Original Article

Outcome Of Inguinal Hernia Surgery Done Laparoscopically- Retrospective Analysis Of 15 Years

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Abstract

Background and Objective- Laparoscopic hernia repairs are used increasingly in adults. The purpose of this study was to analyze the outcome of adults treated surgically for unilateral or bilateral inguinal hernia using laparoscopy.

Methods- We conducted a retrospective, single-center outcome analysis of laparoscopic inguinal hernia repair in adults (18-90 years) that complied with STROBE standards. Our research received the local Ethics Committee. This study comprised 1500 adults who underwent consecutive laparoscopic surgery between March 2, 2017, and March 1, 2022. The prospective questionnaire (issued by mail or filled out during a structured telephone interview) and the hospital records served as the basis for data analysis. The median follow-up period between the operation and when families responded to the questionnaire was 60 months (range: 13–68 months). To verify that the internal ring was properly closed, the knot was knotted intra- or extracorporally and examined. In our study, two distinct surgical methods were study. We used the intraperitoneal, intracorporal knot method in 750 (50%) 1500 of patients. Surgeons used the extracorporal/extraperitoneal knot method on remaining 750 patients. SPSS was used for analysis.

Results- the mean age in IKM was 43.4 years and 44.1 years in EKM which was not significant. The study was male preponderance comprising 60% of patient load. The most common location of hernia was unilateral in 40% of cases followed by bilateral. Recurrence rate was higher in EKM and was significant. Postoperative problems were observed in (1.6%) patients who are higher in EKM but not significant. These were postanesthetic problems such as sore throat and cough. Post-operative infections (granuloma or abscess at the umbilical incision site) during the first month after surgery were observed in (1.6%) patients. Disturbing postoperative pain was reported by 42 (5.6%) patients through intraperitoneal knot method and (8.6%) through extraperitoneal knot method. So post operative pain was higher in EKM and it was significant.

Conclusion- Laparoscopic inguinal hernia repair carries a learning curve and is safe and efficient in adults thereafter. Further prospective studies are required to evaluate the long-term outcome of laparoscopic inguinal hernia repair in adults.

Keywords- laparoscopy, complications, inguinal hernia, recurrence, groin abscess, knot method

Introduction-

The protrusion of the peritoneum through the inguinal canal characterizes the majority of inguinal hernias in adults. [1] Indirect inguinal hernias invade the abdominal wall in adults. Laterally to the vessels of the epigastrium in the inner inguinal ring area.[2] The laparoscopic procedure is a minimally invasive alternative to open surgery, which is typically used to treat inguinal hernias in adults. [3] The benefits of laparoscopic hernia repair over open surgery include superior visual exposure, minimal dissection, fewer complications, equivalent recurrence rates, and improved cosmetic outcomes with the conventional open method. [4–5] The ability to detect unsuspected direct or femoral hernias as well as the ease with which the contralateral internal ring can be examined as well as the avoidance of access damage to the vas deferens and blood vessels during mobilization of the hernial sac are

all additional benefits of laparoscopic hernia repair. Additionally, this method avoids metachronal hernia and extensive scarring while allowing accurate assessment of contralateral groin disease. [6] Additional benefits of laparoscopic hernia repair over open surgery include quicker recovery, less postoperative pain, simultaneous repair of a contralateral wide-open patent processus vaginalis or hernia sac, and better cosmesis.

Materials and Methods-

We conducted a retrospective, single-center outcome analysis of laparoscopic inguinal hernia repair in adults (18-90 years) that complied with STROBE standards. Our research received the local Ethics Committee. This study comprised 1500 adults who underwent consecutive laparoscopic surgery between March 2, 2017, and March 1, 2022. The prospective questionnaire (issued by mail or filled out during a structured telephone interview) and the hospital records served as the basis for data analysis. The median follow-up period between the operation and when families responded to the questionnaire was 60 months (range: 13–68 months). The Surgeon checked in on the patients on a frequent basis. Hernia recurrences were diagnosed by clinical examination, and imaging of the groin region was not obtained on a regular basis. Recurrences were treated and confirmed by open or laparoscopic operation.

