JOJ Dermatology & Cosmetics
ISSN: 2689-4610

Research Article
Volume 6 Issue 2 -July 2024
DOI: 10.19080/JOJDC.2024.06.555683

JOJ Dermatol & Cosmet

HIFU with Oral Collagen Vs HIFU Alone in Vaginal Rejuvenation

Mohamed Ibrahim ElGhareeb[1]*, Rana Tarek Gheith[2] and Samar Ahmed Amer[3]

[1]*MD, Dermatology and Venereology, Assistant Professor of Dermatology and Venereology, Faculty of Medicine, Zagazig University, Egypt*

[2]*Master degree of Dermatology and Venereology, Dermatologist and Venereologist at Al-Ahrar Teaching Hospital in Zagazig, Egypt*

[3]*MD, Public health and community medicine. Assistant Professor of Public Health and Community Medicine, Faculty of Medicine, Zagazig university, Egypt*

Submission: July 19, 2024; **Published:** July 24, 2024

***Corresponding author:** Mohamed Ibrahim ElGhareeb, MD, Dermatology and Venereology, Assistant Professor of Dermatology and Venereology, Faculty of Medicine, Zagazig University, Egypt, Email: moh_elghareeb@yahoo.com

Abstract

Introduction: Many treatment options were tried to reach satisfactory results for patients with loose vagina in order to improve their sexual life and urinary symptoms.

Methods: 54 patients with loose vagina and impaired sexual function participated in this study. Ultrasound gel was applied to a HIFU cartridge before inserting into the patient's vagina and radiating the circumference with HIFU radiation. A group of patients was treated with HIFU alone (group I), and another group was treated with HIFU and systemic marine collagen (group II). We evaluated the patient's vaginal pressure before and after treatment with degree of patient's satisfaction regarding their sexual function and urinary symptoms.

Results: There was no significant difference between both groups regarding vaginal pressure before treatment, but there was a significant difference after treatment. The percentage of change was significantly higher in group II than group I with more improvement in sexual life and urinary symptoms in group II.

Conclusion: HIFU with oral intake of collagen resulted in significantly greater improvements in vaginal pressure compared with HIFU alone.

Keywords: HIFU; Collagen; Vaginal tightening; Sexual satisfaction; Childbirth

Abbreviation: VRS: Vaginal Relaxation Syndrome; GSM: Genitourinary Syndrome of Menopause; IRB: Institutional Review Board

Introduction

Vaginal wall laxity due to connective tissue changes is termed Vaginal Relaxation Syndrome (VRS). This occurs in women that experienced multiple pregnancies with multiple births, as well as the start of menopause [1]. Vaginal rejuvenation is defined as an energy-based treatment (ablative and non-ablative lasers, HIFU and radiofrequency devices) to improve sexual function and decrease genitourinary syndrome of menopause (GSM) symptoms in women [2,3]. HIFU causes tissue ablation through unbroken skin without damaging the surrounding tissue to the focused energy zone through thermomechanical process [4,5]. HIFU focuses on the energy of ultrasonic waves with a frequency of 2 MHz and an intensity of more than 1,000 W/cm2 to cause tissue ablation and allow collagen fibers to contract [6,7]. Systemic marine collagen helps in increasing skin/mucus membrane hydration, decreasing the formation of deep wrinkles and improving skin/mucus membrane elasticity. It is a powerful antioxidant and helps in reversing premature aging and the promotion of a youthful appearance. Systemic marine collagen with high concentration of vitamin C boosts the body's ability to naturally produce collagen [8].

Patients and Methods

This study was conducted on cases from the Department of Dermatology, Venereology, and Andrology at Zagazig University Hospitals from January 2022 to March 2022. This study was conducted on 54 volunteers with the following inclusion criteria: age >18 years, patients with loose vagina and impaired sexual life, patients with normal cell cytology (PAP smear), patients with negative urine culture, and a vestibule free of injuries and bleeding, and at least they have monthly sexual activity. Exclusion criteria were Age <18 years, virgin females, pregnant women, people using photosensitive medications, people injured or actively infected in

the treatment region, people having unexplained vaginal bleeding, or people menstruating. Every patient in the study gave informed consent. Approval by an institutional review board (IRB) for medical research ethics at Zagazig University, Faculty of Medicine, was obtained before implementation of the study (ZU-IRB 9041-4-6-2022). The studied subjects(54 females) were divided into two groups(each with 27) : Group I: treated with a single session of HIFU. Group II was treated with single session of HIFU combined with oral Ginipin®(Parkville pharmaceuticals ,Egypt) which is formed of marine collagen 8.36 gm with vitamins C and E once a day for one month.

