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Effectiveness of selective vaginal tightening on sexual function among reproductive aged women in Iran with vaginal laxity: A quasi-experimental study

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Abstract

Aim: Sexuality is an important part of women's health, quality of life and general well-being. Vaginal laxity may cause sexual dissatisfaction thereby causing some women to demand vaginal tightening surgeries. This study aimed to evaluate the sexual function preoperative and 6 months after selective vaginal tightening in women of reproductive age in Iran with vaginal laxity.

Methods: A quasi-experimental study was carried out on 79 women with vaginal laxity. All the women were requested to complete the questionnaire, which contained sociodemographic and Female Sexual Function Index (FSFI) questions preoperatively and 6 months after vaginal tightening. Data were analyzed using a paired Student's *t*-test, Wilcoxon rank sum test and Mann–Whitney *U*-test.

Results: The mean age of participants was 34.02 ± 5.30 years. The average total FSFI score increased from 24.19 ± 3.09 to 26.92 ± 3.41 ($P < 0.001$) after surgery. The scores for libido, arousal, orgasm and satisfaction domain were significantly improved, but a high level of dyspareunia and low vaginal lubrication were noted ($P < 0.001$).

Conclusion: Sexual function was improved 6 months after vaginal tightening. This indicates that elective vaginal tightening had a positive effect on the sexual function in women. However, the increase in dyspareunia and decrease in lubrication may limit the application of this type of surgery. Further studies with longer follow-up are required to verify the long-term results of vaginal tightening.

Key words: reproductive age, selective, sexual dysfunction, vaginal tightening, women.

Introduction

Depending on the age, sexual dysfunction including decreased libido, vaginal dryness, inability to achieve orgasm and dyspareunia are common with up to 40% of women suffering from these disorders.[1] Pelvic relaxation usually results from a combination of factors including multiple pregnancies and vaginal deliveries, menopause (atrophy), hysterectomy, aging, weight gain and any condition associated with a chronic increase in abdominal pressure.[2] Pelvic organ relaxation or prolapse may result from the process of childbirth. Coexistent damage to the innervations of the pelvic floor musculature may contribute to the

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weakening of the levator muscles and perineal descent.[3] Vaginal birth may cause pelvic relaxation and sexual dysfunction. Studies showed that some women after childbirth may not reach their normal pre-pregnancy sexual level.[4]

Vaginal tightening is mostly elective repair, which is performed for vaginal defects, for example, vaginal laxity. It is argued that the repair, by restoring the normal vaginal axis in asymptomatic patients, may reduce the risk of a subsequent prolapse. The current publications do not show any objective data to support this.

In a study by Goodman *et al*., the results showed that approximately 90% of patients cited aesthetic reasons for their elective surgery and they wanted to obtain a more subjectively aesthetic pleasing appearance without having any real complaints about genitalia disorders. They also found that women noted significant subjective enhancement in sexual function for themselves and their partners, especially in women who underwent vaginal tightening/perineal support procedures ($P = 0.007$).[5]

Although there is little data on the actual number of procedures performed, there is evidence that an increasing number of women are undergoing vaginoplasty, labiaplasty and other genital cosmetic surgeries. In the last 5 years,[6] labial reduction procedures performed in the UK has doubled. The American Society of Plastic Surgeons reported that in 2005 (the first year data was collected), 793 vaginal rejuvenation procedures were performed in the USA, and, by 2006, the number had increased to 1030.[7] Of note, for 2007 and 2008, vaginal rejuvenation was removed from the list of reported procedures.[8] To date, there is no evidence that these surgeries do improve women's sexual health. In fact, surgery in this area of the body may decrease women's sexual pleasure.[9] Genital surgery has been shown to decrease clitoral sensitivity, decrease enjoyment of being caressed and cause difficulty in achieving orgasm.[9] The long-term effects of cosmetic genital procedures on sensation, orgasm and overall sexual function are not known.

Some research has shown that sexual dysfunction is quite high in Iran.[10] To the best of the researchers' knowledge, there are no studies that focus on sexual function as a result of selective vaginal tightening in women in Iran with vaginal laxity. Although we do not have the exact statistics about vaginal tightening, according to the researchers' experience, in Iran, the demand for this surgery, especially due to sexual function, is quite high. This study aimed to evaluate the effect of selective vaginal tightening on sexual function in women of reproductive age with vaginal laxity in Iran.