Methodology-

Adults who had laparoscopic inguinal hernia repair at our facility underwent their procedures while under tracheal intubation and general anesthesia. They underwent surgery in our day surgery facility, and released the same day.

The patient was positioned supine in a modest Trendelenburg posture with a 15° tilt and legs tucked up during the procedure. Using CO2, a pneumoperitoneum with a flow of 1-4 L/min and a pressure of 8–10 mm Hg was created. Two 2 mm or 3 mm ports were put at the lateral border of the rectus abdominis muscle at the umbilical level or just below for the 30° laparoscope, and one optical 5 mm port was surgically introduced through an umbilical incision. The hernia sac's volume was decreased as appropriate. Internal ring was then closed with a nonabsorbable 4/0 suture.

To verify that the internal ring was properly closed, the knot was knotted intra- or extracorporally and examined. In our study, two distinct surgical methods were study. We used the intraperitoneal, intracorporal knot method in 750 (50%) 1500 of patients. Surgeons used the extracorporal/extraperitoneal knot method on remaining 750 patients. After that, the pneumoperitoneum was deflated. Absorbable sutures were used to seal all abdominal wounds. The same postoperative care was given to all patients. When required, the patients and their parents were told to take painkillers. Surgeons carried out follow-up examinations 3 to 5 days and 12 months after the operation. Clinically, the patients were checked for hydroceles, hernia recurrence, and inguinal edema.

Statistical Analysis-

All data collected were tabled and statistically analyzed by Microsoft Office 2003 (excel) and Statistical Package for Social Science (SPSS) version 22. Parametric data were expressed as mean and SD, and non-parametric data were expressed as number and percentage of the total. SD of 2 groups was done using the paired student's t-test. P value < 0.05 is considered significant.

Results-

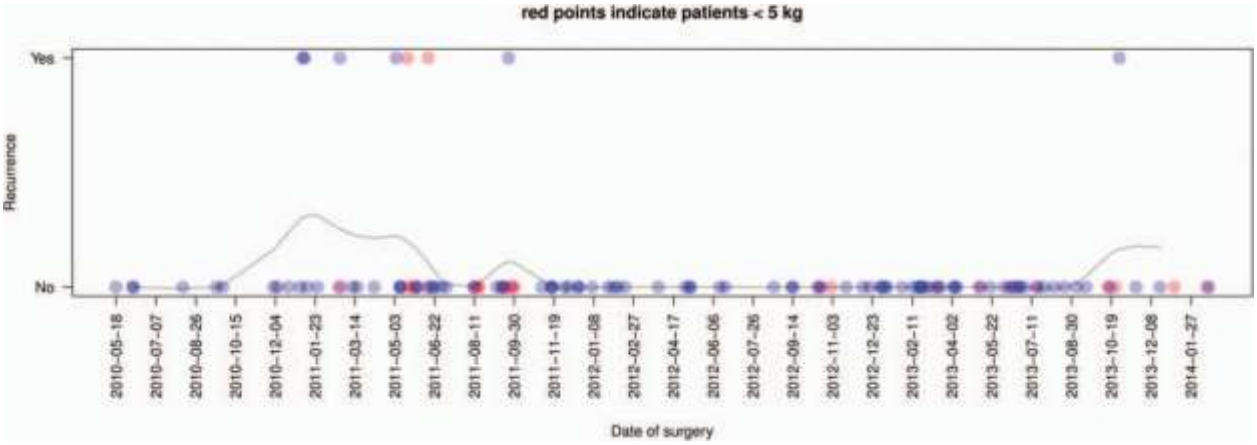
Table 1 Demographic and Clinical details of study participants on the basis of Surgical technique

Variables	**Intraperitoneal/ intracorporal (750)**	**Extracorporal /extraperitoneal (750)**	**p-value**
Age (Mean±SD)	43.4±7.1	44.1±8.4	0.11
Weight(Mean±SD)	61.2±13.2	63.3±11.4	0.10
Gender Males	445	437	0.21
Females	305	313	

