

Laser sessions with perineoplasty for increase sexual satisfaction

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After vaginal delivery and improper episiotomy suturing about 40% of women complaint from wide vagina and defect in pelvic support which will lead to loss of satisfaction in sexual relationship with the partner. In recent years many different methods were used for solve the complaint for many of these ladies of wide vagina and loss of satisfaction in their sexual relationship, which was either surgical or non-surgical ways.

The objective: to confirm that the fractional CO₂ laser was emergency noninvasive modalities to solve problem with or without simple perineoplasty could be needed to restore pelvic support and improve sexual function of women.

Materials and methods: 101 women took part in this prospective study. All women were old from 22 to 45 years. The degree of vaginal laxity severity was evaluated by vaginal examination in each patient. Perineal length, vaginal orifice length were measured and female sexual function index questionnaire was used to assess sexual satisfaction score.

The women had different degree of vaginal laxity and underwent fractional CO₂ laser from 2 to 3 sessions with or without simple perineoplasty and follow up them for gain vaginal tightness and improvement of their sexual function.

Results. There was significant correlation between increase body mass index and parity with decrease sexual function of the women as the P values equal to 0.0001 and 0.029 consequently. Regarding the anatomical variation of the genital tract that occurs to women before and after doing the laser sessions and simple perineoplasty, our study show very significant correlation between partner satisfaction and anatomical variation were P value equal the following consequently 0.003, 0.035 and 0.57.

Conclusion. The degree of vaginal laxity should be clinically evaluated and accordingly the use of only fractional CO₂ laser with or without simple surgical perineoplasty to achieve vaginal tightness and improve in sexual function.

Keywords: fractional CO₂ laser, vaginal laxity, perineoplasty, sexual function.

Лазерна корекція у поєднанні з перинеопластиком для підвищення сексуального задоволення T. A. Azeez, D. M. Abdulrahman, H. N. Saeed, M. J. Salim, O. I. Al-Mashhadani, B. A. L. Al-Rubaii

Після вагінальних пологів і неправильного ушивання епісіотомії близько 40% жінок скаржаться на широку піхву і відсутність ефекту підтримки тазових м'язів, що призводить до втрати задоволення від сексуальних стосунків з партнером. Останніми роками для вирішення проблем багатьох жінок зі скаргами на широку піхву та втрату задоволення від сексуальних стосунків було використано різні методи – хірургічні або нехірургічні.

Мета дослідження: підтвердження того, що застосування фракційного CO₂-лазера є екстремним неінвазивним способом вирішення проблеми з або без простої перинеопластики, щоб відновити підтримку м'язів таза та покращити сексуальну функцію жінок.

Матеріали та методи. У проспективному дослідженні взяла участь 101 жінка. Усі жінки були віком від 22 до 45 років. Ступінь вираженості в'ялості піхви оцінювали під час вагінального дослідження у кожної пацієнтки. Вимірювали довжину промежини, довжину вагінального отвору та використовували анкету індексу жіночої сексуальної функції для оцінювання сексуального задоволення.

Жінки мали різний ступінь вагінальної слабкості, і їм застосували фракційний CO₂-лазер від 2 до 3 сеансів із простою перинеопластиком або без неї. Проведено оцінювання збільшення вагінальної герметичності та покращення сексуальної функції пацієнток.

Результати. Існувала значуща кореляція між збільшенням індексу маси тіла і паритетом зі зниженням статевої функції жінок, оскільки значення P дорівнювали 0,0001 і 0,029 відповідно. Стосовно анатомічних змін статевих шляхів, які виникають у жінок до та після проведення лазерних сеансів і простої перинеопластики, це дослідження демонструє дуже значну кореляцію між задоволеністю партнера та анатомічними змінами, якщо значення P дорівнювало 0,003, 0,035 та 0,57.

Висновки. Слід клінічно оцінити ступінь вагінальної слабкості та відповідно використовувати лише фракційний CO₂-лазер з або без простої хірургічної перинеопластики для досягнення вагінальної герметичності та покращення статевої функції.

Ключові слова: фракційний CO₂-лазер, в'ялість піхви, перинеопластика, статеві функції.

Vaginal laxity is the common aging related complaint of women. Many risk factors such as aging process, conceiving, the mode of woman delivery, increase in weight, psychological and physical distress and those related to estrogen deficiency like after menopause are appear to be the most important reasons for vaginal wall laxity [1, 2]. The

relation between development of vaginal laxity and vaginal delivery is still not well evident but, loss of sensation is common women complaint after vaginal delivery as the vaginal birth cause trauma to levator ani muscle and pelvic floor [3].

