

Tension free tissue repair of inguinal hernia, new method

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Abstract

Background: Inguinal hernia repair is a most common cause of general surgeries. In this study, we investigate a new method for tension free tissue repair of inguinal hernia.

Method: A transverse skin incision is made and dissection is carried down to the external oblique fascia. Cremasteric muscle is then incised and the spermatic cord along with the cremasteric muscles separated from the inguinal floor. Excision of the sac is done. The medial leaf of the external oblique aponeurosis is sutured to the shelving edge of inguinal ligament from the pubic tubercle to the internal ring using 1-0 Nylone interrupted sutures. The last suture is taken so as to sufficiently narrow the internal ring without constricting the spermatic cord. Each suture is passed first through the shelving edge of inguinal ligament and then the EOA. This is followed by closure of the superficial fascia and the skin as usual.

Results: Between 2010 and 2016, 127 patients underwent surgery in this method. 90.5% (n=115) were male and 9.5% (n=12) were female. Mean age of the patients was 39.3 years. 94.48% (n=120) had indirect inguinal hernia and 5.52% (n=7) had direct hernia. 86.66% (n=110) had elective surgery and 13.38% (n=17) of them underwent emergent surgery. No patients had seroma or hematoma or wound infection for early complications. Recurrence rate was 3% (n=4) in follow up.

Conclusion: This method is recommended because of its simplicity in education, low complications, lower cost for patients, usable in emergency and recurrent cases.

Keywords: inguinal hernia, tension free tissue repair, direct hernia, indirect hernia

Introduction

Inguinal herniorrhaphy is a common performed surgery in the world. The groin area is a potentially weak area of the abdominal wall and the most common herniation site [1]. Inguinal hernia is the most common type of hernia in both men and women. The overall lifetime risk of inguinal hernia is 27% in men and 3% in women [2]. More than 20 million people will undergo inguinal hernia surgery worldwide each year, with an annual morbidity rate of 100 to 300 per 100,000 cases worldwide [3]. Over the years, various methods have been described for inguinal hernia repair, and are now widely used by surgeons around the world, including mesh repair and a variety of tissue repair techniques [4]. Today the Lichtenstein mesh-based restoration method is the most common used technique in the world. But despite its benefits, it had some disadvantages include expensive mesh, unavailability of mesh in some areas, including in developing countries, chronic mesh infection that requires mesh removal and mesh migration [5]. Finding a new tension free tissue repair method without excessive manipulation in the inguinal region that is at risk of damage to the spermatic cord structures as well as the use of synthetic materials is not technically and economically feasible [6]. The purpose of the present study is to explain a new tension free tissue repair method for inguinal hernia repair that has the aforementioned benefits.

Method description

Skin and fascia were incised through a transvers inguinal incision to expose the External oblique aponeurosis (EOA). The EOA was cut in line with the upper crux of the superficial ring and canal is also opened and was explored. The cremasteric muscle is then incised, and the spermatic cord along with the cremasteric muscle is separated from the inguinal floor. Excision of the sac is done in

all cases except in small direct hernias, where it was inverted. Then the fascia of EOA is released from the internal oblique muscle with blunt dissection, the spermatic cord elevated from the canal's floor. Beneath the cord, EOF was sutured to shelving border of inguinal ligament from pubic tubercle to the abdominal ring using interrupted number 1 round Nylone. The first two sutures were taken in the anterior rectus sheath where the EOA was fused with it then, to prevent damage to the femoral artery, The index finger of the left hand was used to protect the femoral vessels and retract the cord structures laterally while taking lateral suture. After ensuring homeostasis, the spermatic cord is located in the new created inguinal canal. Then superficial fascia and subcutaneous tissue and skin closed as usual.