HIFU session included insertion of vaginal cartridge in three depths (inner 1/3, middle 1/3, and outer 1/3 of the vagina) with the following parameters in each depth:

i. Parameters for inner 1/3 of vagina : intravaginal probe rotation 360°,angle 3,treatment line length 25 mm, pitch(distance between exposure zones) 1.5 mm and output power 1.20 J.

ii. Parameters for middle 1/3 of vagina : intravaginal probe rotation 360°,angle 3,treatment line length 25 mm, pitch1.5 mm and output power 1 J.

iii. Parameters for outer 1/3 of vagina : intravaginal probe rotation 360°,angle 3,treatment line length 25 mm, pitch1.5 mm and output power 1 J.

Subjective assessment of patient's sexual satisfaction before and after treatment in both groups was evaluated.

Results

By history talking ,the most common type of childbirth was vaginal delivery, which was considerably higher in group I than group II. The most common complaint was sexual, which was substantially higher in group II (100%) than group I (40.7%) (Table 1). Both groups differed significantly regarding vaginal pressure before treatment, while there was a significant difference after treatment. The percentage of change was considerably higher in group II than group I (Table 2). Considerable differences existed between the two groups in terms of sexual satisfaction after intervention, which was higher in group II than group I. Also, there was a highly significant difference regarding sexual satisfaction before and after treatment in each group that was improved after intervention (Table 3).

Table 1: Demographic, marriage and delivery data and presenting symptoms of the studied groups.

	Total 54 patients	Group I 27 patients	Group II 27 patients	P
a) Demographic data				
Age (y) (Mean ± SD)	36.3 ± 6.7 (27 - 52)	34.5 ± 5.5 27 - 50	37.1 ± 7.3 30 - 52	0.09
DM	4 (7.4%)	2 (7.4 %)	2 (7.4 %)	1
b) Marriage , and delivery data				
Marriage duration (y) Median (Mean ± SD) Range	10 (11.3 ± 5.5) (2 – 28)	10 (11.2 ± 5.5) (2 - 28)	10 (12 ± 5.6) (6 - 20)	0.69
Number of Normal Vaginal delivery Median (Mean ± SD) Range	40 2 (2 ± 1.5) (0 - 5)	36 2 (2.2 ± 1.4) (0 - 5)	4 1 (1.0 ± 1.6) (0 - 2)	0.04
Number of Cesarean Section Median (Mean ± SD) Range	18 0 (0.7 ± 1.1) (0 - 3)	8 0(0.86 ± 1.3) (0 - 2)	10 0 (0.45 ± 0.76) (0 - 2)	0.09
Median of Duration since last delivery (Mean ± SD) Range	7 7.8 ± 5.5 (6 – 20)	5 (5.7 ± 4.5) (6 - 19)	10.2 (10.0 ± 5.6) (9 - 20)	0.01
Regular sexual intercourse (at least they have monthly sexual activity)	51 (94.4%)	27 (100%)	24 (88.9%)	0.02
c) Presenting symptoms				
Urinary Incontinence	25 (46.3%)	15 (55.5%)	10 (37%)	0.82
Impaied Sexual life	38 (70.4%)	11(40.7%)	27 (100%)	0.05

How to cite this article: ElGhareeb MI, Gheith RT, and Amer SA. HIFU with Oral Collagen Vs HIFU Alone in Vaginal Rejuvenation. JOJ Dermatol & Cosmet. 2024; 6(2): 555683. DOI: 10.19080/JOJDC.2024.06.555683

Table 2: Vaginal pressure before and after intervention.

	Group I	Group II	p
Before	692.7±94.0	649.0±71.4	0.06
	560-888	520-800	
After	591.2±97.5	537.5±62.9	0.02
	425-790	436-675	
% of change	-16.6	-18.6	0.007
	-14.6±8.8	-16.8±8.5	
	0/-30%	0/-33%	

Table 3: Sexual satisfaction before and after intervention.

	Group I	Group II	p
Satisfied (before)	0 (0%)	0 (0%)	1
Satisfied (after)	24 (88.9%)	26 (96.3)	0.03
p	>0.001	>0.001	

Discussion

HIFU delivers high-intensity ultrasonic waves to deep subcutaneous tissue, generating sufficient heat to vaporize adipose tissue and thermally alter collagen. HIFU generates localized thermal damage zones in the superficial and deep dermis. Acoustic energy heating causes tissue necrosis which is followed by tissue healing with activation of fibroblasts and an increase of basic fibroblast growth factor which leads to neoangiogenesis and neocollagenesis effect with tissue contraction [9]. VRS is mostly associated with a decrease in a patient's quality of life. Treatment options for VRS started from non-invasive medical therapy to more invasive surgical treatment [10,11]. It is known that there is an inverse relationship between vaginal wall tone (vaginal wall contraction) and intraluminal vaginal pressure [12].

