



Outcomes of Tension Free Mesh Repair in Inguinal Hernias- A surgical experience of 67 cases

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ABSTRACT The aim of study is to assess the outcomes of mesh repair of inguinal hernias with special reference to the postoperative complications and recurrence rate. This study includes 67 patients who were operated for inguinal hernias in unit III of Department of Surgery, Bundelkhand Medical College and Associated Hospital, Sagar from July 2014 to April 2016 over a period of about two years. All the patients above the age of eighteen years or more with inguinal hernias were included in the study and those presented with obstructed, strangulated and recurrent inguinal hernias were excluded from the studies. The indirect inguinal hernia was the most common followed by direct hernia. Most of the patients presented with pain in the groin, mass in the groin and increase in size on straining. Scrotal oedema and wound infection were the most common early complications followed by wound hematoma and seroma formation. There was no recurrence during one year of follow up. Ninety percent of patients had mild pain for one week but it did not restrict their daily life activities. 10.4% of patients had chronic groin pain interfering with their normal day to day activities. None of the patients required surgical intervention or mesh removal. Tension free mesh repair of hernia is associated with very low morbidity and it is safe and effective method of hernia repair having minimal recurrence rate and postoperative pain.

KEYWORDS : hernia, inguinal, mesh, recurrence

Introduction:

The word hernia is derived from Greek language meaning 'a bud or shoot'. Hernias are abnormal protrusion of viscus or part of it through an abnormal opening in the wall of its containing cavity¹. Inguinal hernia occurs when the contents push through a weak spot or tear in the lower abdominal wall often in the inguinal canal. The inguinal canal is about 3.75 centimetres long directed downward and medially from the deep inguinal ring to superficial inguinal ring. In men, it is the area where spermatic cord passes from the abdomen to the scrotum and this cord holds up testicles. In women, the inguinal canal contains a ligament that helps in holding the uterus in place.. Muscle deficiency contributes to herniation. The distribution of the connective tissue reduces the strength of transverse aponeurosis and fascia². Inguinal hernia can be congenital or acquired and divided into direct and indirect variety. An indirect inguinal hernia is defined as a defect protruding through the deep inguinal ring whereas direct hernia is a defect protruding through the posterior wall of the inguinal canal. Inguinal hernia is more common in men than women. This is because the men's testicles descend through the inguinal canal shortly after birth and the canal is supposed to close almost completely behind them. Sometimes the canal does not close properly and leaves a weakened area prone to hernia. Hernia in the inguinal region accounts for approximately 75% of all form of hernias and more common in men than female³. Inguinal hernias are a common problem as life time risk for inguinal hernia is 24% for men and 3% for women⁴. The first recorded documentation of inguinal hernia was in 1700 BC by Hammurabi of Babylon⁵. Inguinal hernia repair is one of the most commonly performed surgical procedures in the world. The method of inguinal hernia repair has been evolved through centuries. In Late 19th century the Bassini's repair was introduced. The methods for inguinal hernia remained little change over a century until 1984 when the Lichtenstein introduced open tension free hernioplasty⁶ followed by laparoscopic mesh hernioplasty in the form of trans abdominal preperitoneal repair in 1991 and later in 1992 with totally extra peritoneal repair which probably reduced the risk of intra peritoneal complications with adhesions⁷. Bassini's repair entails approximation of the defect of the posterior abdominal wall, deep inguinal ring and approximation of the conjoint tendon to the inguinal ligament whereas Lichtenstein repair consists of removal of hernial sac with reinforcement of the posterior wall of the inguinal canal with synthetic mesh (polypropylene)⁸. This repair required for large hernias and hernia in middle aged and elderly patients with poor abdominal wall musculature. Tension free mesh repair is one of the most common surgical procedures performed for open repair of inguinal hernia in USA alone about 700,000 cases are performed each year⁹. Recurrence has been a significant problem following hernia repair. For prevention of recurrence the use of mesh has become popular largely because of excellent results reported by Lichtenstein et al. The recurrence rate

with this procedure was reported as nil in Lichtenstein personal series but around one percent in other series¹⁰. Lichtenstein tension free mesh repair for hernia is reported to be less painful, allow rapid return to the normal activities with few local complications and low recurrence rate. Better quality of life is considered to be gold standard for open repair¹¹. The bilateral repair of hernias with this technique allows low risk of complications and save the patient from the hazards of repeated anaesthesia. The morbidity is low and hospital stay is short with this technique¹². Mesh repair is advocated by several specialized hernia centre demonstrating recurrence rate less than two percent. Review by specialized hernia centre show mesh repair has recurrence rates as low as none to 0.4% have been reported in International literature¹³. The objective of this study was to see out the outcome of tension free mesh repair of inguinal hernia with special reference to postoperative complications and recurrence rate.

