear Labia Majoraplasty
5. Thermi-O (ThermiVa + O-Shot) and O-Shot with AmDrop Amniotic Fluid

6. ThermiVa Research on
    a. Tightening of vulva and vagina
    b. GSM
    c. Urinary and Fecal Incontinence
    d. OAB
    e. Orgasmic Dysfunction
    f. Stack Therapy with Fractional Laser combination
    g. Vulvar Dystrophy, Vulvar Vestibulitis, Lichen Sclerosis, Pelvic Pain
7. Gynecologic Predictive Permeation for local anesthesia, vulvar lightening and plumping, platelet rich plasma and amniotic fluid placement, treatment of vulvar dystrophy/LS/Dermatitis.
8. O2Vasc development, research, production: Topical serum to increase genital bloodflow
9. Amniotic Fluid and Exosomes for gynecologic conditions
10. NEO Naturals Exosome for Gynecologic Condition
11. FemXHA PRP + HA Kit for Vulvar Filling and Lichen Sclerosis Treatment

Recent Awards

1. July 2015: Best Feminine Rejuvenation, The Aesthetic Show, Las Vegas, NV

2. April 2016: Award of Innovations in Cosmetic Gynecology, European Society of Aesthetic Gynecology, Rome, IT

3. Feb 2017: Outstanding Contributions to Cosmetic Surgery 2017, International Society of Cosmetogynecology, San Diego, CA

4. May 2017: Award of Lifetime Contribution in Cosmetic Gynecology, European Society of Aesthetic Gynecology, Madrid, Spain.

5. July 2017: Best Feminine Rejuvenation Enhancement, The Aesthetic Show, Las Vegas, NV

6. April 2018: Outstanding Contribution in Cosmetic Gynecology, European Society of Aesthetic Gynecology, London, UK.

7. June 2019: ESAG Master's Course Faculty, Edinburg, Scotland. With Marco Pelosi II, Alexander Bader, Marco Pelosi III, John Miklos.

8. March 2020: Award for Best Results in Cosmetic Genital Surgery and for Teaching Excellence, The International Society of Cosmetogynecology, Ft. Lauderdale, FL.

9. March 2021: Award for Best Results in Cosmetic Genital Surgery, The International Society of Cosmetogynecology, Ft. Lauderdale, FL

10. March 2022: Award for Best Results in Cosmetic Genital Surgery, The International Society of Cosmetogynecology, Ft. Lauderdale, FL

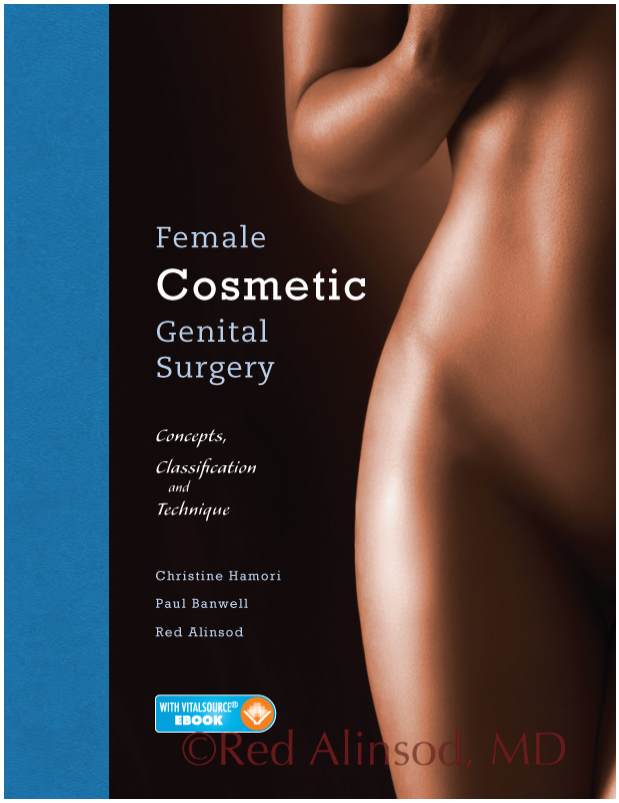
11. October 2022: Launch of Gynflix Cosmetic Gynecology e-Learning

Cosmetic Gynecology e-Learning
from Red Alinsod, MD

12. March 2023: Laguna Beach Business Hall of Fame: Best Doctor 16 years in a row

13. March 2023: Best Doctor from National Women' Choice Award

Publications



PEER-REVIEW | RADIOFREQUENCY | PRIME

TEMPERATURE CONTROLLED RADIOFREQUENCY FOR VULVOVAGINAL LAXITY

Red M. Alinsod evaluates the results of his study on the effectiveness of non-invasive transcutaneous temperature controlled radiofrequency for vulvovaginal rejuvenation

ABSTRACT

Objective: To evaluate the safety, tolerability, and clinical efficacy of non-invasive transcutaneous temperature controlled radiofrequency (TTCRF) for vulvovaginal rejuvenation and document ancillary beneficial effects of treatment.

Patients and methods: subjects (n=23; age range 26-58 years, mean 43.6; 5 menopausal, 6 perimenopausal) presented with mild to moderate primary or secondary vulvovaginal laxity. Associated conditions (orgasmic dysfunction, stress incontinence, atrophic vaginitis) were present in most subjects. Exclusion criteria included pelvic surgery within 5 years, pregnancy or planned pregnancy within the study period, recent abnormal Papanicolaou test result, and presence of vulvar lesions or any condition that may potentially interfere with the safe treatment. Informed consent was obtained from all subjects. Patients were treated up to three times at an interval of 4 to 6 weeks.

Outcome measures: subject assessment via vaginal laxity questionnaire (VLQ) rating on a 7 point scale where 1=very loose and 7=very tight, and sexual satisfaction questionnaire (SSQ) rating on a six point scale where 1=none and 6=excellent, as well as observations of associated conditions such as incontinence, atrophic vaginitis, and orgasmic dysfunction.

Results: median improvement of 5 points on the VLQ scale and 2.5 points on the SSQ scale were noted; results were statistically significant (p<0.05). The most pronounced outcomes manifested after initial treatment with additional improvement after each of the second and third treatments. Patients with orgasmic dysfunction, stress incontinence, and/or atrophic vaginitis noted substantial improvement regardless of number of treatments. Menopausal subjects were able to cease usage of vaginal estrogens.

Conclusion: TTCRF is safe, tolerable, and effective for vulvovaginal rejuvenation. Evidence suggests applications in the treatment of atrophic vaginitis, orgasmic dysfunction, and stress incontinence

THE VAGINAL WALL PREDOMINANTLY consists of dense connective tissue that is heavily vascularized and through which many nerves pass, lined by a slightly keratinized, stratified squamous epithelium. The vulva, particularly the labia majora, is even more skin-like although generally more heavily vascularized and innervated than skin in most bodily regions. During vaginal delivery, stretching causes damage to the connective tissue that heals in a varying state of laxity that increases with each successive birth; the vulva is similarly affected. In addition, reductions in the quality of connective tissue due to neuroendocrine changes and age serve as contributing factors. This condition is rarely discussed in a clinical setting[1-4]. Other conditions such as stress incontinence and atrophic vaginitis arise in conjunction with vulvovaginal laxity, as well as natural results of delivery trauma and advancing age. An additional consequence to vulvovaginal laxity is reduced sensation during coitus, with a potential negative effect on sexual satisfaction and quality of life[4-7].