As a vaginal birth cause increase diameter of the hiatus of the levator ani muscle [4, 5], which will result in

vaginal laxity and end result will decrease friction during intercourse so as a result will decrease sexual satisfaction [6]. The vaginal laxity not only due to physical widening of perineum effect on sexual satisfaction [7], but also they are lead to decrease in sexual desire, confidence and orgasm experience which in end effect on confident for both female and their partner [1, 2], which will lead to decrease in the female sexual function index (FSFI) [8].

Although 48% of women complaint from vaginal laxity after vaginal birth, but 62% of women hiding this complaint despite 50% show improve in sexual satisfaction after vaginal tightness [9]. Therapeutic options available for those complaining women ranging from slightly effective method which is Kegel exercise and topical or systemic hormone replacement which had poor outcome due to low persistence and compliance versus the most effective surgical or non-surgical methods which were increase the incidence of them in last years in about 220% which was in 25% of them are plastic surgeons practiced [10]. Those surgical and non-surgical methods include vaginal plastic surgery and vaginal rejuvenation which are very effective in for the fix the vaginal widening caused by vaginal delivery, progressing in age and estrogen loss by aging process [9].

In last two decades surgical method such as vaginoplasty and perineoplasty they not only used for repair wound after vaginal birth and prevent vaginal laxity and also used for aesthetic purpose [11]. The use of energy based device such as CO2 laser as non-surgical method for fixing the vaginal laxity after vaginal birth become very common and popular in medical field, although the U.S. Food and Drug Administration (FDA) till now not improve their safety and effectiveness in this issue yet [12], but recent studies showed that CO2 laser was very beneficial method in effective healing with very short time if use for the very sensitive tissue of vagina [13].

According to the histological studies CO2 laser appear to be very effective in restore the physiological integrity of vaginal tissues [14]. Those results obtained according to subjective approach of woman and physician by using FSFI and the vaginal health index score (VHIS) [15–17].

Fractional CO2 laser was last few years become very popular using in aesthetic and dermatological purpose for mucous membrane and skin defects related to aging process and scars, as the laser mid-infrared visible light spectrum energy acting by stimulate both of collagen and elastin straining and neocollagenesis in addition to neovascularization of the lower genital tract of female by making them more lubricant and revitalized so improve in their elasticity and hydration, and restore normal vaginal PH level [18].

The factors influence the effectiveness of CO2 laser include density and the length of laser wave, in addition to diameter and duration of the laser pulse and also to the blood supply and hydration of devitalized tissue and the amount of fatty tissue available, for the best results the laser should be done in 2–3 session, each session last from 10 to 20 minutes, 4–6 weeks between session and other [19]. As a CO2 laser designed for maximal thermolysis of the skin sometimes women report only local heat sensation and not needing to use any anesthetic drugs only apply local anesthesia so the women can resumed normal daily activity early [20]. In our study, the objective to find the

degree of vaginal laxity of women, as those women has different degree of severity of vaginal laxity, different ways of management and vaginal rejuvenation for those women to meet their medical requirement.

MATERIALS AND METHODS

A prospective study on 101 women from 22 to 45 years old and with different degree of vaginal laxity and sexual non satisfaction for a period of 6 months from July 2020 till January 2021. The study was conducted in the vaginal rejuvenation clinics in Mosul city and Erbil private clinic and all the women signed informed consent forms. Inclusion criteria include women in their reproductive period with history of vaginal laxity after one or more vaginal birth and agree to enroll in our study. Exclusion criteria include post-menopausal women, women with severe pelvic prolapse or severe urinary incontinence or undergone previous urological operation, and also pregnant women and women refuse to participate in our study.

The degree of vaginal laxity severity was evaluated by vaginal examination in each patient. Perineal length, vaginal orifice length where measured and FSFI questionnaire was explained in detail to them to assess their sexual satisfaction score figure 1. Each patient underwent 2 to 3 fractional CO2 laser sessions 4 to 6 weeks apart, followed by simple perineoplasty under local anesthetic infusion.

Treatment of the vaginal canal was performed by square pattern of fractionated CO2 gynecological Mode with density of 4–5%, and energy level of 15–40 mJ, Model SK eily producer, China source. The speculum cage was introduced into the introitus, and the handpiece was inserted in to the vagina through the introitus (up to 11 cm in the vaginal canal). The handpiece was applied in a manner that keep it with contact to the vaginal wall and pulses were applied then the hand piece rotated 45°–90° and apply pulses until 4–8 pulses were applied, then the hand piece retracted 1cm and energy increased 5 mJ and start giving pulses and rotate the hand piece as previously and retract another 1 cm and increase the energy another 5 mJ and giving pulse and rotate until reaching the introitus with maximum power of 40 mJ.