Methods

This was a quasi-experimental study in which 86 women who were candidates for selective vaginal tightening and who had inclusion and exclusion criteria were recruited non-randomly. This study was conducted in the educational hospital of Paymanieh in Jahrome, Iran, which is located in the south of Iran. The study commenced in May 2011 and was completed in March 2012. The formula $n = \left(z_{1-\frac{\alpha}{2}} + z_{1-\frac{\beta}{2}}\right) 2\left(s_1^2 + s_2^2\right) \Big/ (x_1 - x_2)^2$ was utilized for calculation of the sample size, in which the power of study considered was 90% and the confidence interval considered was 95%. According to the formula, the sample size was 64, and, by adding 13% for drop-outs, the sample size was increased to 86.

The inclusion criteria included women with vaginal laxity who were married, literate and aged 15–45 years. Women who had a history of urogenital infections, had experienced recent stressful events in their life, suffered from chronic diseases, were under medication that affects sexual function (e.g. antihypertensive drugs, cimetidine and antidepressants), smokers, pregnant women and those whose husbands had a history of sexual disorders were excluded. This study was approved by the ethics committee of Ahvaz Jundishapur University of Medical Sciences in Ahvaz, Iran. A written informed consent was obtained from all women prior to the study. Women were requested to complete a sociodemographic questionnaire and a Female Sexual Function Index (FSFI). The contact details of participants were collated and after 6 months they were invited to come to the clinic and complete the FSFI questionnaire. During the 6 months, the participants were free to contact the researcher (S. J.) in case they had any questions about their surgery and sexual function.

The FSFI contained 19 questions including two questions in the libido domain, four questions in the sexual arousal area, four questions in the lubrication area, and three questions each for orgasm, sexual satisfaction and pain. A 5-point Likert scale was used for scoring.

All the women were checked by a gynecologist to confirm vaginal laxity, when they were in the lithotomic position. The women were examined using two

fingers in which they had to squeeze the examiner's fingers to the highest degree possible. If the pressure tone could not be maintained for 3 s, vaginal laxity was confirmed. Vaginal tightening was performed under general anesthesia, by removing excess vaginal lining and tightening the surrounding soft tissues and muscles, especially pudendal body. In addition, the perineal body was reconstructed. All the surgeries were performed by one gynecologist (F. M.). The surgeon performed a vertical incision in the vaginal opening. The rectovaginal area was cut until the inner section of the levator ani muscle was visible. The surgeon's aid placed a finger in the rectum of the patient to avoid any damage to the rectum. The appropriate amount of tissue according to the relaxation degree was removed from the vagina. The stitches started in the upper triangle of the vagina and the last stitch was made to the edge of the hymen. The size of the vagina is considered normal if two fingers can be inserted into the vagina after repair. Any signs and symptoms of bleeding and hematoma were carefully assessed. The participants were requested to return to the clinic for check-up 1 week, 1 month, 2 months, 3 months and 6 months after surgery. During each visit, the patient was examined by the gynecologist and also one of the researchers, however, all the participants completed the FSFI questionnaire 6 months after surgery. Women could start having sexual relations at least 6 weeks after surgery.

The data were analyzed using SPSS ver. 16. The paired Student's *t*-test was used for comparing means in the normal distributed data and the Mann-Whitney *U*-test was used for data that was not normally distributed. The Wilcoxon rank sum test was utilized for comparing categorical data before and after the study.

Results

In this study, 86 women were recruited and 79 women completed the study. Four women displayed signs of hematoma (two persons) and infection (two women). Three women dropped out because of pregnancy (two women) and divorce (one woman). The mean age of the participants was 34.02 ± 5.30 years and the mean age of spouses was 40.6 ± 5.9 years. The mode of past deliveries in most women was normal vaginal delivery (97.5%). The sociodemographic characteristics of the participants are listed in Table 1.

