

# Does inguinal hernia repair have an effect on sexual functions?

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**Introduction** The aim of this study is to evaluate sexual functions which are affected by inguinal hernias and may change after hernia repair surgery.

**Material and methods** A total of 47 patients who underwent Lichtenstein tension-free anterior repair and inguinal hernia surgery were evaluated in terms of erectile function, intercourse function, sexual desire, overall satisfaction and orgasm satisfaction using the International Index of Erectile function questionnaire (IIEF) scoring system before surgery and in the first and sixth months after surgery. Parameters evaluated with the IIEF score before the surgery and in the first and sixth months after surgery were compared statistically using the Wilcoxon test.

**Results** The average age of patients was  $46.2 \pm 11.2$  years (range: 22–67). It was determined that all scores, apart from sexual desire ( $p = 0.08$ ), significantly increased in the postoperative first and sixth months compared to the preoperative period. It was measured that the preoperative sexual desire score increased significantly in the postoperative sixth month ( $p < 0.001$ ). A significant score was also detected when all scores in the postoperative sixth month were compared to the postoperative first month.

**Conclusions** Inguinal hernia surgery positively affects sexual functions compared to the preoperative period. The improvement in sexual parameters in addition to the benefits of hernia removal and presence of no significant postoperative complications indicates that this surgery is useful and safe.

**Key Words:** inguinal hernia ◊ sexual functions ◊ Lichtenstein technique

## INTRODUCTION

Inguinal hernia operations are one of the most common surgical operations performed by surgeons. Inguinal area hernias are five times more common in males. Inguinal and femoral hernia operations are the most common surgical operations conducted in the United States with nearly 800.000 cases per year [1, 2, 3]. Techniques used in hernia surgery started as simple tissue repairs and today open or laparoscopic repairs using mesh are the preferred surgical procedures [1, 4].

Postoperative sexual function is an important factor to consider because the operation is performed in the inguinal region, in close proximity to the testicular structures and nerves which are important

for sexual function. Furthermore, modern techniques of hernia repair are based on the implantation of a mesh to reinforce the inguinal floor. The first results of a prospective study of the Department of General Surgery Charité, Campus Mitte, showed no significant influence of the hernia repair with mesh on sexual function for at least 3 months postoperatively. Meanwhile, the implanted mesh can cause long-term tissue induration or even shrink as part of a chronic foreign tissue reaction and affect sexual functions in this way. Additionally, the presence of a hernia may negatively affect sexual activity due to pain and cosmetic concerns. Although many studies have been made on the efficiency of inguinal hernia surgeries with reference to their effects on quality of life, there are

only several studies which specifically evaluate post-operative sexual activity[5–8].

The aim of this study is to evaluate sexual functions which are affected by inguinal hernias and may change after hernia repair surgery.

## MATERIAL AND METHODS

A total of 47 male patients who underwent inguinal hernia surgery with Lichtenstein tension-free anterior repair were prospectively analysed. A 6x11 cm polypropylene mesh was used to close the hernia defect. Patients under 20 years of age, sexually inactive and with a history of secondary hernia surgery were excluded. Female patients were excluded because the IIEF scoring system cannot be used in the evaluation of sexual functions in this population. Laparoscopic repairs were not included in the study because this is a different operating technique than open tension free repair and limited in number in our cases. Using the IIEF scoring system, consisting of 15 presurgery and first and sixth months postsurgery questions, the following parameters were evaluated: erectile function (6 questions), intercourse function (3 questions), sexual desire (2 questions), overall satisfaction (2 questions) and orgasm satisfaction (2 questions) (Table 1).

### Statistical analysis

Parameters evaluated with IIEF score before the surgery and in the first and sixth months after surgery were compared statistically using the Wilcoxon test. Values with  $p < 0.05$  were accepted as statistically significant. Statistical evaluation of data was performed with SPSS 22 for Windows.

## RESULTS

The average age of the 47 patients included in the study was  $46.2 \pm 11.2$  years (range: 22–67). Average operation duration was measured at 42,23 minutes (range: 26–71). Hernias were classified according to the European Hernia Society (EHS) groin hernia classification. Thirty patients (63.8%) had indirect (lateral) inguinal hernias, 4 had (8.5%) direct (medial) and 13 had (27.6%) combined direct and indirect inguinal hernias (Table 2). Six patients had bilateral inguinal hernias. The average hernia defect was  $2.5 \pm 1.9$  cm. No local complications were observed in any of the patients after operation. Forty patients (85.1%) mentioned preoperative sexual dysfunction related to symptoms of the groin hernia. All of these patients suffered from pain, local pressure and feelings of tension. None of the patients had severe degree erectile dysfunction and did not use any pharmacologic agents (phosphodiesterase-5 inhibitors etc.). Nine patients had mild-moderate erectile dysfunction and the remaining 31 patients had mild degree erectile dysfunction. Seven patients had no erectile dysfunction. Six of nine patients had bilateral inguinal hernias. The surgical repair had a positive influence on sexual function. Following hernia repair all patients' sexual function improved without surgical revision or medical treatment after an average period of 6 months. When erectile function, intercourse function, overall satisfaction, and orgasm satisfaction scores evaluated before inguinal hernia operation were compared to the scores in the postoperative first month ( $p < 0.001$ ,  $p = 0.001$ ,  $p < 0.001$  and  $p < 0.001$  respectively) and sixth month ( $p < 0.001$ ,  $p < 0.001$ ,  $p < 0.001$  and  $p < 0.001$  respectively), a statistically significant in-