The procedure was performed in the outpatient clinic and did not require analgesia/anesthesia. Patients were recommended to avoid coital sexual activity and tampon use for at least 5 days after each treatment session. Perineoplasty done under local anesthesia for cosmetic reason. This procedure is ideal for patients with complaints of vaginal laxity, and who are interested in sexual function. Patients followed up after 2 weeks to check for any early complication like infection and then followed 6 months after for final checking. Side effects and complications with pelvic examination to reassess vaginal laxity, perineal length and vaginal orifice length and the Female sexual function index score was recorded to the patients and then results collected.

All the results which collected from our study and by use of statistical equation to calculate the mean and standard deviation (SD). ANOVA was used to determine the probability of significant differences and a P value <0.05 was considered to be statistically significant. Chi-squared and t-tests for the data were used to compare the improvement in sexual satisfaction and different parameters enrolled in study wither anatomical or psychological.

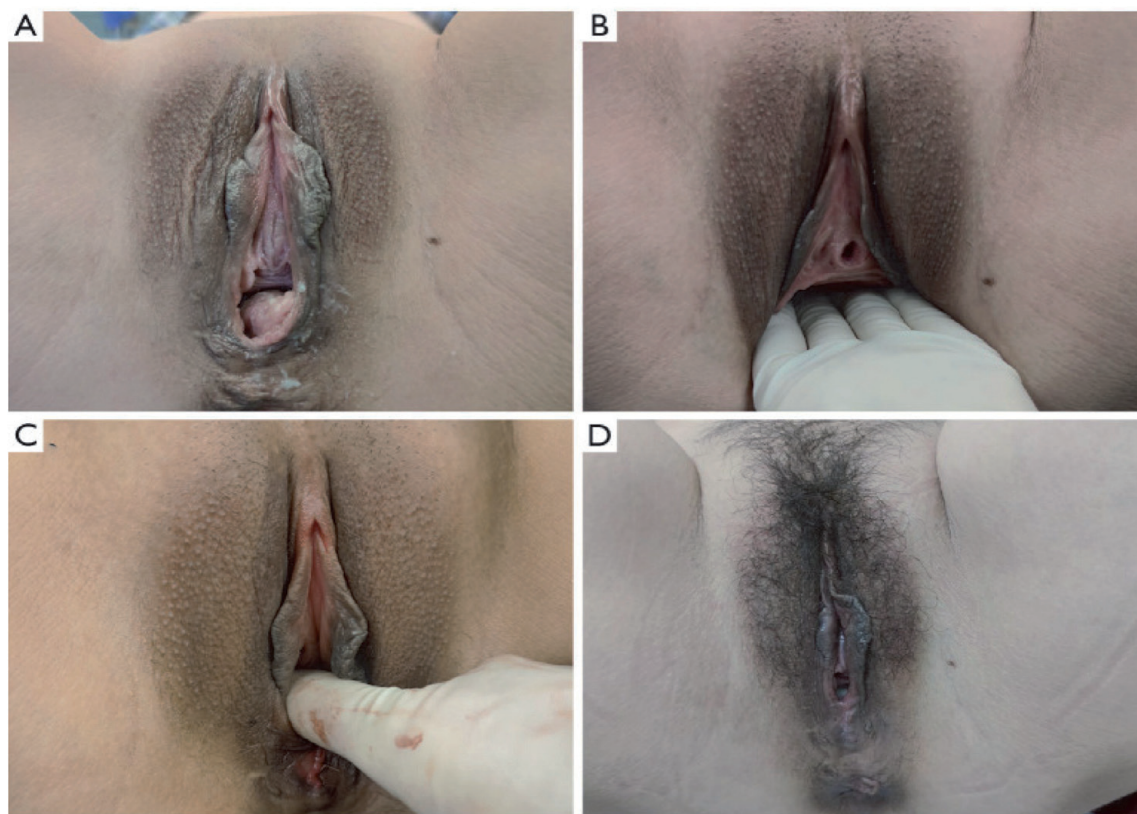


Figure 1 [21]: A 35 years old lady complaint from severe degree of vaginal laxity after vaginal birth and treated by surgical operation (A) The condition of vagina before any interference, (B) four fingers of the examiner can be introduce to the vagina easily, (C) after surgery only one finger of the same examiner can be introduce in the vagina. (D) The same lady after 3 months of surgery

RESULTS AND DISCUSSION

More than 100 women enrolled in our study, which show different degree of vaginal laxity and decrease in sexual falsification as herself or her partner. In our study we compare the different parameter in the women which include their age, body mass index (BMI) and number of their children (parity) and their effect in sexual satisfaction of their partner which show that only the age had no effect in sexual function of the woman as there was not significant different in sexual function when compare to different age of women which was from 22 to 45 years old as the P value equal to 0.46, but if compare the sexual partner satisfaction with BMI and parity it appear significantly different as the P values equal 0.0001 and 0.029 consequently as show in table 1.