Table 1 Sociodemographic characteristics of participants

Characteristics	Mean ± SD or *n* (%) (*n* = 79)
Age (years)	34.02 ± 5.3
Age of spouse (years)	40.6 ± 5.9
Length of marriage (years)	15.6 ± 6.6
Number of deliveries	3.29 ± 1.71
Number of children	3.18 (1.70)
Previous mode of delivery	
Cesarean	2 (2.5)
Vaginal delivery	77 (97.5)
Vaginal delivery using forceps or vacuum	16 (21.3)
Education	
Primary	36 (45.5)
High school	29 (36.7)
Diploma†	11 (13.9)
University education	3 (3.7)
Spouse's education	
Primary	23 (30.4)
High school	28 (34.3)
Diploma	20 (25.3)
University education	8 (10.1)
Job	
Working	3 (3.8)
Housewife	76 (96.3)

†Diploma is a degree which people receive when they finish their secondary high school. SD, standard deviation.

The data about sexual function is presented in Table 2. Aspects of sexual function including libido, sexual arousal, orgasm and sexual satisfaction improved significantly 6 months after surgery ($P < 0.001$). Dyspareunia increased and lubrication decreased significantly ($P < 0.001$). The mean total score of sexual function increased from 24.19 before surgery to 26.92 after surgery ($P < 0.001$). In total, 58 (73.41%) of the participants had sexual dysfunction before surgery, which decreased to 37 (46.83%) after surgery. The vaginal tone was examined by a gynecologist after surgery; 77 (97.5%) women had a tight vagina and only two women (2.5%) claimed that they felt little change compared to before surgery.

Six months after surgery, 37 (46.8%) women had dyspareunia most of the time, 14 (17.7%) seldom, 26 (32.9%) sometimes, one (1.3%) did not have any pain and one (1.3%) always had dyspareunia. To reduce the pain, patients were recommended to use a lubricant (Simplex brand). None of them needed vaginal dilatations prior to resuming coitus. We requested the patients to avoid sexual intercourse for 6 weeks after surgery; however, none of them started coitus until 8 weeks after surgery.

Table 2 Scores for participants according to the FSFI questionnaire before and after surgery

Sexual function domains	Before, $n = 79$	After, $n = 79$	P-value
	Mean ± SD		
Libido	2.95 ± 0.84	4.76 ± 0.83	$P < 0.001$
Sexual arousal	2.87 ± 0.41	4.87 ± 0.65	$P < 0.001$
Orgasm	3.7 ± 1.18	5.6 ± 0.79	$P < 0.001$
Lubrication	5.22 ± 0.98	2.9 ± 0.62	$P < 0.001$
Sexual satisfaction	4.47 ± 0.70	5.43 ± 0.67	$P < 0.001$
Pain	4.96 ± 1.28	3.81 ± 0.83	$P < 0.001$
Total score of sexual function	24.19 ± 3.09	26.92 ± 3.41	$P < 0.001$
Sexual dysfunction score, n (%)	58 (73.41)	37 (46.83)	$P < 0.001$

FSFI, Female Sexual Function Index; SD, standard deviation.

Discussion

Women in this study were of reproductive age, complained of vaginal laxity, were not satisfied with their sexual relationship and underwent selective vaginal tightening. None of them had apparent rectocele or pelvic organ prolapse. After 6 months, all aspects of sexual function improved significantly except for pain and lubrication. A review of the female genital cosmetic and plastic surgery showed that patients requesting vaginoplasty and/or perineoplasty do so in order to increase friction and sexual satisfaction, and, occasionally, for aesthetic reasons. The majority of studies regarding patient satisfaction and sexual function after vaginal aesthetic and functional plastic procedures report beneficial results, with overall patient satisfaction in the 90–95% range and sexual satisfaction over 80–85%.[11] It is not hard to find cultural evidence that a tight vagina is the perfect vagina.[12] A qualitative study showed that women collaborate to produce an account that clearly identifies (and reproduces) the cultural desirability for a tight vagina, and that it may be a sort of cultural imperative that the vagina should be tight, and that a lax vagina was specifically associated with negative judgments about sexual promiscuity.[13] Other studies in the symptomatic women showed that surgery could improve some domains of sexual function but not all.[14]

Our results showed that the prevalence of dyspareunia increased and vaginal lubrication decreased significantly. According to the 17th and 18th questions of the FSFI questionnaire, all patients who had dyspareunia, had pain at the time the penis entered the vagina, and not once the penis was in the vagina. This may be due to the scar of the surgery in the perineum.