Materials and Methods:

This study includes 67 patients who were operated for inguinal hernia in unit III, Department of Surgery, Bundelkhand Medical College and Associated Hospital, Sagar from July 2014 to April 2016 over a period of about two years. The study was conducted on the basis of all the patients admitted in wards through as an elective case from outpatient department. All the patients above the age of eighteen years or more with inguinal hernias were included in the study and those patients presenting with obstructed, strangulated and recurrent inguinal hernias were excluded from the study. The data of each patient was collected in a proforma form designed for the study and it included the details of age, sex, duration of symptoms prior to admission and clinical investigations and complications. A detailed history and physical examination were carried out and routine investigations were done in all cases. Investigations include complete count, blood sugar, blood urea, HBsAg, HIV, x-ray chest and ECG. Per rectal examination and ultrasound of the prostate was done to assess the urinary status of the patients above fifty years of age. All operations were performed under spinal anaesthesia. The hernias were classified according to its anatomical position as direct or indirect. Preoperative preparations include shaving the operation area and all patients were given intravenous antibiotics consisting of third generation cephalosporin. All patients undergone tension free mesh repair. This technique includes the following components:

1. Opening of the subcutaneous fat around the line of incision
2. Opening of the scarpa fascia down to the external oblique aponeurosis and visualisation of the external inguinal ring and the lower border of the inguinal ligament.
3. Division of the external oblique aponeurosis from the external ring laterally for up to 5centimetre safe guarding the ilioinguinal nerve.

- Mobilization of the superior and inferior flaps of the external oblique aponeurosis to expose the underlying structures.
- Mobilization of the spermatic cord along with the cremaster including the ilioinguinal nerve, the genitofemoral nerve and the spermatic vessels.
- Opening of the covering of the spermatic cord and identification and isolation of hernial sac. Inversion, ligation and excision of the sac done.
- An 11X6 centimetres polypropylene mesh was used. Placement and fixation of mesh to the edge of defect or weakness in the posterior wall of the inguinal canal to create a new artificial internal ring with care taken to allow some laxity to compensate for increased intraabdominal pressure when the patient stands.

All patients aged above fifty years and underwent hernia repair under spinal anaesthesia were catheterized for twenty four hours. All patients were put on intravenous broad spectrum antibiotics and analgesics continued till third postoperative day. Patients were discharged from the hospital when they were free from pain and had no complaints. Patients were told to wear underwear as a scrotal support to prevent scrotal oedema. Stitches were removed on eighth postoperative day on outpatient basis. Wound and inguinoscrotal region were examined for any complications. Patients were advised to return to their routine life after two weeks with the initiation of light work and heavy work after one and half months. The follow up was done after two and six weeks postoperatively and then after every three months for one year. Data collection was done on pre designed proforma and frequency of complication and recurrence were calculated.

Result: A total of 67 patients who presented with inguinal hernias and underwent tension free mesh repair were studied. All patients were male. Most of the patients were in their third to sixth decade of life. 68.6% patients belong to rural area and 31.34% patients were from urban area. The age distribution is depicted in table 1

Table 1- Age distribution of the patients

Age(Years)	Number	Percent
10-19	02	2.9%
20-29	07	10.4%
30-39	23	34.3%
40-49	12	17.9%
50-59	14	20.8%
>60	09	13.4%

Out of these patients, six patients (8.9%) had bilateral direct inguinal hernia. The right sided indirect inguinal hernia (47.7%) was the most common followed by left sided indirect inguinal hernia (17.9%).

Table 2- Types of hernias

Clinical Diagnosis	Number	Percent
Indirect right	32	47.7%
Indirect left	12	17.9%
Direct right	07	10.4%
Direct left	10	14.9%
Bilateral	06	8.9%

Majority of the Patients had variable duration of symptoms prior to admission. Most of the patients presented with pain in the groin, mass in the groin and increase in size on straining.