Regarding the anatomical variation of the genital tract that occurs to women after doing the laser sessions and simple perineoplasty, our study show very significant correlation between partner satisfaction and anatomical variation due to management option that we done (laser with or without perineoplasty) by vaginal length and hiatus length of genital tract only but not for perineal length which were P value equal the following consequently 0.003, 0.035 and 0.57 as in table 2.

Regarding to the women desire for needing of this management options (laser with or without perineoplasty) on anatomical variable parameters it was show significant different between anatomical variation and women

recommendation for this management options by using chi- squared test as show in table 3.

On the other hand the psychological variation which include (feeling of dyspareunia and narrow vagina) which occurs to women after laser sessions and perineoplasty operation and partner sexual satisfaction our study show only

Table 1
Effect of the AGE, BMI and parity on partner satisfaction (mean±sd)

Factors	Partner satisfaction	Significant
Age (years)		
≤ 30	95.40 + 4.44	0.46
31-40	95.04 + 4.00	
> 40	93.68 + 6.84	
BMI (kg/m ²)		
< 25	95.98 + 3.81	< 0.0001
26-30	94.72 + 4.18	
≥30	83.75 + 7.50	
Parity		
1-3	96.17 + 4.41	0.029
4-6	93.80 + 5.03	
7-10	93.33 + 3.89	

Table 2

Effect of anatomical variation on partner satisfaction (mean±sd)

Anatomical variation	Partner satisfaction	Significant
Perineal length (cm)		
0.5–1.0	95.50±4.34	0.57
1.1–1.5	94.18±6.05	
1.6–2.0	94.61±3.83	
> 2.0	93.40±3.13	
Vaginal length (cm)		
> 7.2	95.95±2.55	0.003
7.3–8.0	84.95±4.78	
8.1–8.9	85.33±9.24	
9.0 <	95.00±4.51	
Hiatus length (cm)		
4.0–4.9	90.00±0.00	0.035
5.0–5.9	94.54±5.15	
6.0–6.9	95.12±4.52	
7.0–7.9	96.18±3.79	

Table 3

Relation between anatomical variation and recommendation of operation

Anatomical variation	If recommend the operation	Chi ²	Significant
Perineal length (cm)			
0.5–1.0	49.5%	42.88	0.001
1.1–1.5	27.72%		
1.6–2.0	17.83%		
> 2.0	4.95%		
Vaginal length (cm)			
> 7.2	18.81%	37.26	0.001
7.3–8.0	38.61%		
8.1–8.9	2.97%		
9.0 <	39.60%		
Hiatus length (cm)			
4.0–4.9	1.98%	57.61	0.001
5.0–5.9	45.54%		
6.0–6.9	41.58%		
7.0–7.9	10.89%		

dyspareunia was significantly different before and after the management options as its P value equal 0.02, but when the patients explain the percentage of narrowing feeling which was not significant as the P value 0.07 as shown in table 4.

While the psychological changes and recommendation of operation or laser sessions our study show very high significant correlation on psychological parameter and recommendation of management as the P value equal to 0.0001 for both (dyspareunia and percentage of achieve narrow vagina) as showed in table 5.

Our study concentrate on the effects of laser sessions on sexual function by using FSFI and it was very high significant effect of laser on sexual function of both women and their partners as the P value appear less than 0.05 as shown in table 6.

Vaginal rejuvenation from surgical viewpoint include different degree of colporrhaphy, on our study we only

done simple perineoplasty which involve surgical removal of triangular shape of skin tissue from the perineum above the anus to achieve vaginal introitus tightness and rebuilding perineal body under local anesthesia. In a study done by Padro et al, which involve 53 women all of them complaint from different degree of vaginal laxity, then colporrhaphy were done to them in order to achieve vaginal tightness and improve sexual satisfaction and improve reach of orgasm. In almost all women perineoplasty which include paravaginal stiches was done and fascia separation by use of CO2 laser.