The term 'vulvovaginal laxity', encompasses laxity of both the vaginal introitus and labia majora. Given that most people refer to the entire compound structure as 'the vagina' it stands to reason that 'vaginal laxity' and 'vulvovaginal laxity' will be used synonymously by some but it is important to note that, technically, 'vaginal laxity' does not involve the vulva specifically. Laxity of the vagina, specifically, is often referred to as pelvic organ prolapse but that term is also inaccurate because it refers to a more severe condition possibly involving vaginal and other genitopelvic structures bulging into the vaginal canal and introitus, rather than laxity of the introitus itself[8].

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KEYWORDS
Vulvovaginal laxity, temperature-controlled radiofrequency, non-surgical vaginal rejuvenation

'To the patient, there are other notable characteristics of vulvovaginal laxity and the aesthetic appearance of the vagina may be perceived as significantly compromised, leading to self-consciousness. Laxity of the labia majora may be associated with discomfort and irritation when tight clothing is worn, as well as discomfort during intercourse. Orgasmic dysfunction, reduced friction during sex due to 'looseness', and other aspects of laxity-related changes are perceived to negatively impact the sexual experience in a variety of ways. So vaginal laxity or 'looseness' as a medical or aesthetic concern is not new; it is, however, only recently becoming socially acceptable as a topic of consideration. References to the vagina--structure, function, and associated problems--are now less taboo. Gynecological and urological issues that women may have been reluctant to address directly with physicians or even friends in the ▷

Lasers in Surgery and Medicine 48:641–645 (2016)

Transcutaneous Temperature Controlled Radiofrequency for Orgasmic Dysfunction

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Background and Objectives: To evaluate the safety, tolerability, and clinical efficacy of transcutaneous temperature controlled radiofrequency (TTCRF) on vulvovaginal tissue for orgasmic dysfunction.
Study Design/Materials and Methods: Subjects included 25 sexually active women, ages 21–65, with self-reported difficulty in achieving orgasms during sex (anorgasmic or slow-to-orgasm). Each patient received three sessions at intervals of about 1 month. Treatment was performed using a slim S-shaped probe with a stamp-sized metal radiofrequency emitter on one surface of the tip (25 minutes total time on average). External treatments covered the labia majora and minora, lower mons pubis, perineal body, clitoral hood, and clitoris. Full length treatment of the vagina with concentration on the anterior wall was performed. Tissue temperature during therapy was elevated to and maintained between 40°C and 45°C. No anesthesia was required. After treatment, patients immediately resumed normal activities, including sex.
Results: Twenty-three of 25 patients reported an average reduction in time to orgasm of 50%. Patients also noted significant vaginal tightening effects, increased vaginal moisture, and improved vulvar and clitoral sensitivity. All anorgasmic patients reported the ability to achieve orgasms. Two patients had minimal response.
Conclusion: TTCRF is an effective non-hormonal, non-surgical option for women having difficulty achieving orgasm. Treatment also has visible tightening effects on feminine tissues and appears to increase local blood flow, resulting in increased vaginal tightness and moisture. Improved appearance and friction resulted in improved confidence and reduced performance anxiety. Lasers Surg. Med. 48:641–645, 2016. © 2016 The Authors. *Lasers in Surgery and Medicine* Published by Wiley Periodicals, Inc.

Key words: temperature-controlled radiofrequency; vulvovaginal rejuvenation; orgasmic dysfunction; vaginal rejuvenation; vaginal laxity

INTRODUCTION

The use energy-based therapies for rejuvenation of the skin in aesthetic medicine is common, and among them non-invasive or minimally invasive radiofrequency (RF) energy is a well-studied and popular alternative [1]. By creating heat via impedance as electric current is conducted through tissue, stimulation of fibroblasts occurs, and the therapeutic outcome is achieved; the target tissue temperature range lies between 40°C and 45°C [2]. Recently, this skin rejuvenation modality has been harnessed for rejuvenation of vaginal tissue to treat vulvovaginal laxity resulting from age- or childbirth-related causes. Orgasmic dysfunction, manifesting as anorgasmia or increased time to orgasm, rests among the associated symptom suite [3]. As many as 35% of women may experience orgasmic dysfunction and its resultant effect on quality of life [4], and research suggests a strong need for treatment alternatives when surgical correction is not indicated [5]. Other than psychological, behavioral, and hormonal therapies, recent alternatives include injectable autologous platelet rich plasma, which is safe and without the potential side effects noted with other injectable treatments, but results were relatively modest.

Transcutaneous temperature controlled radiofrequency (TTCRF) is the combination of RF, an established technology proven safe and effective for skin laxity, with feedback controls for the monitoring and maintenance of tissue temperature via thermocouples and thermistors in the treatment probe [6]. Power is modulated in relation to tissue impedance to elevate tissue temperature near the electrode stimulating neocollagenesis plus contraction and denaturation of collagen, triggering the healing cascade to produce healthier new tissue. With the goal of raising and maintaining tissue temperature to a therapeutic target of between 40°C and 45°C, temperature feedback controls power, and thus adjusts energy delivery to maximize non-invasive delivery of RF energy while minimizing patient discomfort. There is no downtime.

The character of vaginal wall tissue, similar to that of skin, makes it an obvious candidate for such treatment. RF is particularly effective on naturally moist, well hydrated

Conflict of Interest Disclosures: The author is a paid research consultant for Thermi, An Almirall Company, manufacturer of the TTCRF technology used during the investigation.
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Gynecologic
SURGICAL TECHNOLOGY INTERNATIONAL XXIX

Transcutaneous Temperature Controlled Radiofrequency (TTCRF) for the Treatment of Menopausal Vaginal/Genitourinary Symptoms

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ABSTRACT

Objective: The aim of this study was to evaluate the effects of non-ablative, monopolar transcutaneous temperature controlled radiofrequency (TTCRF) technology in the treatment of postmenopausal women suffering from genuine stress urinary incontinence (SUI) related to menopause and to evaluate histological changes vaginally associated with the treatment.

Materials and Methods: Subjective and objective symptoms of SUI were assessed in study subjects before and after TTCRF, (1 treatment every 30 days, for 3 months; n=10) and compared with the effects of a placebo treatment on a control group of demographically similar women (n =10). SUI was subjectively evaluated with subjective Urogenital Distress Inventory (UDI-6) and with the International Consultation on Incontinence

Histologic and Clinical Changes in Vulvovaginal Tissue After Treatment With a Transcutaneous Temperature-Controlled Radiofrequency Device

Monique J. Vanaman Wilson, MD,* Joanna Bolton, MD,† Isabela T. Jones, MD,‡ Douglas C. Wu, MD, PhD,§ Antoanella Calame, MD,|¶ and Mitchel P. Goldman, MD|¶

BACKGROUND Although transcutaneous temperature-controlled radiofrequency (TTCRF) may effectively treat vulvovaginal laxity (VVL), atrophic vaginitis (AV), orgasmic dysfunction (OD), and stress urinary incontinence (SUI), there is a lack of histopathologic evidence to validate its use.

OBJECTIVE Evaluate clinical and histological changes induced by vulvovaginal TTCRF.