Location of operation			0.09
Right	112	120	
Left	120	120	
Unilateral	330	339	
Bilateral	188	171	
Recurrence	48	67	0.01*

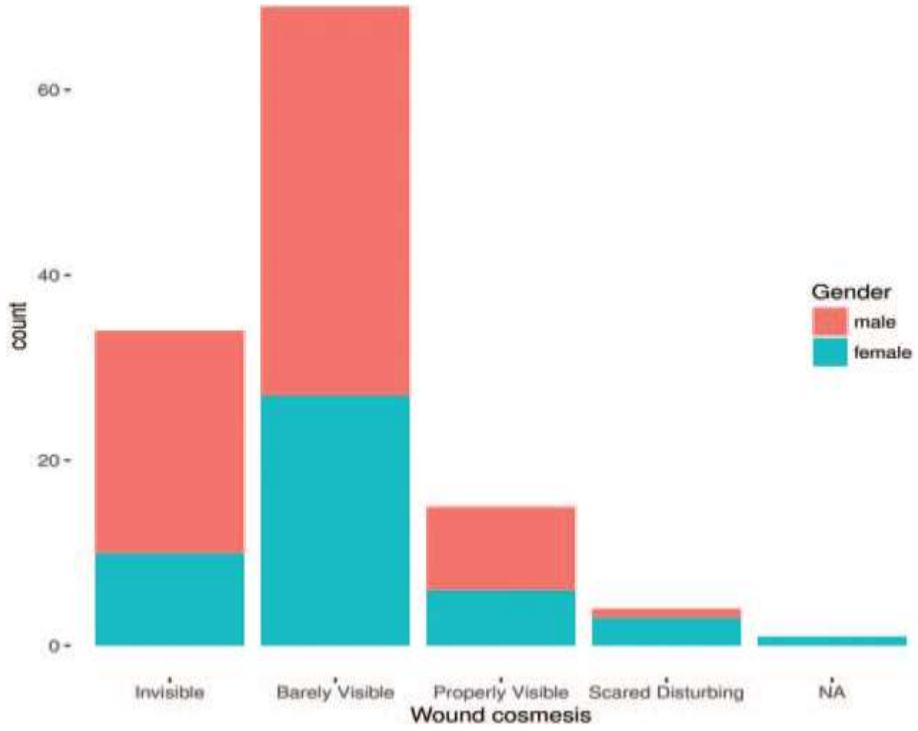
As per table 1 the mean age in IKM was 43.4 years and 44.1 years in EKM which was not significant. The study was male preponderance comprising 60% of patient load. The most common location of hernia was unilateral in 40% of cases followed by bilateral. Recuurence rate was higher in EKM and was significant.

Figure 1-Inguinal hernia repairs and hernia recurrence by body weight



As per figure 1 surgical record of 4 years (though study of 15 years) the tentative dates of surgery are also mentioned, so average was calculated based on the figure which shows the hernia repairs and recurrence based on weight. Blue dots indicate a patient Overweight or more and red dots indicate a patient normal BMI.

Figure 2- Rating of wound cosmesis after Laparoscopy



As per figure 2 the patients were asked to judge the appearance of the scar at the incision sites. The scars at the navel region and abdominal wall were rated: invisible in 36 (29.2%) cases, barely visible in 70 cases (56.9%), clearly visible in 15 (12.2%) cases, and scarred and esthetically disturbing in 4 (3.2%) cases.