**Table 1.** International Index of Erectile function questionnaire (IIEF)

Main Domains	Questions	Score Range	Min.-Max. score
Erectile function	Q1. Frequency of achieving erections during sexual activity?	0-5	1-30
	Q2. Are 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?		
	Q15. Rate of confidence to achieve and maintain erections?	1-5	
Intercourse function	Q6. Frequency of attempts at sexual intercourse?	0-5	0-15
	Q7. Intercourse satisfaction for the patient?		
	Q8. Enjoyment of sexual intercourse?		
Orgasmic satisfaction	Q9. Frequency of ejaculation after sexual intercourse or stimulation?	0-5	0-10
	Q10. Frequency of orgasm with intercourse or stimulation?		
Sexual desire	Q11. Frequency of sexual desire?	1-5	2-10
	Q12. Rate of level of sexual desire?		
Overall satisfaction	Q13. Satisfaction with overall sexual life?	1-5	2-10
	Q14. Satisfaction with sexual relationship with the partner?		

crease was detected. When the sexual desire score in the preoperative period was compared to the score in the postoperative first month, no statistically significant increase ( $p = 0.008$ ) was detected, but there was a significant increase in the postoperative sixth month ( $p < 0.001$ ). When compared to postoperative first month and sixth month scores, a statistically significant increase in erectile function, intercourse function, overall satisfaction, sexual desire, orgasmic satisfaction scores was detected. ( $p < 0.001$ ,  $p < 0.001$ ,  $p = 0.001$ ,  $p < 0.001$  and  $p < 0.001$  respectively). Average scores and statistical values related to IIEF scores are available in Table 3.

## DISCUSSION

The presence of inguinal hernia and undergoing hernia surgery may have an effect on sexual activity. Pain and cosmetic concern associated with scrotal hernia may negatively affect sexual activity. These findings may be observed more commonly in chronic scrotum involving hernias [7, 8]. The spermatic cord, testicle and scrotal formations may be affected in inguinal hernia surgery, which is also a factor influencing sexual activity. Direct injury of the spermatic cord or its components (ductus deferens or pampiniform plexus of veins) can cause reversible (hematoma, seroma or orchitis) or irreversible testicular damage (atrophy or oligospermia). Operative trauma can lead to tissue or nerve injury (ilioinguinal, iliohypogastric nerves or ramus genitalis of genitofemoral

nerve) leading to hypoesthesia or other neurological symptoms.

The implanted mesh can also cause long-term tissue induration or even shrink as part of a chronic foreign tissue reaction and thus affect sexual function. This local tissue induration can affect nerves and other important anatomical structures (e.g. ductus deferens)[6–9]. The presence of resistive orchialgia cases emerging secondary to inguinal hernia was reported by Chen et al. [10]. It is obvious that sexual activity can be negatively affected, especially in these patients.

Ertan et al. prospectively investigated 34 patients with scrotal hernia in terms of sexual function before and 3 months after hernia repair by using the International Index of Erectile Function (IIEF). They reported that there was a significant recovery in IIEF scores after scrotal tension free hernia repair and sexual activity was positively affected after the operation [11]. In contrast to our patients those in the aforementioned study had very large scrotal hernias and yet their sexual activity was still improved. In another study, it was reported that pain and quality of life parameters improved in the third month after inguinal hernia operation [12]. Mathur et al. evaluated quality of life in patients with hernia waiting for operation and found that deterioration in hernia-related quality of life was higher than in the control group and in people with non-sedentary jobs [13]. Zieren et al. performed a study consisting of 224 patients and investigated the effect of operation on sexual functions after inguinal hernia operation and evaluated patients preoperatively and in the postoperative third and sixth months. They showed that in patients with sexual function disorders, there was recovery in sexual functions after the operation and that the operation had no significant effect on patients with a normal preoperative sexual life [14]. El-Awady et al. evaluated sexual functions of 40 patients who had tension-free inguinal hernioplasty in the postoperative third and ninth months with IIEF and stated that there was

