

## Sexual function after Stoppa hernia repair in patients with bilateral inguinal hernia

Ali Jangjoo<sup>1</sup>, Mohammad Reza Darabi Mahboub<sup>2</sup>, Mostafa Mehrabi Bahar<sup>3</sup>,  
Monavvar Afzalaghaee<sup>4</sup>, Ali Najib Jalali<sup>5</sup>, Mohsen Aliakbarian<sup>6</sup>

Received: 15 July 2013

Accepted: 18 Dec 2013

Published: 17 June 2014

### Abstract

**Background:** This study was performed to evaluate the effect of Stoppa hernia repair on sexual function of the patients with bilateral inguinal hernia.

**Methods:** In a prospective follow-up study, 50 patients with bilateral inguinal hernia were investigated to assess sexual function before and 1 and 6 months after standardized Stoppa hernioplasty using the International Index of Erectile Function (IIEF) questionnaire. The mean scores obtained on pre- and postoperative visits for all domains of sexual function were analyzed and compared with the Friedman and paired Wilcoxon tests.

**Results:** The mean score of IIEF at the first month after surgery was significantly declined compared to that before surgery and 6 months after surgery ( $P < 0.001$ ), while the difference between preoperative score and the score at 6 months after surgery was not significant.

**Conclusion:** Bilateral inguinal mesh repair with Stoppa technique can decreased sexual activity of the patients at one month after surgery, nevertheless it returns to its initial condition at 6 months after surgery. This suggests that the Stoppa technique does not affect the sexual function of patients with bilateral inguinal hernia.

**Keywords:** Hernia; Inguinal; Herniorrhaphy; Sexual Behavior.

*Cite this article as:* Jangjoo A, Darabi Mahboub MR, Mehrabi Bahar M, Afzalaghaee M, Najib Jalali A, Aliakbarian M. Sexual function after Stoppa hernia repair in patients with bilateral inguinal hernia. *Med J Islam Repub Iran* 2014 (17 June). Vol. 28:48.

### Introduction

Inguinal hernioplasty is one of the most common surgical procedures performed by general surgeons. Among different hernioplasty techniques, there is an increasing interest towards prosthetic repairs and it is estimated that annually 1 million of hernia repairs are performed using prosthetic materials (1-2).

Stoppa technique is one of the most common methods that use mesh prosthesis in hernia repair. This preperitoneal approach to bilateral inguinal hernias was first

described by Stoppa et al on ilical midline incision was made to dissect the hernial sacs and reinforce the preperitoneal space with giant mesh prosthesis. A more extensive field of dissection and a large prosthesis which required to cover this area may affected the quality of life and sexual function of the patients after surgery. Conflicting data have been described by few studies focused on quality of sexual life after inguinal hernia repair (5-6). To our knowledge no studies on sexual function after Stoppa hernia repair have been con-

1. MD, Associate Professor, Surgical Oncology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.

[jangjooa@mums.ac.ir](mailto:jangjooa@mums.ac.ir)

2. MD, Professor, Department of Urology, Imam Reza Hospital, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.

[darabimmr@mums.ac.ir](mailto:darabimmr@mums.ac.ir)

3. MD, Professor, Surgical Oncology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran. [mehrabim@mums.ac.ir](mailto:mehrabim@mums.ac.ir)

4. MD, Assistant Professor, Department of Biostatistics, Faculty of Health Sciences, Mashhad University of Medical Sciences, Mashhad, Iran.

[afzalaghaem1@mums.ac.ir](mailto:afzalaghaem1@mums.ac.ir)

5. MD, General Surgeon, Surgical Oncology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.

6. (Corresponding author) MD, Assistant Professor, Surgical Oncology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran. [aliakbarianm@mums.ac.ir](mailto:aliakbarianm@mums.ac.ir)

ducted yet. In this study we evaluated the effect of Stoppa hernia repair on sexual function of the patients with bilateral inguinal hernia.