MATERIALS AND METHODS This was a prospective, nonrandomized trial. Ten female subjects with mild-to-moderate VVL, with or without AV, OD, and/or SUI underwent 3 TTCRFs at 4-week intervals. Five subjects underwent pre- and post-treatment biopsies of the labia majora and vaginal canal for histology. Assessments were performed at baseline and Days 10, 30, 60, and 120.

RESULTS Investigator-rated VVL improved significantly from baseline to Day 10, with improvement maintained through Day 120 ($p = .001$ and .001, respectively). Sexual satisfaction improved significantly by Day 60 ($p = .001$). Improvement in AV reached significance at Day 120 ($p = .048$). Although OD and SUI improved steadily, the difference in improvement did not reach statistical significance. Histology revealed that post-treatment increases in collagen, elastin, vascularity, and small nerve fibers.

CONCLUSION Transcutaneous temperature-controlled RF resulted in significant improvements in AV, VVL, and sexual satisfaction with milder improvements in OD and SUI. Post-treatment histology demonstrated neocollagenesis, neoelastogenesis, neoangiogenesis, and the first reported finding of TTCRF-related neurogenesis.

Supported by ThermiGen LLC.

Vulvovaginal rejuvenation is an increasingly popular procedure. Aging, menopause, weight fluctuations, and childbirth create mechanical forces on the vulva and vagina, and reduce the quality of connective tissue in the area, leading to symptoms of vulvovaginal laxity (VVL), atrophic vaginitis (AV), stress urinary incontinence (SUI), and orgasmic dysfunction (OD). Although women rarely discuss these issues, they can significantly detract from quality of life. In the past, options for addressing these concerns were limited to hormonal therapies, lubricants, Kegel exercises, and traditional surgical intervention. Now, there are several laser and energy devices that can provide minimally and noninvasive vulvovaginal rejuvenation.[1]

Monopolar radiofrequency (RF) is an established modality for tissue tightening both on and off the face.[2] Radiofrequency induces collagen denaturation with subsequent contraction of fibrils, neocollagenesis, and activation of the healing cascade.[3,4] In 2010, Millheiser and colleagues[5] demonstrated the efficacy of monopolar

California Skin Institute, Sunnyvale, California; †Alliant Dermatology, The Villages, Florida; ‡McLean Dermatology and Skincare Center, McLean, Virginia; §Goldman, Butterwick, Groff, Fabi and Wu, Cosmetic Laser Dermatology, San Diego, California; ¶Compass Dermatopathology, San Diego, California; ‖Department of Dermatology, University of California, San Diego, San Diego, California

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ORIGINAL CONTRIBUTION

WILEY JCD Journal of Cosmetic Dermatology

Review and clinical experience exploring evidence, clinical efficacy, and safety regarding nonsurgical treatment of feminine rejuvenation

Michael Gold MD[1,2,3,4] | Anneke Andriessen PhD[5,6] | Alexandros Bader MD[7] | Red Alinsod MD[8] | Elizabeth Shane French[9] | Nathan Guerette MD[10] | Yegor Kolodchenko MD[11] | Michael Krychman MD[12] | Susan Murrmann MD[13] | Julene Samuels[14]

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[11]Association of Laser Medicine and Cosmetology, Cogerent Laser Clinics Group, Kyiv, Ukraine
[12]Southern California Center for Sexual Health and Survivorship Medicine Inc., Newport Beach, CA, USA
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Funding information
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Summary

Introduction: The use of energy-based devices for the treatment of vaginal laxity, orgasmic dysfunction, and stress incontinence, such as minimally ablative fractional laser and radiofrequency, is gaining momentum. This review aims to answer clinical questions on the application of energy-based devices for feminine genital rejuvenation.

Methods: The target group includes physicians involved in esthetic medicine and feminine genital rejuvenation. A literature review was conducted on technologies in use for feminine rejuvenation to explore their safety, efficacy, tolerability, patient satisfaction, and clinical usability. A panel of physicians with clinical experience conducting these types of treatment reviewed and discussed the results of the literature search and gave clinical evidence-based recommendations.

Results: Energy-based devices may induce wound healing, stimulating new collagen, and elastin fiber formation. Radiofrequency treatment may also increase small nerve fiber density in the papillary dermis, improving nerve sensitivity, sexual function, including arousal and orgasmic dysfunction. Both minimally ablative fractional laser and radiofrequency has been shown to be effective when treating mild to moderate primary or secondary vulvovaginal laxity and associated secondary conditions. These treatments are reported to be safe, effective, and well tolerated with a rapid return to activities of daily living.

Conclusions: As this is an evolving medical field, clinical evidence often lacks robustness. Studies and clinical experience suggest that feminine genital rejuvenation using energy-based devices seems an attractive option for patients with mild-to-moderate medical conditions. The treatment can be safely and effectively delivered by trained staff as part of the comprehensive care, that is, currently available to women.

KEYWORDS
CO2-based lasers, erbium:yttrium-aluminum-garnet lasers, feminine rejuvenation, radiofrequency devices

Lasers in Surgery and Medicine 49:137–159 (2017)

Light and Energy Based Therapeutics for Genitourinary Syndrome of Menopause: Consensus and Controversies

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Gynecologist and plastic surgeons pioneered the application of lasers in medicine and surgery almost 5 decades ago, initially used to treat cervical and vaginal pathologies. Ever since, energy-based devices have been deployed to treat pelvic pathologies and improve fertility. Recent technological developments triggered an unprecedented wave of publications, assessing the efficacy of fractional laser, and radiofrequency on the vaginal wall in reversing natural aging processes. Studies have shown that a certain degree of thermal energy deposited on the vaginal wall stimulates proliferation of the glycogen-enriched epithelium, neovascularization, and collagen formation in the lamina propria, and improves natural lubrication and control of urination. This review aimed to review such data and to guide future research. A unique assembly of experts from around the globe, compiled and edited this manuscript based on a thorough literature review and personal experience. Lasers Surg. Med. 49:137–159, 2017.

Key words: laser; radiofrequency; energy based device; genitourinary syndrome of menopause (GSM); vagina; vulva; rejuvenation; stress urinary incontinence (SUI); lichen sclerosus; vulvodynia

LASERS IN GYNECOLOGY: HISTORIC OVERVIEW

Almost 5 decades ago, gynecologist and plastic surgeons pioneered the integration of lasers for the ablation of diseased tissue [1]. Energy of the focused CO_2 laser beam was exploited to create incisions by tissue vaporization, while the defocused beam, featuring a lower energy density, elicited tissue contraction, and was applied to treat various cervical and vaginal pathologies [2]. In the 1970's, various lesions such as genital warts on the uterine cervix, were treated with the CO_2 laser which has since become a common treatment approach for genital warts with micromanipulators connected to colposcopes.

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[Correction added on 24 February 2017, after first online publication: The spelling of Jorge E. Gaviria's name and affiliation number were corrected.]

