

Inguinal Hernia Repair; Tension Free Mesh Repair, A New Technique (Adel's Technique)

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Abdominal wall hernias represent a common issue in general surgical practice. The definitive treatment of all hernias, regardless of their origin or type, is surgical repair. There is an ongoing debate about whether to repair primary, unilateral inguinal hernias by the open method or the laparoscopic. Many agree that laparoscopic repairs are better for recurrent hernias or bilateral, but its use for primary, unilateral hernias is controversial. So, still the open method has the upper hand in unilateral inguinal hernia repair. There are different methods for repair, nowadays; the most popular method is the mesh repair. In this study, we worked on 200 cases of inguinal hernias, through the period of January 2013, to January 2016. Age groups ranging from 29 – 60 years old, all are males. The aim of this work is to represent the best method for inguinal hernia repair with the least complications especially recurrence. We modified the technique of tension free mesh repair, and we found that by this method we had no recurrence in all cases (recurrence rate 0 %), we had only 4 cases of post-operative superficial wound infection (2 %) & 2 cases mesh infection (1%). In conclusion, this method for unilateral inguinal hernia repair can be utilized for almost all adult inguinal hernias with highly effective repair.

Introduction: Inguinal hernia regardless of the type is one of the most common diseases that a surgeon has to manage. Improved surgical techniques and a better understanding of the anatomy and physiology of the inguinal canal have significantly improved the outcomes for many Patients. (1)

Still there is no consensus as to whether the optimal approach to inguinal hernia repair is open or laparoscopic. (2, 9)

Some surgeons prefer to repair a unilateral, primary inguinal hernia with an open procedure, while other surgeons prefer a laparoscopic approach. Minimally invasive hernioplasties have been developed during the last decade using either a laparoscopic or an open technique. The learning curve in laparoscopic hernioplasty is long. (3)

Whereas the open operation with a mesh-plug and patch is easier to perform. The results from this method have been promising. (4)

Open and laparoscopic approaches have been directly compared most often in inguinal hernia repairs. In general, laparoscopic repair has been associated with less postoperative pain and quicker recovery, but longer operative time and higher recurrence rates. (5, 6)

So, still the open method has the upper hand in unilateral inguinal hernia repair. The recurrence rate in nonspecialized centers is

high, and postoperative pain and discomfort are common. Open tension-free hernia surgery is used with mesh, the recurrence rate decreased and rehabilitation period has been reduced compared to sutured repairs. Many different tension-free techniques have been developed, and the use of mesh is common and increasing. (4)

Multiple studies have demonstrated that tension-free mesh repair of inguinal hernias reduces postoperative groin pain, expedites recovery, and reduces recurrence rate. (7, 8, 9).

Thus, the tension-free mesh techniques are most widely used and endorsed by various hernia societies. (10, 11)

The aim of this work is to represent the best method for inguinal hernia repair with the least complications especially recurrence.

Methods: This study performed on 200 patients admitted to El-Marwa hospital, and El-Monera general hospital, between Jan. 2013 – and – Jan. 2016. All patients are male, between the age of 29 – to – 60 years, 194 patients (97%) had primary hernia, while 6 (3%), were recurrent. Patients with chronic cough, chronic constipation; Symptoms of Irreducible hernia, prostatism, obstructed hernia and Strangulated hernia were excluded from the study.

A questionnaire designed for this study was used for data collection. A polypropylene mesh was used for all patients. Prophylactic antibiotics were given with induction of anesthesia in the form of third generation cephalosporin (cefotax). Prolene 0 suture material was used.

We modified the technique of inserting the mesh by enrolling the mesh like a cone and inserting the apex of the cone in the internal ring (like a plug), then putting the body and bottom of the cone over the posterior wall of inguinal canal till pubic tubercle, and plication of posterior wall over the mesh reaching the internal ring narrowing it over the cone (with few stitches which used for plication of posterior wall passing through the mesh to fix it in place to prevent migration), in some patients with very weak posterior wall passing the suture to the conjoint tendon for support. By this method we strengthened the posterior wall by the mesh, we narrowed the neck of the inguinal canal by the mesh, & at the same time we covered the mesh away from the cord and the nerves protecting it from dense adhesions with the mesh.

Postoperatively, each patient was examined at 2–4 weeks, at 3 months, and yearly thereafter to determine the presence or absence of any complications especially recurrence.

Results: Number of patients in this study was 200 patients. All of them are males. Age of the patients ranged from 29-60 years, 194 patients (97%) had primary hernia, while 6 patients (3%), were recurrent, one hundred forty four (72%) had right sided inguinal hernia while forty six patients (23 %) had a left sided hernia and 10 patients (5 %) had bilateral hernia, (table 1), (figure 1). One hundred fifty nine patients (79.5%) had indirect hernia and 41 (20.5%) had direct hernia (Table 2), (figure 2). One hundred thirty patients (65%) presented with pure inguinal hernia while 70 patients (35%) presented with inguinoscrotal hernia 24 patients (12 %) were diabetics.

One hundred seventy patients (85%) had spinal anesthesia, 30 patients (15 %) had general anesthesia. All patients received prophylactic antibiotics in a form of third generation cephalosporin (cefotaxime) before the induction of anesthesia. Duration of surgery was ranging from 35 minutes to 60 minutes.