### Methods

Between December 2009 and February 2011, 50 patients underwent bilateral inguinal hernia repair using Stoppa technique in Imam Reza Hospital were included in the study. Of 50 patients, 29 (58%) had a previous history of inguinal hernia repair 21 with unilateral and 8 with bilateral repairs) of whom 7 (14%) had more than one previous hernia repair. The institutional review board of Mashhad University of Medical Sciences approved the research project. An informed consent was obtained from all participants. All patients with preoperative sexual inactivity, diabetes mellitus, renal failure and those with history of pelvic surgery or radiation, prostatism, heart disease, and depression were excluded. Demographic data such as age, gender and marital status were recorded.

### Surgical procedure

The procedure was accomplished through classic Stoppa technique. A midline subumbilical incision was made and endo-abdominal fascia incised. The preperitoneal cleavage was started from the Retzius' space and continued laterally and posteriorly to the rectus abdominis muscle and epi-

gastric vessels. The dissection continued downward in front of the bladder, and then outward posterior to the iliopectic ramus in Bogros' space. The spermatic cord was skeletonized and the hernial sac isolated and resected and then the peritoneum closed.

Following "parietalization of the spermatic cord" a fitted prolene patch placed in the preperitoneal space, and the middle part of the superior border of the prosthesis was fixed with an absorbable suture to the inferior border of the Richet's umbilical fascia. Finally two closed suction drainage tubes were placed on the prosthesis and the abdominal wall closed in the anatomic plane.

A standard IIEF (International Index of Erectile function) questionnaire (Table 1) was completed before surgery and then at the end of the first and sixth postoperative months. Always a trained physician was present to respond to the patient's questions and to resolve ambiguities. A structured interview questionnaire was used for the illiterate patients.

Statistical analysis was performed using SPSS software version 16.

IIEF scoring system composed of 15 questions which were classified into four domains by adding the scores of individual items: erectile function (6 questions), intercourse function (3 questions), sexual desire and satisfaction (4 questions), and orgasmic function (2 questions).

Table 1. IIEF questionnaire

Main domains	Items	Score range*
Erectile function	Q1. Frequency of getting erections during sexual activity?	0-5
	Q2. Erections hard enough for penetration after sexual stimulation?	
	Q3. Frequency of penetration?	
	Q4. Frequency of maintaining an erection after penetration?	
	Q5. Ability to maintain an erection until completion of intercourse?	
Intercourse function	Q6. Frequency of attempts of sexual intercourse?	0-5
	Q7. Intercourse satisfaction for the patient?	
	Q8. Enjoyment of sexual intercourse?	
Orgasmic satisfaction	Q9. Frequency of ejaculation after sexual intercourse or stimulation?	0-5
	Q10. Frequency of orgasm with intercourse or stimulation?	
Sexual desire	Q11. Frequency of sexual desire?	1-5
	Q12. Rate of level of sexual desire?	
Overall satisfaction	Q13. Satisfaction with overall sex life? 1-5	1-5
	Q14. Satisfaction with sexual relationship with the partner?	
Erectile function	Q15. Rate of confidence to get and maintain erections?	1-5

\* 0: none; 1: almost never; 2: a few times (less than half the time); 3: sometimes (about half the time); 4: most of the times (more than half the time); 5: almost always.

Table 2. Comparison between mean scales of IIEF questionnaire in different periods (preoperatively, 1 and six months postoperatively)

Domain	Mean±S.D		
	Preoperatively	1 month postop	6 month postop
Erectile dysfunction	3.74±0.72	3.21±0.86	3.72±0.72
Sexual dysfunction	3.70±0.77	3.05±0.91	3.72±0.71
Libido	3.44±0.58	2.92±0.81	3.48±0.63
Ejaculation	4.10±0.65	3.43±0.68	3.98±0.59

### Statistical Analysis

To compare sexual function in different periods, the average  $\pm$  standard deviation (SD) calculated for each of three interviews and then the mean score of each domain and overall mean score were compared using Friedman test. Also paired Wilcoxon test was used to perform double comparisons. The level of significance was set at  $p<0.05$ .