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INSTRUMENT REVIEW

ThermiVa: The Revolutionary Technology for Vulvovaginal Rejuvenation and Noninvasive Management of Female SUI

Navneet Magon[1] · Red Alinsod[2]

About the Reviewer

Dr Navneet Magon currently works with Indian Armed Forces, and is presently posted to the busiest hospital of Armed Forces Medical Services. Ardently involved with academics, Dr Magon has over 60 peer-reviewed publications to his credit, which includes publications in Studd's CPOG, and has contributed chapters to various postgraduate books. Dr Magon is a peer-reviewer for many national and international journals and is on the roll of honor of the World Association of Medical Editors (WAME). He is the National Corresponding Editor for the Journal of Obstetrics and Gynecology of India, the official journal of FOGSI. Awarded with the prestigious FOGSI Dr Kamini Rao Oration for year 2014 and AOFOG Dr SS Rathnam Young Gynecologist Award 2015, he is presently the National Coordinator for FOGSI Endoscopy Committee (2015–2018) as well as FOGSI Urogynecology Committee (2014–2017). An ace pelvic reconstructive and endoscopic surgeon, Dr Magon is also the President of Urogynecology and Pelvic Health Association of India.

Abstract Addressing vaginal laxity, atrophic vaginitis, stress urinary incontinence (SUI), and different manifestations of sexual dysfunction has always been problematic due to women's traditional difficulty discussing these issues with doctors as well as the societal attitude of resignation toward these conditions. The recent rise of non-invasive feminine rejuvenation using energy-based modalities to vaginal tissue has its origins in aesthetic medicine. Transcutaneous temperature-controlled radiofrequency therapy at the vulvovaginal region has shown promising results in giving a more youthful appearing vulva, restoration of vaginal elasticity and 'tightness', considerable improvement in SUI, reduction in overactive bladder symptoms, and reduction in sexual dysfunction. It is also emerging as the non-invasive treatment modality for mild to moderate SUI. It seems that the time has come, when women shall ever be grateful to their gynecologist for management of SUI with ThermiVa without an incision.

Dr Navneet Magon is a Obstetrician-Gynecologist, Endoscopic Surgeon, and Vaginal Reconstructive and Cosmetic Surgeon at Base Hospital, Delhi Cantt. Dr. Red Alinsod is a Urogynecologist and Cosmetic Vaginal Surgeon at South Coast Urogynecology, CA.

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Keywords Female sexual dysfunction · Stress urinary incontinence · Vaginal Rejuvenation · ThermiVa · Laser

Between childbirth and menopause, vagina and nearby tissues undergo numerous changes leading to a well-

Transcutaneous Temperature Controlled Radiofrequency for Atrophic Vulvovaginitis and Dyspareuni

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OBJECTIVE

To evaluate the safety, tolerability, and clinical efficacy of non-surgical transcutaneous temperature controlled radiofrequency (TTCRF) for atrophic vulvovaginitis and dyspareunia.

BACKGROUND

TTCRF brings with it numerous advantages for the treatment of skin disorders.[1] RF is an established modality for tissue tightening via stimulation of neo-collagenesis, tissue contraction, and activation of the healing cascade. This was shown in a histological study of RF in animal studies.[2] Improvement of blood flow also appears to be a key mechanism of action that results in increased neuropeptide release, vasodilitation of arterioles, and increased transudate into the vaginal canal. The specific temperatures (40-45 C) to achieve these tissue endpoints is modulated by controlling the power, in relation to tissue impedance, which raises tissue temperature in the proximity of the RF electrode.

Thermistors and thermocouples within the treatment probe provide feedback to the device, which controls power to modulate energy deposition and maximize therapeutic relevancy without causing damage and minimizing the potential for patient discomfort. Unlike laser-based treatments, skin type (color of pigmentation) is not an issue with RF energy; and while it is proven effective on surface skin of the face and other body regions, RF is even more effective in tissue that is naturally moist and well hydrated, as in the vaginal and vulvar structures.

PATIENTS

- 25 patients (age range 35-69 years, mean 54) who complained of significant atrophic vaginitis and dyspareunia
- 5 Patients had severe introital stenosis allowing only small fingertip entry
- 8 patients were being treated with hormone replacement therapy including vaginal estrogens but with unsatisfactory responses
- Exclusions: Pregnancy, chronic steroid and anti-inflammatory medication use, undiagnosed vulvar lesions, prior pelvic mesh surgery
- Methods: 3 Monthly 20 minute sessions using TTCRF handpiece both on vulva (10 min) and vagina (10 min), No anesthesia
  - Treatment Endpoints: 40-45 Celcius on tissues lasting 3-5 minutes per site of treatment
- Evaluation:
  - Patient report of symptoms resolution, Evaluation of moisture production, comfort during intercourse
  - Validated questionaires (Vaginal Laxity Questionaire, Sexual Satisfaction Questionarie, FSFI)
  - Photographic evaluation Before and After each treatment at each visit
  - No serious adverse complications. No blisters or burns.

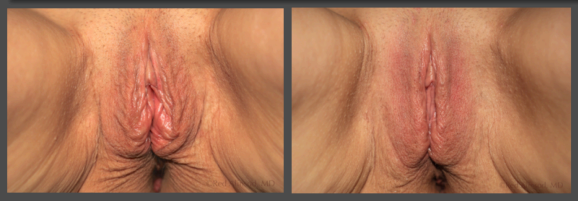

Figure 1. Before and after pictures of multiparous woman, age 59 years, complaining of severe atrophic vulvovaginitis with poor response to long term vaginal estrogens; outcome after three treatments with TTCRF included visible aesthetic improvement and complete resolution of atrophic vulvovaginitis. Dyspareunia was resolved and the patient felt significant tightening effects and increased sensitivity.

OUTCOME

- All 25 patients reported resolution of their symptoms of vulvovaginal dryness and dyspareunia.
- All showed improvement in the Sexual Satisfaction Scale (Average of 2.5 points)
- All reported elimination of lubricant use or only an occasional need for lubricants.
- Effects of treatment are lasting 9-12 months before the need for single touchup treatments.
- Of the 25 patients in the atrophic vaginitis study group, there were 12 with SUI and/or OAB symptoms. Those 12 had resolution of both symptoms without the need for pelvic floor physical therapy or Kegels exercises. Tissue tightening effects were seen externally and internally. Ongoing studies are being performed on this subset of SUI and OAB patients as well as laxity patients.
- Severe vaginal introital stenosis resolved with TTCRF treatments in 5 patients resulting in improved post treatment pliability, softness, and thickness of vaginal tissues.

Transcutaneous Temperature Controlled Radiofrequency for Overactive Bladder

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IUGA international urogynecological association
41st Annual Meeting
2 - 6 AUGUST, 2016
CAPE TOWN - SOUTH AFRICA

SOUTH COAST UROGYNECOLOGY

INTRODUCTION

Overactive bladder with and without incontinence is rising with the aging population. Most treatments involve lifestyle change, medications, neuromodulations, and more recently paralytic agents. Anticholinergic medications often have undesirable side effects. Other treatments have procedural and surgical risks. Transvaginal radio frequency treatments for vaginal tightening and atrophy have recently been introduced that have shown shrinkage of the vaginal mucosa with increased vaginal moisture. Radio frequency effects on bladder and urethral tissue at 40-45 Celsius has been shown to be safe and well tolerated.

AIM

To evaluate the safety, tolerability, and clinical efficacy of transcutaneous temperature controlled radiofrequency (TTCRF) on anterior vaginal tissue for overactive bladder.