One hundred ninety patients (95%) stayed in the hospital one day and the remaining 10 patients (5 %) stayed two days. No one developed recurrence (0%), twelve patients (6%) developed wound hematoma, 21 patients (10.5%) developed scrotal swelling, 17 patients (8.5%) developed seroma, 4 patients (2%) developed superficial wound infection, 2 patients (1%) developed deep wound infection, and 6 patients (3%) develop neuralgia.

Right sided	Left sided	Bilateral
144	46	10

(Table 1)

Discussion: Hernia repair is one of the commonly performed operations all over the world. Various open and laparoscopic procedures are available now for hernia repair. They are judged by the recurrence rate following the operation.

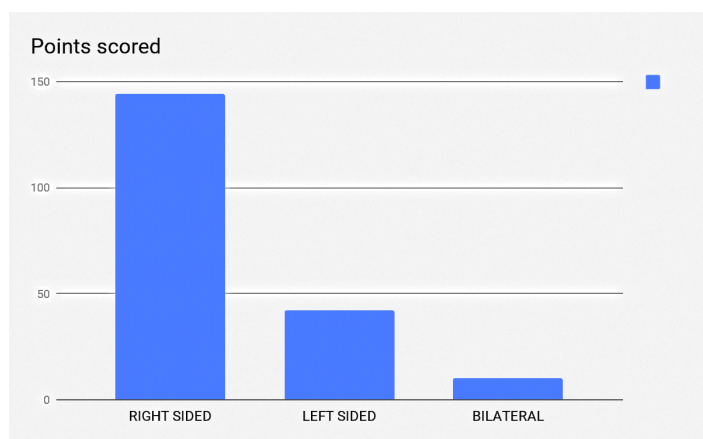


Figure: The incidence of recurrent hernia after groin hernia primary repair varies from 1% in specialized centers to 30% in general surveys. (12).

DIRECT	INDIRECT
41	159

(Table 2)

In specified analyses, there was interaction between the type of hernia (primary or recurrent) and surgical approach (open or laparoscopic). After laparoscopic repair, recurrence was significantly more common than after primary hernias open repair (10.1 percent vs. 4.0 percent), but rates of recurrence after recurrent hernias repair were similar in the two groups (10.0 percent and 14.1 percent, respectively) (13).

A review of the literature on the results of hernia repair reveals that for inguinal repairs, recurrence rates were as follows:

Bassini: 2.9%–25.0%,

Shouldice: 0.2%–2.7%,

McVay: 1.5%–15.5%,

Nyhus: 3.2%–21.0%.

For operations using mesh, the recurrence rates were as follows:

Nyhus buttress: 0%–1.7%,

Rives: 0%–9.9%,

Stoppa: 0%–7%,

Tension-free repairs: 0%–1.7%,

Plug repairs: 0%–1.6%.

The laparoscopic repairs recurrence rates have been: Trans Abdominal Pre Peritoneal (TAPP), 1.0% – 4.3%; and Totally Extra Peritoneal (TEP), 0%–0.4 %.) (14).

Another phenomenon that groin numbness can be experienced after hernia repair. In a Scottish study that includes more than 5500 patients, this was reported to various degrees in as many as 9%. (15)

When chronic pain occur following inguinal hernia repair, it may be necessary to remove the mesh to relieve the pain. Mesh excision can be very tedious and can result in recurrence of hernias as well as damage to the cord structure and circulation of the testicle.

The 6 patients who developed neuralgia in this study 4 of them was of the recurrent group, & 2 was inguinoscrotal and diabetics, all are treated conservatively.

Other complications include seroma formation, bruising and hematoma occur in (7% of cases), and wound infection in (1-7% of cases). (16, 17)

In this study, 6 patients (3%) who developed wound infection, 4 of them superficial wound infection that was treated with antibiotics and regular dressing only 2 patient with deep wound

infection treated with drainage, antibiotics and daily dressing, only one case treated by removal of mesh (this case excluded from the study).

In large study done by Bueno-Lledo', et;al. (2017); they found that for a median of 50.6 months, the overall mesh infection rate was 1.9%. With the high use of Synthetic materials for hernia repair, the number of patients who will suffer such infections is likely to increase. It is because of this great morbidity that everything must be done to prevent infection in these patients. Therefore, the study of risk factors in the mesh infection and explanation is essential to try to minimize its impact.(18)

Scrotal swelling occurred in 21 patients (10.5%), more common in age group 40-60yrs, more common in patients with inguinoscrotal hernia, all patients with scrotal swelling were treated with analgesia and scrotal support. Wound hematoma occurs more commonly in patients' age >50 years, all patients with wound hematoma were treated conservatively. In the study of Neumayer; et. al. 2004, they found that Hematoma or seroma occurred in 13.6% : 16.4% in open versus laparoscopic repair. (14)

17 patients (8.5%) who developed seroma, 9 were treated conservatively as it was mild and 5 were treated with aspiration under aseptic technique, and 3 of them by open drainage, most of them were having inguinoscrotal hernia.

Conclusions: Despite that this surgical technique may be described, it seems that there many technical variations that have been applied to this method and by this method it was found that the recurrence rate (0%), the incidence of postoperative neuralgia is less than other methods (which is the main issue in this study), the remaining postoperative complications as regards, wound infections, seroma, hematoma, vascular injury, bladder injury and scrotal swelling were less or equal to what is documented in the literature in the other methods.

This technique can be utilized for almost all adult inguinal hernias with highly effective repair, less complications rate, but we need more studies in a wide range of cases to compare the outcome of these studies with other methods of hernia repair.

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