Materials and methods

This study was performed in Imam Hussein Hospital in Tehran between 2011 and 2019, 127 patients underwent surgery in this way. Of these, 90.5% (n=115) were male and 9.5% (n=12) were female. Mean age of the patients was 39.3 years. 86.61% (n=110) had unilateral hernia and 13.38% (n=17) had bilateral hernia. 94.48% (n=120) indirect inguinal hernia and 5.51% (n=7) direct hernia. 80.31% (n=102) patients underwent spinal anesthesia and 19.68% (n=25) under general anesthesia. 3.93% (n=5) patients had recurrent hernias. 86.61% (n=110) patients had elective surgery and 13.38% (n=17) of them underwent emergent surgery. All patients were visited 8 hours after surgery and the diet was started and encouraged to ambulate. No patients had seroma or hematoma or wound infection for early complications. Average hospital stay was 1.5 day. Mean follow up was 3 years and recurrence rate was 3.14% (n=4) (Table 1).

Table 1. Inguinal hernia repair

Case	male	90.5%(n=115)
	female	9.5%(n=12)
Hernia type	direct	5.51%(n=7)
	indirect	94.48%(n=120)
Method of anesthesia	Unilateral	86.61%(n=110)
	Bilateral	13.38%(n=17)
	Spinal	80.31%(n=102)
	General	19.68%(n=25)
Surgery type	Elective	86.61%(n=110)
	Emergent	13.38%(n=17)
	Recurrent	3.93%(n=5)
	new	96.06%(n=122)
Mean of hospital stay (days)	1.5	
Average age (years)	39.3	
Wound infection	0	
Recurrent rate	3.14%(n=4)	
Hematoma of surgery site	0	
Intraoperative complications (cord structure damage)	0	

Discussion

Inguinal hernia repair has always been important for surgeons and in this regard, different types of tissue methods as well as mesh repair have been described for this purpose. Various methods of hernia repair indicate that none of them is the perfect one. Always choose the type of repair method based on recurrence rate, complications, cost of treatment and speed in returning to daily routine. There are common methods of tissue repair (Shouldice and Bassini and McVay) and Lichtenstein mesh based. There is no evidence of the superiority of these two groups over each other, each having its own advantages and disadvantages [7]. The Lichtenstein method of repair, which is used today as the most common method of repair all over the world, in addition to the important advantage of not having tissue tension, it has disadvantages such as being expensive, recurrence in 4% of patients, foreign body sensation and mesh infection [8]. Also, a study by Shane et al showed that in young patients who were evaluated for infertility and in the past, they had undergone mesh repair found they had unilateral or bilateral vasodeferan obstruction with testicular atrophy or epididymal obstruction. And the authors conclude that the use of mesh in young patients for hernia repair should be used with caution [9]. In addition, some studies have reported problems such as mesh migration and mesh rejection and sexual dysfunction due to pain [10]. In this method, that is kind of tissue repair, after incision of the skin and fascia of the external oblique muscle and separation of the sac and closure, the inguinal canal is repaired with the fascia of the external oblique and actually reinforces the canal floor and the posterior wall of the canal and form a new inguinal canal. In addition, this method minimizes over-manipulation of the spermatic cord as well as canal structures that may damage the spermatic cord. Another advantage of this method is its ease of doing and training, and it does not have the complexities of traditional methods such as the Shouldice method. Recurrence rate

was 3.4% in the follow-up in the present study that is similar to Lichtenstein method. no intraoperative complications occurred in any of the patients. Treatment of patients with incarcerated or strangulated inguinal hernia whom underwent emergency surgery is another challenging issue in the treatment of patients. In cases of strangulation due to contamination and severe inflammation of the hernia site it is not possible to use Lichtenstein because of mesh infection. Also, due to emergency conditions, some patients may not tolerate prolonged surgery for the use of complex tissue repair techniques. In this study, 17 patients underwent emergency hernia repair with no recurrence and subsequent complications. In patients with recurrent hernia, there are various procedures, such as laparoscopic repair, due to previous adhesions because of previous surgery and disruption of the anatomy of the site, in these patients, spermatic cord structures may also be damaged. Laparoscopic repair is also not widely available for its limitations of the Laparoscopic facilities and its complex technique and requires the surgeon's greater experience in performing it. In this study, 5 recurrent hernia patients were treated successfully by this way. Other considerations in this method are the low cost of treatment because of the lack of mesh and the short duration of hospitalization.

Conclusions

Inguinal hernia as one of the most common surgeries has always been the focus of surgeons, this method is recommended because of its simplicity in education, short time to operation, low complications, lower cost for patients, usable in emergency and recurrent cases.

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