METHOD

- 75 women, ages 21-85, with overactive bladder included in the study
- Each patient received 3 sessions at intervals of about 1 month.
- Treatment was performed using a slim S-shaped probe with a stamp-sized metal radiofrequency emitter on one surface of the tip (10 minutes total time on average).
- Full length treatment of the anterior vagina with concentration on the pubocervical fascia was performed.
- Tissue temperature during therapy was elevated to and maintained between 40 degrees C and 45 degrees C.
- No anesthesia was required.
- After treatment patients immediately resumed normal routines, including exercise and sexual activities.

RESULTS

- 68/75 (90.6%) patients overactive bladder without incontinence reported a reduction of OAB symptoms by at least one third, 33%.
- 43/75 (57%) patients with overactive bladder without incontinence reported a 50%+ reduction in OAB symptoms.
- Of these patients 24/75 (32%) completely resolved their OAB symptoms.
- Seven patient with s (9%) had more moderate symptoms reduction of 25% and less. All seven of these patients had overactive bladder with incontinence.
- All patients noticed some reduction in OAB symptoms over baseline.
- Results for nocturia were similar.

A Slim finger sized S-Shaped wand with a stamp sized metal radiorequency emitter on the back side can be used on the external vulvar structures and deep inside the vagina all the way to the apex. The entire anterior compartment is treated with emphasis on the pubocervical fascia to 40-45 degrees Celsius for approximately ten minutes to shrink tissues, increase collagen production, and increase local blood flow.

Radiofrequency emitting tip.

CONCLUSIONS

TTCRF is an effective non-pharmacologic, non-surgical option for women with overactive bladder symptoms. Treatment have a visible tightening effects on vaginal mucosa and also appears to increase local blood flow, resulting in increased vaginal tightness and moisture. Improvement of symptoms in overactive bladder without incontinence is more dramatic than with overactive bladder with incontinence.

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Curvilinear Labiaplasty and Clitoral Hood Reduction Surgery

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KEYWORDS
• Labiaplasty • Clitoral hood reduction • Radiofrequency • Barbie look • Hybrid look
• Curvilinear labiaplasty • Linear excision labiaplasty

KEY POINTS

- Curvilinear labiaplasty is an effective surgical technique with the fewest risks. It can achieve the appearance the patient desires in almost all cases.
- Labiaplasty is best done in an office setting. Local anesthesia in an awake setting without an intravenous line is exceptionally safe.
- The same basic surgical technique is performed to achieve the degree of labial reduction the patient wants.
- Clitoral hood reduction surgery is often recommended to achieve a balanced and symmetric appearance.
- Radiosurgical tools and techniques are exceptionally precise with minimal lateral heat spread.

CASE STUDY

Erica is an active 36-year-old mother of three children and an athletic trainer. For years, she has felt uncomfortable when wearing her usual workout clothes and aesthetically not pleasing. In her situation, her enlarged labias have caused discomfort and chaffing when rubbing against her clothing. This led to painful intercourse and near-constant irritation bringing her into our office for a surgical consultation. Using a curvilinear approach, we were able to correct the issue with minor recovery time.

A labiaplasty minora surgery and clitoral hood reduction is an outpatient procedure either performed under local or general anesthesia that serves to improve the aesthetic and functional quality of the vulva.[1–3] The procedure not only restores confidence and self-esteem but improves discomfort and irritation for many women. Presently, labiaplasty minora procedures are one of the most frequently performed aesthetic vaginal surgical procedures. Considering normal anatomic variations, Hodgkinson and Hait[4] defined the ideal aesthetic picture of female external genitalia as the one in which the labia minora are small and not larger than the labia majora.

The Technique Used

After years of performing labiaplasty surgery and experimenting with various styles of surgical technique, our preferred approach to performing this procedure is the curved linear technique (sometimes referred to as curvilinear excision, cutting, or amputation techniques) or elliptical excision.[2,4,5] In our opinion it is the most effective with the fewest risks. The incision runs along the length of the labia. It allows the surgeon to remove darker pigmentation often found on the edges of the labia and more accurately create the new shape of the labia as determined by the patient. However, it should be noted that the technique is

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Aesthetic gynecologic surgery

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 deepithilialized 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 cosmetic 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-epitheliazation 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.

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REVIEW ARTICLE

Female genital cosmetic surgery: a review of techniques and outcomes

Cheryl B. Iglesia · Ladin Yurteri-Kaplan · Red Alinsod

Received: 15 April 2013 / Accepted: 18 April 2013

Abstract The aesthetic and functional procedures that comprise female genital cosmetic surgery (FGCS) include traditional vaginal prolapse procedures as well as cosmetic vulvar and labial procedures. The line between cosmetic and medically indicated surgical procedures is blurred, and today many operations are performed for both purposes. The contributions of gynecologists and reconstructive pelvic surgeons are crucial in this debate. Aesthetic vaginal surgeons may unintentionally blur legitimate female pelvic floor disorders with other aesthetic conditions. In the absence of quality outcome data, the value of FGCS in improving sexual function remains uncertain. Women seeking FGCS need to be educated about the range and variation of labia widths and genital appearance, and should be evaluated for true pelvic support disorders such as pelvic organ prolapse and stress urinary incontinence. Women seeking FGCS should also be screened for psychological conditions and should act autonomously without coercion from partners or surgeons with proprietary conflicts of interest.

Keyword Female genital cosmetic surgery · Cosmetic gynecology · Vaginal rejuvenation · Labiaplasty · Vaginoplasty

Introduction

Consumer marketing and media hype have spawned the considerable controversy over female genital cosmetic surgery (FGCS). FGCS articles first appeared in North American journals in 1978, and the first technical article appeared in 1984 [1, 2]. This review describes the techniques and outcome data of labiaplasty, vaginoplasty, and other cosmetic gynecological procedures.

Female genital perceptions

Women seek FGCS for both aesthetic and functional reasons including pain with intercourse or sports, vulvar irritation, chafing, and discomfort with underwear or clothing [3]. Younger generation X women (ages 18–44) prefer pubic hair removal, which allows for easier vulvar visualization compared with older women [4]. Konig et al. found that 78 % of 482 women learned about labia minora reduction via the media and 14 % thought their own labia minora looked abnormal [5]. Indeed, many women undergoing labia minora reduction perceive their own genitalia as abnormal [6]. Feelings of embarrassment with sexual function including a strong desire to improve strained relationships are also commonly cited as reasons for FGCS [7]. Issues of vulvar dissatisfaction can start in early adolescence and have been reported in girls less than 10 [8, 9]. Michala et al. evaluated 16 girls with a mean age of 14.5 years who presented for labia minora reduction [8]. Six girls were bothered by labia minora asymmetry while 10 complained of labia minora protrusion, despite having normal labial width.