Table 2- Surgical Findings and Post-operative outcomes

Variables	**Intraperitoneal/ intracorporal (750)**	**Extracorporal /extraperitoneal (750)**	**p-value**
Inguinal hernia confirmed by laparoscopy	750	750	1
Preoperative incarceration of hernia;	27	37	0.21
Postoperative problems Granuloma Abscess at site Cough Sore throat	 12 10 10 7	 14 8 10 2	 0.11
Postoperative pain	42	65	0.01*
Infection	17	32	0.01*
Recurrence	48	67	0.01*

In our study, the extracorporal/extraperitoneal knot technique (750) and intraperitoneal, intracorporal knot technique was used in other (750). We were not able to calculate the difference in outcome due to the limited number of the patients who underwent the epifascial, but Postoperative problems were observed in (1.6%) patients who are higher in EKM but not significant. These were postanesthetic problems such as sore throat and cough. Post-operative infections (granuloma or abscess at the umbilical incision site) during the first month after surgery were observed in (1.6%) patients. Disturbing postoperative pain was reported by 42 (5.6%) patients through intraperitoneal knot method and (8.6%) through extraperitoneal knot method. So post operative pain was higher in EKM and it was significant. Incarceration that occurred immediately before the operation was observed during surgery in 27 (3.6%) patients IKM and 37 (3.8%) in EKM but was not significant. The rate of infection and Recurrence were higher in EKM (3.7%) and 7.5% of recurrence compared to IKM with 6.5% recurrence.

Discussion-

41 studies comparing open versus laparoscopic inguinal hernia repair in adults were examined by a Cochrane meta-analysis. [7] The study revealed that laparoscopic repairs typically took 15 minutes. A rare, major complication was more likely, and the procedure took longer than open repair. However, after open mesh and laparoscopic procedures, the rate of hernia recurrence in adults was comparable, there was less lingering pain and numbness, and it took less time to get back to normal daily activities. [7] One significant disadvantage of laparoscopic hernia surgery over open repair is the increased costs brought on mostly by the use of disposable tools. [8]. In older vs young adults, the rate of recurrence following laparoscopic hernia repair was greater (4% vs 1%, P=.17). [9]

We observed a recurrence rate of 7.5% after laparoscopic hernia repair in adults. This is higher than the recurrence rate published in the literature where recurrence rates after laparoscopic hernia repair between 0% and 4.4% are described.[5,27–36] There is only 1 publication by Grimsby et al,[10] which compared the use of nonabsorbable sutures with the use of absorbable sutures. They reported significantly higher rates of hernia recurrences associated with the use of absorbable sutures when compared with the group repaired with nonabsorbable sutures (recurrence rates: 29% vs 4%).[10] Our recurrences mainly occurred during the learning curve for laparoscopic hernia repair according to the technique described by Schier et al[5] and we observed less recurrences during the learning curve for the technique according to Becmeur et al.[11] The increased rate of recurrences seemed to cluster with more surgeons adopting the laparoscopic technique of hernia repair, followed by a decline of complications over time. Shalaby et al[12] described a hernia recurrence rate of only 0.23% with several techniques of laparoscopic inguinal hernia repair and noted that recurrences occurred only among the early cases, which is indicative of a learning curve. Shalaby et al[12] recommend coagulation of the upper half portion of the hernia sac opposite of the testicular vessels and spermatic duct, to allow for a durable occlusion of the hernial sac opening without causing harm to the spermatic duct and testicular vessels.

The decrease in postoperative pain in adults is likely linked to single-site laparoscopic surgery or single-port access surgery. [13] Compared to patients treated laparoscopically, patients who had open hernia repairs needed more postoperative analgesics. The variation was insignificant, though. [14] Contrarily, Chan et al[15] reported that laparoscopic herniorrhage required more postoperative analgesics than open herniorrhage, although the scant data in this meta-analysis prevented meaningful comparisons. A significant reduction of postoperative wound infection and abscess formation with the laparoscopic approach (IKM) compared with open hernia repair in adults was reported by Salvilla et al.[16]

Conclusion-

After a learning curve, laparoscopic surgery is a safe and reliable procedure to treat inguinal hernias in adults. Laparoscopic surgery enables intraoperative verification of a contralateral wide-open vaginal process as well as a painless closure of the internal inguinal ring. The high hernia recurrence rate (7.6%) that was higher in EKM approach and infection rate was also higher. More has to be investigated in a more extensive prospective long-term analysis.

Conflict of Interest- None declared

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