At the end this procedure the vaginal diameter was decrease and lower two third of vagina achieved tightness and only two fingers can insert. Before surgery the women not only seeking for vaginal tightness also seek their partner to feel vaginal tightness to improve self-confidence and sexual satisfaction. The authors follow up the women after 6 months of surgery, 66% of them reveal excellent improvement of sex-

Table 4

Effect of psychological variation on partner satisfaction (mean±sd)

Psychological variation	Partner satisfaction	Significant
Dyspareunia		
Yes	100.00±0.00	0.02
Mild	90.00±8.94	
No	95.13±4.24	
Success to narrow vagina %		
< 70	93.75±2.50	0.07
71–80	93.29±6.58	
81–90	93.15±4.22	
> 90	95.84±4.34	

Table 5

Psychological variation if recommendation for operation

Psychological variation	If recommend the operation	Chi ²	Significant
Dyspareunia			
Yes	0.99%	162.55	0.0001
Mild	5.94%		
No	93.07%		
Achieve narrow vagina %			
< 70	3.96%	80.42	0.0001
71–80	13.86%		
81–90	19.80%		
> 90	62.38%		

Table 6

Effect of laser operation on sexual function

Variable	Operation	Mean	SD	t	Significant
desire	before	2.06	2.849	3.557	0.000
	after	3.10	0.714		
arousal	before	1.89	2.362	3.422	0.001
	after	3.18	2.951		
orgasm	before	1.18	2.032	4.713	0.000
	after	3.26	3.941		
pain	before	0.31	1.134	1.500	0.135
	after	0.54	1.082		
satisfaction	before	1.28	1.484	13.952	0.000
	after	3.50	0.610		
lubricant	before	1.32	0.720	16.104	0.000
	after	2.74	0.523		

ual life, 24% had significant improvement, and only 10% had no or only slight improvement. During operation there were no reported complications and after operation only few cases complaint from surgical wound dehiscence [22].

While a study done by Abedi et al, enrolled women had sexual dysfunction due to vaginal laxity. On this study vaginal tightness achieve by performing vertical incision to the vaginal introitus to expose rectovaginal and levator ani muscle and adequate amount of extra tissue removed. Following up these women after 6 months done sexual satisfaction after operation was noticed but increase incidence of dyspareunia, and vaginal dryness were common complication noticed make limitation in use this surgical intervention [23]. A huge multicenter cross-sectional study of FGCS where include 341 women with the complaint of vaginal laxity of different degree, 47 of them perineoplasty done to them and showed high degree of satisfaction regarding to vaginal tightness and sexual function including them and their partner [24].

Salvatore et al investigated 77 postmenopausal women complaint from vaginal laxity and atrophy as aging process and also unsatisfactory sexual function, after 12 weeks of use CO2 laser they showed very significant improvement

in the FSFI total score and domain scores (ie, desire, arousal, lubrication, pain, orgasm, satisfaction) [25]. The improvement occurs due to the effect of fractional CO2 laser on female had complain of vaginal atrophy it was recently evaluated by Filippini et al, in 386 postmenopausal women. In menopausal women by the effect of deficient estrogenic effect on vagina cause dyspareunia and discomfort. CO₂ laser was excellent on restore vaginal connective tissue and water content with simple surgical correction lead to treat vaginal epithelium and relieve annoying symptoms such as dyspareunia and vaginal atrophy [26].

A study of Ostrzenski A. introduce another method for treating vaginal laxity by use of fractional CO2 laser, he first explain that vaginal laxity due to loss of vaginal rugation as a result of lack of estrogen as aging process, so loss of feeling of penile friction during intercourse. The healing method include by using fractional CO2 laser from 8- 10 W focus on continuous mode on vaginal surface rugosa where the vaporization was between 2 and 5 mm in width, and this vaporization should be end when reach to the level of endopelvic fascia. A 10 women participated in this study show improvement in their sexual function and there was no any complication reported [27].

CONCLUSIONS

Laser vaginal rejuvenation is usually preferred way as non-invasive conservative surgical technique to improve sexual function caused by vaginal laxity of different degree, which is very effective and no mention complication. It is highly recommended for women which complaint from dyspareunia and fibrosis of vaginal mucosa due to improper episiotomy and non-successful vaginal perineoplasty procedure, as well as altered sexual satisfaction as hormonal deficiency and aging process cause vaginal atrophy.

As our research shows that the vaginal rejuvenation could be the solve of the women complaining from vaginal laxity whether caused by vaginal birth or aging process and according to the degree of laxity, as if the vaginal laxity of moderate to severe degree simple surgical perineoplasty with fractional CO2 laser were the best treatment modality, but if the laxity of only mild degree non-surgical CO2 laser was enough for this women for increase vaginal tightness and improve in partner sexual satisfaction and sexual function.

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Стаття надійшла до редакції 12.09.2023. – Дата першого рішення 19.09.2023. – Стаття подана до друку 25.10.2023