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A mini-review of aesthetic gynecology and leading gynecology associations' approaches to this issue

Estetik jinekoloji ve önde gelen jinekoloji derneklerinin konuya yaklaşımı hakkında mini derleme

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Abstract

Aesthetic gynecology has seen increasing patient and physician demand. Although this typically falls in the reign of obstetrics and gynecology, plastic surgeons and cosmetic surgeons have also developed great interest in this field. Currently, few if any obstetrics and gynecology residency or fellowship programs teach this subject matter though inroads have taken place in plastic surgery and cosmetic surgery training programs that had the foresight to include specific training in this field. Currently, many surgeons start by first training in various established certification and preceptorship programs based in the United States and the United Kingdom. New programs worldwide in 2016-2017 have also been launched to offer certification training to interested physicians in both surgical and non-surgical treatments. A steady flow of certificate programs continues to evolve in Turkey, the Middle East, Spain, and South America, as a second wave of experts emerge. We present a review of surgical and non-surgical techniques of what is presently called "aesthetic gynecology" and the approaches of prominent gynecologic societies regarding this relatively new subspecialty.
Keywords: Aesthetic gynecology, labiaplasty, vaginoplasty, rejuvenation, radiofrequency

Öz

Estetik jinekolojiye olan talep hem hastalar hem hekimler tarafından gün geçtikçe artmaktadır. Bu alan kadın hastalıkları ve doğum uzmanlarının konusu olmasına rağmen, plastik cerrahlar ve kozmetik cerrahlar da bu alana büyük ilgi göstermektedirler. Günümüzde, kadın hastalıkları ve doğum asistanlığında veya burs programlarında eğitim verilse de bu alanda spesifik eğitim vermek için oluşturulmuş plastik cerrahi ve kozmetik cerrahi eğitim programlarında da ilerleme kaydedilmiştir. Halen pek çok cerrah, ilk eğitimlerini Birleşik Devletler ve Birleşik Krallık'taki çeşitli sertifikasyon ve eğitmenlik programlarından almaktadırlar. 2016-2017 yılları arasında dünya çapında yeni programlar, cerrahi ve cerrahi olmayan prosedürlerle ilgilenen hekimlere sertifikasyon eğitimi sunmuştur. Türkiye, Orta Doğu, İspanya ve Güney Amerika'da da ikinci uzman dalgası oluşturacak sertifika programları açılmaya devam etmektedir. Bu derlemede günümüzde "estetik jinekoloji" olarak adlandırılan cerrahi ve cerrahi olmayan teknikleri ve bu nispeten yeni sayılan alt uzmanlık alanıyla ilgili önde gelen jinekoloji derneklerinin yaklaşımlarını gözden geçireceğiz.
Anahtar Kelimeler: Estetik jinekoloji, labioplasti, vajinoplasti, rejuvenasyon, radyofrekans

Introduction

Developments in both technology and fashion induce seasonal changes in the notion of beauty. The social and cultural differences among countries also play a highly significant role in this matter. Thus, one cannot give an exact description of the normal view of external genitalia. However, upon consideration of anatomic variations, Hodgkinson and Hait[(1)] defined the ideal aesthetic picture of female external genitalia as the one in which the labia minora are small and not larger than the labia majora. The Motakef classification is based on the protrusion of the labia minora that exceeds the size of the labia majora[(2)]. The Banwell classification categorizes labia according to their shape and morphologic variations[(3)]. None of the classification systems have been accepted by gynecologic or plastic surgical societies and are rarely used. Apart from medical indications such as labial hypertrophy and congenital adrenal hyperplasia, most operations are performed upon the patient's request due to a feeling of enlargement and looseness in the vagina, a desire to improve sexual function, discomfort when wearing clothes or doing fitness activities, or with an aim to increase sexual satisfaction for both herself and her partner. Regarding

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CASE REPORT

Dyspareunia and chronic pelvic pain after polypropylene mesh augmentation for transvaginal repair of anterior vaginal wall prolapse

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Abstract Synthetic mesh augmentations for pelvic floor reconstructive surgeries are increasing in usage and popularity. Many studies are focusing on the anatomical success rates of transvaginal anterior compartment repairs with synthetic mesh, with minimal attention on its postoperative complications. We present a case report on a 59-year-old postmenopausal woman who underwent an anterior repair with 6×4-cm polypropylene mesh. Postoperatively, she developed severe dyspareunia and debilitating chronic pelvic pain. The patient failed conservative medical therapy and now requests complete removal of the synthetic mesh.

Keywords Cystocele repair · Synthetic mesh · Polypropylene mesh · Dyspareunia · Chronic pelvic pain · Anterior repair

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Introduction

Synthetic meshes are being used with increasing frequency in various pelvic floor reconstructive surgeries. Building on the success of the tension-free vaginal tape sling procedure, surgeons are beginning to expand the indications for synthetic mesh applications. Larger sizes of synthetic mesh of different materials and different porosity through different surgical entry points are being used in prolapse repairs for the anterior, posterior, and apical compartments [1, 2].

There is a growing use of synthetic mesh placement in the vagina without sufficient evidence of clinical studies on patient safety for these procedures. In animal studies, Zheng et al. examined the host response of synthetic mesh placement in the rat model. Zheng states that the use of synthetic mesh augmentation for fascial defect repairs induced a strong inflammatory reaction resulting in strong scar formation and good tensile strength [3]. On the other hand, synthetic mesh also creates extensive and severe fibrosis that can possibly contribute to postoperative pain, infection, mesh erosion, dyspareunia, and chronic pelvic pain.

For the management of mild complications (e.g., small mesh erosion through the vaginal epithelium), conservative treatment with vaginal estrogen therapy alone or in combination with antibiotics may be sufficient. In the cases of larger areas of vaginal erosion of synthetic mesh, the exposed mesh can be trimmed in the office setting or, occasionally, a repeat intraoperative procedure may be necessary to undermine the vaginal epithelium and cover the exposed mesh with vaginal tissues [2]. However, for the management of more severe complications such as dyspareunia and chronic pelvic pain, the treatment options are more daunting. How do you manage a patient that presents

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CASE REPORT

Dyspareunia and chronic pelvic pain after polypropylene mesh augmentation for transvaginal repair of anterior vaginal wall prolapse

Lawrence L. Lin · Alexandra L. Haessler · Matt H. Ho · Lance H. Betson · Red M. Alinsod · Narender N. Bhatia

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Abstract Synthetic mesh augmentations for pelvic floor reconstructive surgeries are increasing in usage and popularity. Many studies are focusing on the anatomical success rates of transvaginal anterior compartment repairs with synthetic mesh, with minimal attention on its postoperative complications. We present a case report on a 59-year-old postmenopausal woman who underwent an anterior repair with 6×4-cm polypropylene mesh. Postoperatively, she developed severe dyspareunia and debilitating chronic pelvic pain. The patient failed conservative medical therapy and now requests complete removal of the synthetic mesh.