**Table 2.** Hernia types regarding to European Hernia Society (EHS) classification

EHS groin hernia classification (Primary, n:47, Recurrent, n:0)	0	1	2	3	x
L (lateral)	0	0	30	7*	0
M (medial)	0	0	0	10*	0
F (femoral)	0	0	0	0	0

\*Mixed inguinal hernias are classified under the subgroup of its dominant hernia type

**Table 3.** Average scores and statistical values of areas related to IIEF scores

Evaluated area	Pre-op average score	Post-op 1 <sup>st</sup> month average score	Post-op 6 <sup>th</sup> month average score	Pre-op vs. post-op 1 <sup>st</sup> month p value	Pre-op vs. post-op 6 <sup>th</sup> month p value	Post-op 1 <sup>st</sup> month vs. post-op 6 <sup>th</sup> month p value
Erectile function	19.87 ±3.85	21.6 ±3.76	23.86 ±4.1	$p < 0.001$	$p < 0.001$	$p < 0.001$
Intercourse function	9.29 ±2.25	9.59 ±2.10	11.06 ±1.5	$p = 0.001$	$p < 0.001$	$p < 0.001$
Orgasmic satisfaction	7.59 ±1.1	8.17 ±1.12	8.74 ±1.13	$p < 0.001$	$p < 0.001$	$p < 0.001$
Sexual desire	7.02 ±1.24	7.23 ±1.10	8.14 ±0.95	$p = 0.08$	$p < 0.001$	$p < 0.001$
Overall satisfaction	7.4 ±1.05	8.14 ±1.04	8.6 ±1.05	$p < 0.001$	$p < 0.001$	$p = 0.001$

recovery in all sexual function parameters, apart from orgasm, after the operation [5]. Jangjoo et al. evaluated 50 patients before inguinal hernia operation and in the first and six months after the operation and a significant decrease was detected in IIEF scores in the first month compared to preoperative and sixth month values. It was reported that this was due to using a wider incision and a bigger piece of mesh in the hernioplasty technique which led to prolonged pain caused by secondary inflammation [7]. The results of these studies, except the study by Aasvang et al., all indicated improvement of sexual function after hernioplasty. Aasvang et al. reported that after recurrent hernia operations, sexual activity secondary to testicular pain increasing with sexual activity and ejaculation was affected negatively. This condition was connected to the increase in reoperation related pain level [15]. Bulus et al. investigated the effects of perimesh fibrosis and edema on testicular arterial flow and sexual function following Lichtenstein tension-free mesh repair. They found that hernia repair did not have any negative effects on sexual activity [16].

In line with the available literature, in our study it was detected that there was recovery of sexual parameters after hernia repair. The reason for having no increase in sexual desire in the postoperative first month is related to the presence of surgery related symptoms in the early postoperative period. Lack of postoperative symptomatic findings in the sixth month describes the increase in scores compared to the first month. Since our patient profile consisted of sexually active patients, there were no post-operative complications in the patients and patients who had second inguinal operations were not included in the study, we conclude that the results were positive. Improvement of sexual activity was significant in six of the patients presenting with bilateral inguinal hernia and moderate degree erectile dysfunction in the preoperative evaluation period. When patients were asked about the reason of the recovery in sexual functions in the postoperative sixth month, 36.1% stated that this was due to the disappearance

of cosmetic concerns (such as hernia related bloating and operation scar) and 75% stated the cause as a decrease in pain. We think that this finding is important since it shows that patients substantially care about cosmetic concerns but unfortunately being a subjective comment, has no statistical meaning. We also think that pain is a more important factor. The occurrence of pain during sexual activity can affect overall satisfaction. Furthermore, we think that the presence of hernia has a higher influence on the sexual activity than the effects of the surgery. The patients with no preoperative complaints were not negatively influenced by the surgery as far as their sexual life was concerned. This may be evidence of benefit of surgery. Nonetheless, we think that studies including more patients who have complications after surgery in different hernia types are needed for comparison.

## CONCLUSIONS

Symptoms specifically associated with inguinal hernias, such as groin bulge or pain, can lead to limitations of a patients' sexual life. Inguinal hernia surgery positively affects sexual functions compared to during the preoperative period. This effect is more significant in the later period. This study shows that there may be post-operational recovery in patients who have a decrease in sexual performance related specifically to inguinal hernia. In our study, the implantation of mesh for groin hernia repair did not affect sexual function. The recovery in sexual parameters in addition to the other benefits of hernia repair and presence of no significant postoperative complications shows that this surgery can be performed safely. However, additional studies, taking into account the role of the partner in a balanced sexual life, as well as the different surgical approaches of surgical inguinal hernia repair, have to be conducted in order to gain better information about the other several aspects of this subject.

## CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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