### Results

Fifty consecutive men with bilateral inguinal hernia undergoing hernioplasty with Stoppa technique entered into the study. All operations were performed by the same surgical team. The mean age of the patients set at  $55.7\pm15.61$  yr (range: 26-82).

The mean scale for different items including erectile function, intercourse function, sexual desire and satisfaction, and orgasmic function were obtained on 3 separate intervals (before surgery, one and six months after surgery) using standard IIEF questionnaires (Table 2).

Statistical analysis by Friedman test showed a statistically significant difference ( $p<0.001$ ) between preoperative and postoperative erectile function scales ( $p<0.001$ ). This comparison was completed using Wilcoxon test in which depicted a statistically significant difference between preoperative and 1 month postoperative scales ( $p<0.001$ ), but there was not any significant difference when comparison made between preoperative and 6 month postoperative scales ( $p=0.68$ ). Also, the difference between 1 and 6 month postoperative scales was significant ( $p<0.001$ ).

The comparison was performed for other items which showed similar results. Com-

paring the preoperative and postoperative scales related to intercourse function, sexual desire and satisfaction, and orgasmic function with Friedman test showed statistical differences ( $p<0.001$ ,  $p<0.001$  and  $p<0.001$ , respectively). Also, Wilcoxon test was used to compare the preoperative with 1 month postoperative scales related to intercourse function, sexual desire and satisfaction, and orgasmic function which showed significant difference ( $p<0.001$ ,  $p<0.001$  and  $p<0.001$ , respectively).

Comparison between preoperative and 6 month postoperative scales related to intercourse function, sexual desire and satisfaction, and orgasmic function did not show any significant relationship ( $p=0.513$ ,  $p=0.274$  and  $p=0.083$  respectively).

Finally, there was statistically significant relationship between 1 month and 6 month postoperative scales related to intercourse function, sexual desire and satisfaction, and orgasmic function ( $p<0.001$ ,  $p<0.001$  and  $p<0.001$ , respectively).

### Discussion

Sexual dysfunction is a complication of inguinal hernia, especially chronic and scrotal ones, which is usually temporary and can be improved following hernioplasty. It seems reasonable to consider the impact of different herniorrhaphy techniques on the incidence of this complication to choose the most suitable technique. The impact of Stoppa technique on postoperative sexual function is not well understood. To our knowledge there is no study to focus on sexual function after Stoppa hernioplasty.

Ertan et al studied the recovery of sexual function following unilateral scrotal hernia repair using Lichtenstein hernioplasty and

confirmed the efficacy of this technique on recovery of sexual function after operation (7). Our study showed neither improvement, nor worsening of sexual function after surgery. Since, some symptoms such as inguinal bulge or pain which specifically may limit the patient's sexual life are seen in patients with scrotal hernia, this difference was probably due to inappropriate patient selection. Ertan et al studied the patients with scrotal hernia while the present study dealt with the patients with bilateral inguinal hernia.

Other study by Zieren et al indicated a significant improvement in pain, vitality, and physical activity after elective hernia repair (8).

Mathur et al in a similar study investigated the quality of life in patients with inguinal hernia who were waiting for operation and found that these patients had significantly impaired quality of life compared with the control group. They reported an inverse relationship between the size of the hernia and quality of life. In these two studies, little has been reported on postoperative sexual function which play an important role in quality of life (9).

In another study, Zieren et al studied the influence of inguinal hernia repair on sexual function of the patients who were operated with standardized Plug and Patch mesh technique. Two hundred and twenty-four patients (210 men and 14 women) were asked to answer an anonymous questionnaire of 40 questions preoperatively, 3 months postoperatively and every 6 months afterwards. The results of this study showed that the surgical repair can improve the sexual life in patients with preoperative sexual dysfunction, while it did not have any major influence on patients with a preoperative normal sexual life (10).

El-Awady et al studied 40 male patients with inguinal hernia to investigate the effect of Lichtenstein hernioplasty on sexual activity. There was not any significant difference in testicular volume measured using color Doppler, comparing two testicles and comparing the operation site testicle

before and after surgery. Also, using the IIEF questionnaire they compared sexual activity before and after surgery which showed a significant improvement in the mean activity in all aspects of sexual function except orgasm in the third and ninth postoperative months (5).