Keywords Cystocele repair · Synthetic mesh · Polypropylene mesh · Dyspareunia · Chronic pelvic pain · Anterior repair

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Introduction

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For the management of mild complications (e.g., small mesh erosion through the vaginal epithelium), conservative treatment with vaginal estrogen therapy alone or in combination with antibiotics may be sufficient. In the cases of larger areas of vaginal erosion of synthetic mesh, the exposed mesh can be trimmed in the office setting or, occasionally, a repeat intraoperative procedure may be necessary to undermine the vaginal epithelium and cover the exposed mesh with vaginal tissues [2]. However, for the management of more severe complications such as dyspareunia and chronic pelvic pain, the treatment options are more daunting. How do you manage a patient that presents

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Recent Advances in Tape Slings for Female Urinary Stress Incontinence

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Sling therapy is the enhanced surgical support of the urethra. In this article, the history of the use of slings for the surgical treatment of female urinary stress incontinence is reviewed, and the usual surgical routes for retropubic (transvaginal) or transobturator tape passage are described. The latest innovation in sling therapy is the use of minislings, which are short tape mesh implants inserted through a single vaginal incision; these slings may be placed in an office setting. Outcomes data are either lacking or suggest a considerable decrement of effectiveness of unstabilized minislings over full-length slings; however, the short-term efficacy of a stabilized, adjustable minisling is 97%. These results suggest benchmark effectiveness associated with full-length slings in a less invasive device that also has the capability of short-term adjustability.
[Rev Obstet Gynecol. *2009;2(1):46-50*]

Key words: Minisling • Urinary stress incontinence • Retropubic sling • Transvaginal tape • Subfascial or transobturator sling • Suburethral sling

Urodynamic stress incontinence (USI) is the leakage of urine through an incompetent urethra in the absence of a detrusor contraction.[1] The purest symptom of USI is urinary loss upon raising intra-abdominal pressure, as in coughing. Ten percent of middle-aged women report weekly incontinence,[2] although only 1 in 1000 women undergo curative surgery. USI may be complicated by intrinsic sphincter deficiency (ISD), detrusor overactivity or voiding disorder, or pelvic organ prolapse. USI is amenable to physical therapy and to surgery. Drug therapy to remedy a structural defect has been understandably disappointing. Bulking agents have a role in treating women with ISD, those who have

Durability and complications of an ultra lightweight transvaginal mesh in the treatment of pelvic organ prolapse

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1. Objective

To assess the anatomic durability and complications of a synthetic non-absorbable ultra lightweight mesh (Restorelle® Smartmesh®, Coloplast Corp, Minneapolis, Minnesota, USA) placed transvaginally for the treatment of pelvic organ prolapse (POP).

2. Background

Data have shown that the rate of vaginal mesh exposure may decrease with a reduction in polypropylene mesh density, without compromise in tissue support.[1,2] Mesh material with a surface density below 50-60 g/m² and a pore size larger than 1.2 mm are considered to be of low weight and high porosity.[3] Restorelle is a type I polypropylene mesh, considered to be ultra lightweight and of high porosity, as it possesses a density of 19 g/m² and a pore size between 1.6 and 2.0 mm.

3. Methods

A retrospective chart review was conducted at 3 sites in the United States. Women who received Restorelle for anterior and/or posterior prolapse at least six months prior were included in the analysis. Primary endpoint was anatomic durability assessed by the Pelvic Organ Prolapse Quantification System (POP-Q) or the Baden-Walker halfway scoring system (B-W), with success defined by POP-Q Stage <= I or B-W Grade <= I; and absence of retreatment for POP. Secondary endpoints included mesh-related complications. Exposures, dyspareunia, and pain were coded using the International Urogynecological Association (IUGA) - International Continence Society (ICS) classification system. Anatomic durability was analyzed using Kaplan-Meier curves. Complication rates and 95% Exact Confidence Intervals (CI) were based on number of mesh units placed, overall and by compartment.

4. Results

481 subjects were ≥ 180 days post implant with Restorelle. 247 had clinical follow-up at or beyond 180 days (mean 532±355 days; range 181 to 1989), comprising the sub-set of patients we chose to analyze (Cohort 1). 234 subjects had clinical follow-up < 180 days (Cohort 2). Baseline characteristics are summarized in Table 1. As the only significant differences between Cohorts were gravidity, parity, and previous hysterectomy, we would expect the groups to have similar outcomes. In Cohort 1, mesh was placed in the anterior compartment in 62 patients, posterior compartment in 68, and in both compartments in 117, for a total of 366 mesh implants (181 anterior and 185 posterior). Anterior success rate was 95.5% and posterior success rate was 97.8%. Anterior success rates for baseline stages 2, 3, and 4 were 94.5%, 96.4%, and 95.2%, respectively. Posterior success rates for baseline stages 1, 2, 3, and 4 were 100%, 97.5%, 97.8%, and 100%, respectively. Anatomic durability is shown in Figure 1. Five complications were reported among five study subjects, with 4 exhibiting exposure and 1 dyspareunia. The total mesh complication rate (5/366) was 1.4% (95% CI: 0.5%-3.2%). The anterior mesh complication rate (4/181) was 2.2% (95% CI: 0.6%-5.6%), and the posterior mesh complication rate (1/185) was 0.5% (95% CI: 0.01%-3.0%). Table 2 summarizes IUGA/ICS codes and event details, all of which were resolved. There were no reported erosions into viscus or explants.

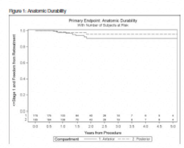
Table 1: Baseline Characteristics

	Long-term Follow-up (N=247) Cohort 1 mean ± standard deviation (N) / % (N)	Short-term Follow-up (N=234) Cohort 2 mean ± standard deviation (N) / % (N)	Wilcoxon / Chi-Square P-value
Age (years)	61.4 ± 12.4 (247)	59.5 ± 12.6 (234)	0.053
Gravidity	2.9 ± 1.7 (225)	3.6 ± 2.0 (215)	<0.001
Parity	2.5 ± 1.4 (225)	3.1 ± 1.8 (214)	0.007
Body Mass Index (BMI)	27.1 ± 5.8 (233)	27.2 ± 5.5 (196)	0.690
Height (inches)	64.2 ± 2.8 (234)	64.4 ± 2.8 (203)	0.234
Weight (lbs)	157.8 ± 30.6 (242)	160.6 ± 33.4 (211)	0.337
Previous Hysterectomy	47.8% (118)	38.5% (90)	0.039
Previous Incontinence Surgery	10.5% (26)	6.8% (16)	0.152
Previous POP Surgery	1.2% (3)	2.1% (5)	0.429
Pre-implant estrogen - Yes	45.8% (104/227)	45.5% (85/187)	0.942
Post-implant estrogen - Yes	86.6% (201/232)	86.1% (174/202)	0.880
Baseline Grading/POP-Q Staging			
Anterior Procedures	N=179	N=174	0.424
1	0% (0)	1.2% (2)	
2	40.8% (73)	39.1% (68)	
3	46.9% (84)	42.0% (73)	
4	11.7% (21)	13.8 % (24)	
Missing	0.6% (1)	4.0% (7)	
Posterior Procedures	N=185	N=189	0. 931
1	1.6% (3)	1.1% (2)	
2	42.7% (79)	40.2% (76)	
3	48.1% (89)	43.9% (83)	
4	6.5% (12)	7.4% (14)	
Missing	1.1% (2)	7.4% (14)	

Table 2: Complication Codes and Details for Mesh-Related Events

Subject	Complication Category	Pain	Compartment	Complication Code	Time to Onset	Resolution	Number of Visits
1	Exposure Vaginal: ≤ 1 cm exposure	No	Anterior	2A/T3/S1	2-12 months (132 days)	Resolved in office with mesh trim	1
2	Exposure Vaginal: ≤ 1 cm exposure	Yes, provoked on exam	Posterior	2Ab/T3/S1	2-12 months (292 days)	Resolved in office with mesh trim	1
3	De novo dyspareunia Vaginal: no epithelial separation	Yes, with intercourse	Anterior	1Bc/T3/S2	2-12 months (134 days)	Resolved with use of medical dilator	1
4	Exposure Vaginal: ≤ 1 cm exposure	No	Anterior	2A/T3/S1	2-12 months (141 days)	Treated initially with estradiol cream; resolved with mesh excision in operating room	2
5	Exposure Vaginal: ≤ 1 cm exposure	No	Anterior	2B/T3/S1	2-12 months (210 days)	Resolved with mesh trim and use of estradiol	2

Figure 1: Anatomic Durability



5. Conclusions

Ultra lightweight transvaginal mesh appears to be durable with low rates of mesh related complications.