Because historical studies report high rates of dyspareunia (up to 30%) after the traditional midline repair, many have advocated observation of asymptomatic posterior defects. An alternative surgical repair, the site-specific rectocele repair, is based on the observations of distinct defects in the rectovaginal septum. The more limited repair may provide a lower incidence (0–10%) of postoperative dyspareunia.[15,16] In the present study, 77 (97.5%) women were satisfied with the surgery and experienced a tighter vagina. In a study conducted by Pardo *et al*. on 53 women who complained of vaginal laxity and underwent vaginal tightening, the results showed that after 6 months, 94% of the patients experienced a tighter vagina and higher rate of orgasm.[17] Our results are almost in line with Pardo *et al*., except in our study there was an increase in the rate of dyspareunia and vaginal dryness after 6 months. The discrepancy between Pardo *et al*. and the present study may be due to the fact that in the study of Prado *et al*., they did not use a structured questionnaire, such as the FSFI, and simply asked the women about their feelings.

However, other studies reported dyspareunia rates ranging 19–27% after site-specific rectocele repair, supporting the opinion that asymptomatic patients should be treated conservatively.[18] If the site-specific rectocele repair proves to be durable and has lower rates of dyspareunia, it may be reasonable in the asymptomatic patients. However, long-term objective outcomes are needed. In a study in which 34 women underwent follow-up checkups for 41 months after posterior colpoperineorrhaphy, the results showed that vaginal pain, dyspareunia, and vaginal laxity were all significantly reduced.[19] Some studies showed that following posterior colporrhaphy, 21–27% of the women experienced dyspareunia if the surgery involved levator ani plication.[20] A review study by Tunuguntla (2006) showed that vaginal surgery is not a factor related to the deterioration of sexual function

in sexually active women. Sling surgery for urinary incontinence does not appear to adversely affect overall sexual function, although individual parameters of sexual function scores may vary, for example, a significant percentage of women experience dyspareunia.[21] In a study conducted by Jeong *et al*., the results showed that the pain score in the group with mid-urethral sling and posterior colpoperineorrhaphy performed concurrently with mid-urethral sling, decreased (pain increased) significantly and authors concluded that it was due to the levatorplasty.[22] The results of the present study are in agreement with Jeong *et al*.'s study, except in the present study the patient underwent surgery because of vaginal laxity, whereas in the study of Jeong *et al*. the patients had urinary incontinence. Sexual dysfunction may occur after vaginal surgery because of organic, emotional and psychological factors. In the organic category, we can mention vascular, neural and hormonal factors. Decreasing blood flow can cause fibrosis in the smooth muscle, resulting in vaginal dryness and dyspareunia.[23] Surgical disruption of the iliohypogastric and/or pudendal arterial branches may compromise blood flow and impair sexual function.[23] Perhaps, the cultural base may create a greater ease in billing for patients or gynecologists in Iran who offer this type of surgery to their patients.

Strengths and limitations of the study

This was the first time that we evaluated the effect of selective vaginal tightening surgery on sexual function in women in Iran with vaginal laxity. Previous studies evaluated the effect of surgery on women who had other symptoms.[24] As the rate of these surgeries in Iran is quite high, it seems necessary to evaluate their results.

One of the limitations of this study was that the women only consulted a gynecologist and midwife about the consequences of the surgery, and not a psychologist. According to Weil-Davis, 'Before people will spend money on something as expensive and uncomfortable as cosmetic surgery, they need to be motivated not only by desire but by concern or self-doubt'.[25]

The results of this study showed that selective vaginal tightening in women with vaginal laxity may improve some aspects of sexual function, however, dyspareunia and vaginal dryness remain a concern in these types of surgery. Further studies with longer follow-up are required to prove the effectiveness of vaginal tightening. We are going to follow these patients beyond the 6 months to record the consequences of the surgery. The results will be reported in subsequent studies.

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