Aasvang et al showed that some patients after hernia surgery, suffered from increased pain during sexual activity, testicular pain, and pain with ejaculation was significantly higher after reoperation. In the other hand, based on the results of this study, hernioplasty especially those performed for recurrent inguinal hernia lead to a decreased sexual activity because of pain caused by surgery (11).

The results of these studies except the study by Aasvang et al were all indicated improvement of sexual function after hernioplasty which was different from our results. In this study, there was no significant improvement in sexual function 6 months after surgery compared to the preoperative situation. This disagreement might be due to different surgical techniques, or it may arise from a larger area of dissection in Stoppa technique and a larger prosthetic mesh which led to higher rate of inflammation and probably prolonged period of pain. Furthermore, other factor such as higher rate of operation for recurrent hernia in our study may influenced the result.

Since old age can affect sexual function, the higher mean age in our study compared with other studies could also justify this difference.

Nevertheless, the difference in interview intervals may affected the result of sexual assessment. Since the pain and other postoperative complications are expected to decline slowly, it is more likely that patients with longer interval from operating time could have more desirable sexual performance.

### Conclusion

Herniorrhaphy with Stoppa technique does not worsen or improve sexual function of the patients with hernia and can be safely

done in patients with preoperative normal sexual function. However, it is probably better to consider other techniques in patients with impaired preoperative sexual function.

### Acknowledgements

The results described in this paper formed part of a thesis submitted by the fifth author for a postgraduate degree in general surgery. This study was supported by the Vice Chancellor for research of Mashhad University of Medical Sciences. The authors sincerely acknowledge Ms. M. Hassanpour for editing the manuscript.

### References

1. Cobb WS, Kercher KW, Heniford BT. The argument for lightweight polypropylene mesh in hernia repair. *Surg Innov*. 2005 Mar;12(1):63-9.
2. Lichtenstein IL, Shulman AG, Amid PK, Montllor MM. The tension-free hernioplasty. *Am J Surg*. 1989 Feb;157(2):188-93.
3. Stoppa RE, Warlaumont CR, Verhaeghe PJ, Romero ER, M'Balla-N'Di CJ. Prosthetic repair in the treatment of groin hernias. *Int Surg*. 1986 Jul-

Sep; 71(3):154-8.

4. Stoppa RE. Wrapping the visceral sac into a bilateral mesh prosthesis in groin hernia repair. *Hernia*. 2003 Mar; 7(1):2-12.

5. El-Awady SE, Elkholy AA. Beneficial effect of inguinal hernioplasty on testicular perfusion and sexual function. *Hernia*. 2009 Jun;13(3):251-8.

6. Zieren J, Beyersdorff D, Beier KM, Muller JM. Sexual function and testicular perfusion after inguinal hernia repair with mesh. *Am J Surg*. 2001 Mar; 181(3):204-6.

7. Ertan T, Keskek M, Kilic M, Dizen H, Koc M, Tez M. Recovery of sexual function after scrotal hernia repair. *Am J Surg*. 2007 Sep;194(3):299-303.

8. Zieren J, Kupper F, Paul M, Neuss H, Muller JM. Inguinal hernia: obligatory indication for elective surgery? A prospective assessment of quality of life before and after plug and patch inguinal hernia repair. *Langenbecks Arch Surg*. 2003 Feb; 387(11-12):417-20.

9. Mathur S, Bartlett AS, Gilkison W, Krishna G. Quality of life assessment in patients with inguinal hernia. *ANZ J Surg*. 2006 Jun;76(6):491-3.

10. Zieren J, Menenakos C, Paul M, Muller JM. Sexual function before and after mesh repair of inguinal hernia. *Int J Urol*. 2005 Jan;12(1):35-8.

11. Aasvang EK, Mohl B, Bay-Nielsen M, Kehlet H. Pain related sexual dysfunction after inguinal herniorrhaphy. *Pain*. 2006 Jun;122(3):258-63.