6. References

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ADVANCES IN AESTHETIC VULVOVAGINAL SURGERY

Dr Red M. Alinsod, specialist in aesthetic vaginal surgery, discusses his experience of using Ellman's Pellevé system, and the increased precision it offers for vulvovaginal surgery

RED M. ALINSOD, MD, FACOG, FACS, ACGE, specialist in Urogynaecology and Reconstructive Pelvic Surgery and Aesthetic Vaginal Surgery at South Coast Urogynecology, Inc. and Laguna Institute for Aesthetic Vaginal Surgery in Laguna Beach, CA, US.

"Ellman's Pellevé Generator is the device of choice for any labial and revision surgery"

DUE TO THE EFFECTS of childbirth, ageing, trauma, and/or genetics, the vaginal tissue and surrounding muscles can become stretched and lose their strength and tone. Labial enlargement, unevenness, or traumatic tears from childbirth also affect the appearance of the labia which may result in discomfort with intimate contact, chronic rubbing, pulling sensation, vulva pain, and discomfort when wearing certain types of clothing, such as jeans or swimsuits.

Aesthetic vulvovaginal surgery (AVS), also called female genital cosmetic surgery (FGCS), cosmetic vaginal surgery, or cosmetic gynaecologic surgery, is an umbrella term for various surgical procedures performed to improve the appearance or function of the vulvovaginal region. Aesthetic and functional techniques include traditional vaginal prolapse procedures, as well as cosmetic vulva and labial procedures. These consist of elective minimally invasive surgeries, such as vaginoplasty (vaginal tightening techniques), perineoplasty for vaginal tightening, labia minora plasty for hypertrophic or irregularly shaped labia minora, clitoral hood reduction for an excessively large clitoral hood, labia majora plasty for enlarged or lax labia majora, or labia majora augmentation for hypotrophic labia majora.

The line between cosmetic and medically indicated procedures has become blurred, and many operations are performed for both purposes. Women seeking FGCS need to be educated about the range and variation of 'normal' labia widths and genital appearance, and should be evaluated for true pelvic support disorders such as pelvic organ prolapse and stress urinary incontinence[1].

Most patients want their prolapse repaired, and their genital area to be tighter and more attractive. The typical age of women seeking labial surgery is 20s to 30s. We also see teens who are athletic and self-conscious about the way their genital area appears in a bathing suit or shorts. There may be a genetic component and some girls will present with a predisposition to larger labia.

Women post childbirth and those who are back on the dating scene after divorce may seek vaginal tightening or require deep pelvic surgery to correct a prolapse, fallen uterus or rectum. Being able to address the functional as well as aesthetic issues in one stage offers significant advantages in terms of recovery, convenience, and costs.

Ellman's Pellevé offers versatility

The Pellevé® S5 System (Ellman International, Inc.) is a versatile radiofrequency (RF) device that can be used for both surgical and non-invasive vaginal tightening. Our practice was the first to perform and develop protocols for non-surgical labia majora laxity. Formerly, only surgery could help a patient suffering from the unsightly drop of their labia majora and loss of skin tone. Patients who had the 'camel toe' appearance or had personal discomfort issues with their labia majora are able to avoid labia majora plasty surgery with this 30-minute non-invasive labial skin tightening technique.

My philosophy is to do the most minimal surgery to get maximum results.

Therefore, we can achieve minimal damage to the tissues, with good precision, which is important especially when you are working around tender genital areas. By using the minimally invasive technique, I can perform 98% of the cosmetic work with the patient awake, without IVs, and not experiencing pain. I was the first to use the technique of dermoelectroporation (DEP) for anaesthesia. This transdermal delivery technique utilises the skin's water based channels to allow macromolecules of the anaesthetic agent to penetrate safely into the tissue so patients are totally comfortable during the procedure. We have perfected a protocol for vaginoplasty using a microtumescent local anaesthetic, without the need for invasive tubes, lines, and spinal needles. The typical labiaplasty uses only 4-7cc of local anaesthetic. My development of the pudendo-levator block in conjunction to the Lone Star APS Vaginal

Lasers in Surgery and Medicine

Safety and Efficacy of a Non-Invasive High-Intensity Focused Electromagnetic Field (HIFEM) Device for Treatment of Urinary Incontinence and Enhancement of Quality of Life

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Background and Objectives: Urinary incontinence is a common and distressing condition which interferes with everyday life. Patients frequently experience discomfort related to urine leakage and the subsequent need to use absorbent pads. Since the continence mechanism is primarily maintained by a proper function of pelvic floor muscles (PFM), many treatment methods focused on strengthening of the PFM have been introduced in the past. The aim of this study was to evaluate the safety and efficacy of a high-intensity focused electromagnetic technology (HIFEM) for treatment of urinary incontinence with emphasis on effects on prospective patients' quality of life.
Study Design/Materials and Methods: The study followed an institutional review board approved protocol. A total of 75 women (55.45 ± 12.80 years, 1.85 ± 1.28 deliveries) who showed symptoms of stress, urge, or mixed urinary incontinence were enrolled. They received six HIFEM treatments (2 per week) in duration of 28 minutes. Outcomes were evaluated after the sixth treatment and at the 3-month follow-up. The primary outcome was to assess changes in urinary incontinence by the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) and changes in the number of absorbent pads used per day. The secondary outcome was subjective evaluation of the therapy and self-reported changes in quality of life. The statistical analysis was conducted by paired *T-test* and Pearson correlation coefficient ($\alpha = 0.05$).
Results: After the sixth session, 61 out of 75 patients (81.33%) reported significant reduction of their symptoms. The average improvement of 49.93% in ICIQ-SF score was observed after the sixth treatment, which further increased to 64.42% at the follow-up (both $P < 0.001$). Individually, the highest level of improvement was reached in patients suffering from mixed urinary incontinence (69.90%). The reduction of absorbent pads averaged 43.80% after the sixth treatment and 53.68% at 3 months (both $P < 0.001$), while almost 70% of patients (30 out of 43) reported decreased number of used pads. At the follow-up, a highly significant medium correlation ($r = 0.53$, $P < 0.001$) was found between the ICIQ-SF score improvement and the reduction in pad usage. A substantial decrease in the frequency of urine leakage triggers was documented. Patients reported no pain, downtime or adverse events, and also reported additional beneficial effects of the therapy such as increased sexual desire and better urination control.
Conclusions: This study demonstrated that HIFEM technology is able to safely and effectively treat a wide range of patients suffering from urinary incontinence. After six treatments, an improvement in ICIQ-SF score and reduction in absorbent pads usage was observed. Based on subjective evaluation, these changes positively influenced quality of life. Lasers Surg. Med.
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Key words: HIFEM; pelvic floor muscles; urinary incontinence

INTRODUCTION

Urinary incontinence (UI), defined as involuntary loss of urine [1], is a chronic condition which may negatively affect quality of life (QOL). On the basis of its etiology and

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