Our study indicates that a single session of HIFU is adequate for lowering vaginal pressure and improving vaginal flexibility. Our results go with Kolczewski et al, 2022 who found that marvelous improvement in vaginal health after HIFU treatment .They considered two vaginal treatment sessions with 6 weeks interval [13]. Our study states that single HIFU session with our proposed treatment parameters is efficient in improving vaginal laxity. Major components of the vaginal epithelium and endopelvic fascia are type I and type III collagens. Collagen is an essential component contributing to the lamina propria's dynamic structural changes [14]. In the present study, using collagen supplements with HIFU led to a greater decrease in vaginal pressure and better outcomes.

To our knowledge, no previous studies have investigated the effect of HIFU and collagen supplementation on vaginal rejuvenation.

Conclusion

HIFU combined with collagen intake resulted in significantly greater improvements in vaginal pressure than HIFU alone as well as improvements in sexual function.

References

1. Gaviria J, Korosec B, Fernandez J, Geramel M (2016) Up to 3-year follow-up of patients with vaginal relaxation syndrome participating in laser vaginal tightening. J Laser Heal Acad 1: 6-11.
2. Vanaman M, Bolton J, Placik O, Sabrina GF (2016) Emerging trends in nonsurgical female genital rejuvenation. Dermatol Surg 42(9): 1019-1029.
3. Gold M, Andriessen A, Bader A, Red A, Elizabeth Shane F, et al. (2018) Review and clinical experience exploring evidence, clinical efficacy, and safety regarding nonsurgical treatment of feminine rejuvenation. J Cosmet Dermatol 17(3): 289-297.
4. Fritz K, Salavastru C (2016) Ways of noninvasive facial skin tightening and fat reduction. Facial Plastic Surg 32(3): 276-282.
5. Izadifar Z, Izadifar Z, Chapman D, Paul B (2020) An introduction to high intensity focused ultrasound: systematic review on principles, devices, and clinical applications. J Clin Med 9(2): 460.
6. Borelli SS, Borsato MFL, Braga BB (2018) Ultrasound for Lipolysis. In :Issa M, Tamura B (eds) Lasers, Lights and Other Technologies. Clinical Approaches and Procedures in Cosmetic Dermatology. Springer, Cham pp. 405-410.
7. Haar GT, Coussios C (2007) High-intensity focused ultrasound: physical principles and devices. Int J Hyperthermia 23: 89-104.
8. Wang JV, Schoenberg E, Saedi N, Omar I (2020) Platelet-rich plasma, collagen peptides, and stem cells for cutaneous rejuvenation. J Clin Aesthetic Dermatol 13(1): 44.
9. Ikeda T, Yoshizawa S, Tosaki M, John S Allen, Shu Takagi, et al. (2006) Cloud cavitation control for lithotripsy using high intensity focused ultrasound. Ultrasound Med Biol 32(9): 1383-1397.
10. Fruehauf JH, Back W, Eiermann A, Michael-Christian L, Martin P, et al. (2008) High-intensity focused ultrasound for the targeted destruction of uterine tissues: experiences from a pilot study using a mobile HIFU unit. Arch Gynecol Obstet 277(2): 143-150.
11. Gaviria J, Lanz J (2012) Laser Vaginal Tightening (LVT) - evaluation of a novel noninvasive laser treatment for vaginal relaxation syndrome. J Laser Heal Acad 1: 59-66.
12. Clark GL, Pokutta-Paskaleva AP, Lawrence DJ, et al. (2019) Smooth muscle regional contribution to vaginal wall function. Interface Focus 9: 20190025.

How to cite this article: ElGhareeb MI, Gheith RT, and Amer SA. HIFU with Oral Collagen Vs HIFU Alone in Vaginal Rejuvenation. JOJ Dermatol & Cosmet. 2024; 6(2): 555683. DOI: 10.19080/JOJDC.2024.06.555683

13. Kolczewski P, Kozlowski M, Cymbailk-Ploska A (2022) Micro-Focused Ultrasound Therapy in Patients with Urogenital Atrophy and Vaginal Laxity. J Clin Med 11(23): 6980.

14. De Landsheere L, Brieu M, Blacher S, Carine Munaut, Betty N, et al. (2016) Elastin density: Link between histological and biomechanical properties of vaginal tissue in women with pelvic organ prolapse. Int Urogynecol J 27(4): 629-635.

DOI: 10.19080/JOJDC.2024.06.555683

How to cite this article: ElGhareeb MI, Gheith RT, and Amer SA. HIFU with Oral Collagen Vs HIFU Alone in Vaginal Rejuvenation. JOJ Dermatol & Cosmet. 2024; 6(2): 555683. DOI: 10.19080/JOJDC.2024.06.555683