Table 3- Clinical symptoms recorded on admission

Symptoms	Number	Percent
Pain in groin	49	73.2%
Mass in groin	67	100%
Increase in size on straining	55	82%

Straining during defecation and micturition were found to be the major predisposing factor that is 38.8% (no. 26) for hernia formation. Other contributing factors are smoking 20.8% (no. 14), chronic cough 13.4% (no. 9), obesity 8.9% (no. 6) and weight lifting 10.4% (no. 7). In five patients, none of the contributing factors were found. There were no major intraoperative or postoperative complications. Complications were observed in twenty two patients (32.8%). All were managed conservatively and shown in table 4.

Table 4- Postoperative complications

Complications	Number of cases	Percent
Wound infection	04	5.9%
Wound hematoma	03	4.4%
Scrotal oedema	05	7.4%
Seroma formation	03	4.4%
Chronic groin pain	07	10.4%
Mesh infection	NIL	NIL
Recurrence	NIL	NIL
Mortality	NIL	NIL

Scrotal oedema and wound infection were the most common early complications encountered in our study. Patients with scrotal oedema and wound infection responded well to the conservative treatment with oral antibiotic, scrotal support and analgesics. Three patients had wound hematoma and seroma formation and responded well to the conservative treatment. Ninety percent of patients had mild pain for one week but it did not restrict their daily life activities. Chronic groin pain was reported by seven patients affecting their life style or activities of daily living. Twenty nine (43.2%) patients were discharged within three days and seventeen patients (25.3%) were discharged within four days. Twenty one patients (31.34%) stayed for more than four days due to some reason as wound infections or belong to remote area. The follow up was done after two and six weeks postoperatively and then after every three months for one year. No incidence of recurrence was seen during one year follow up.

Discussion: The history of groin hernia surgery has gone through many stages of development¹⁴. Tension free repair is now frequently used because of higher recurrence rates with non mesh repair and better knowledge of tissue repair and wound healing. Several studies comparing the outcome of open mesh with non mesh repair, both locally and internationally, have shown that tension free mesh repair technique offered less postoperative pain, early return to work and no recurrence^{15,16}. All patients in our study were male and observations were similar to earlier studies¹⁷. 65.6% of our patients had indirect inguinal hernia which had been reported as 72%¹⁸ and 8.9% of patients had bilateral direct inguinal hernia. In our study, 47.7% of patients had hernia on right side as same stated in Bailey and Love 24th edition. The cause of right sided inguinal hernia is due to delayed descend of right testis and patent processus vaginalis. Multiple risk factors are involved in causing the inguinal hernia. In most of the patients indirect inguinal hernia is common in younger and middle aged group. The most common early postoperative complication was scrotal oedema in five patients (7.4%) and postoperative wound infection in four patients (5.9%). This compares with 3.6% postoperative wound infection reported by Tzovarus et al.¹⁹ Wound hematoma and seroma formation has been reported in 4.4% of the patients²⁰. If we compare our recurrence rate (0%) over a follow up of about one year with the international study conducted at District Hospital Sweden by Peter Danielson et al.²¹. They also showed the same result that is recurrence rate of nil over a period of one year. Another study conducted at Queensway, UK²² showed same result over a follow up period of one year and they recommended that tension free mesh repair as a treatment of choice for inguinal hernia repair due to high patient's satisfaction and minimal complications. There is evidence from a number of studies that 30% of patients experienced some degree of discomfort or pain one year or more after inguinal hernia surgery²³. In six percent of the patients this pain was severe and markedly interferes with the patient's life style. In our study 10.4% of patients had chronic groin pain interfering with their normal daily activities. Tension free mesh repair can be safely done and is well tolerated with minimal postoperative pain. The operative procedure is usually simple and had minimal number of postoperative complications. None of the patients required operation to treat the complications. No recurrence with this type of treatment during our study period. Patients accepted this procedure happily and there is minimal disruption due to early return to normal life. Limitation of our study is that the number of patients and length of follow up is smaller as compared to other studies.

Conclusion: Tension free mesh repair of hernia is associated with very low morbidity. This technique is simple, rapid, relatively less painful, safe and allows the quick return of the patients to their normal day to day activities. It is an effective method of hernia repair having minimal recurrence rates and less postoperative pain.

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