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Open and laparoscopic inguinal mesh repair: Hospital stay and Complications

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Abstract

Conservative treatment means living with the hernia, making lifestyle changes and watching for changes to the hernia. Lifestyle changes may include giving up smoking and avoiding heavy lifting, or wearing a special belt called a 'truss'. Hernia control has been reported in about 30% of patients. Complications associated with the use of a truss include testicular atrophy, ilioinguinal or femoral neuritis, and hernia incarceration. Patients with clinical evidence of inguinal hernia were admitted and were subjected to full history and examination, routine investigations like complete blood count, blood sugar level, serum creatinine, chest X-ray, ECG etc. Additional investigations like abdominal ultrasonography, CT scan of abdomen were done in cases with equivocal findings and suspected of other pathologies. Inclusion and exclusion criteria were defined and strictly adhered to in selecting the cases to be included in the study. Among the 30 cases that underwent open mesh repair, 3 cases required urethral catheterization for urinary retention, 3 cases suffered chronic pain, 2 cases had wound related complications and 1 had wound infection.

Keywords: Inguinal mesh repair, hospital stay, complications

Introduction

Inguinal hernia most probably has been a disease ever since mankind existed ^[1]. In view of its existence in different kinds of animals, and in particular of primates, one can assume that already prehistoric human beings were affected with the disease ^[2]. Written proof of this statement became available from manuscripts and founds in Mesopotamian and Egyptian cultures. So does the famous papyrus Ebers, dating from around 1550 BC, refer to patients suffering from inguinal hernia, quoting its appearance during coughing ^[3].

A number of situations like obese patients, hernias that cannot be elicited on physical examination, and recurrent inguinal hernias make the usually straightforward diagnosis of inguinal hernia ambiguous. In these situations, radiologic investigations may be used as an adjunct to history and physical examination.

Anatomic structures are easily identified by the presence of bony landmarks; however, because there are few in the inguinal canal, other structures such as the inferior epigastric vessels are used to define groin anatomy. Positive intra-abdominal pressure is used to elicit the herniation of abdominal contents. Movement of these contents is essential to making the diagnosis with ultrasonography, and lack of this movement may lead to a false negative.

Conservative treatment means living with the hernia, making lifestyle changes and watching for changes to the hernia. Lifestyle changes may include giving up smoking and avoiding heavy lifting, or wearing a special belt called a 'truss'. Hernia control has been reported in about 30% of patients. Complications associated with the use of a truss include testicular atrophy, ilioinguinal or femoral neuritis, and hernia incarceration.

Indications include patients with occult/asymptomatic/minimally symptomatic primary or recurrent inguinal hernias and who have significant co-morbidity and who do not want to have surgical repair (after appropriate information provided) ^[4].

Fitzgibbons and colleagues recently reported the first prospective randomized trial of a watchful waiting strategy for patients with asymptomatic or minimally symptomatic inguinal hernias. These investigators randomized more than 700 men to either a watchful waiting or open tension-free hernia repair. The risk for hernia incarceration in the watchful waiting group was extremely low at 1.8 per thousand patient-years, or 0.03% of study participants.

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This study provides conclusive evidence that a strategy of watchful waiting is safe for elderly patients with asymptomatic or minimally symptomatic inguinal hernias, and that even though almost 25% of patients eventually undergo repair, when they do, the operative risks and complication rates are no different than those of patients undergoing prophylactic repair [5, 6].

Methodology

60 cases of primary inguinal hernia were selected for the study. Permission of ethical committee and informed consent of each patient was taken.

Patients with clinical evidence of inguinal hernia were admitted and were subjected to full history and examination, routine investigations like complete blood count, blood sugar level, serum creatinine, chest X-ray, ECG etc. Additional investigations like abdominal ultrasonography, CT scan of abdomen were done in cases with equivocal findings and suspected of other pathologies. Inclusion and exclusion criteria were defined and strictly adhered to in selecting the cases to be included in the study.

Pre-operative treatment included

- Correction of anemia, if present.
- Weight reduction if obese.
- Improvement of nutritional status.
- Abstinence from smoking/alcohol.
- Advice regarding breathing exercises.

The type of anesthesia used was spinal anesthesia for open cases and general anesthesia for laparoscopic hernia mesh repair.

The patients were randomized according to their serial number to undergo open or laparoscopic hernia mesh repair. All cases with a odd serial number underwent laparoscopic repair (TEP, TAPP) and all cases with an even serial number underwent open mesh repair.

A single dose of preoperative broad spectrum antibiotic was given followed by the same postoperatively. Analgesics like Injection tramadol was given postoperatively for 1 day and oral analgesics were continued thereafter.

Post-operative care and complications

- After surgery all patients were monitored carefully for pain, bleeding, wound infection and urine retention.
- A wound infection was ranged from minimal discharge of serous/pus from a single cutaneous suture to extensive and invasive process requiring hospitalization and intravenous antibiotics.
- Bleeding was defined as subcutaneous hematoma.
- Urinary retention was termed as inability to void requiring catheterization.

The patients were discharged when fit and were asked to come for follow-up after 7 days, then 1 and 3 months postoperatively. The patients were advised to return to their pre hernia lifestyle except lifting heavy weights.

In the present study, we have attempted to study the demographic characteristics and distribution of inguinal hernia in this part of the country and to enumerate the advantages and disadvantages of open mesh repair and laparoscopic mesh repair for the treatment of inguinal hernia.

Statistical Methods

Descriptive statistical analysis has been carried out in the present

study. Results on continuous measurements are presented on Mean \pm SD (Min-Max) and results on categorical measurements are presented in Number (%). Significance is assessed at 5% level of significance. The following assumptions on data were made

- Dependent variables were normally distributed.
- Samples drawn from the population were random and cases of the samples were independent.

Results

Table 1: Showing age distribution in the study groups

Age in years	Open repair		Laparoscopic repair		Total	
	NO.	%	NO.	%	NO.	%
10-20	0	0	3	10	3	5
21-30	6	20	3	10	9	15
31-40	9	30	6	20	15	25
41-50	5	16.67	5	16.67	10	16.67
51-60	5	16.67	9	30	14	23.33
61-70	3	10	3	10	6	10
>70	2	6.66	1	3.33	3	5
Total	30	100	30	100	60	100
Mean \pm S.D	44.70 \pm 15.55		46.83 \pm 15.68		45.86 \pm 15.64	

Age distribution is statistically similar and comparable within the two groups with a p value of 0.598.

Table 2: Showing duration of hospital stay after operation in both the cases

Duration of hospital stay after operation (in days)	Open repair	Laparoscopic repair	P value
Min – Max	2 - 4	1 - 2	1.92E-14**
Mean \pm S.D	2.5 \pm 0.57	1.17 \pm 0.38	

The duration of stay in the hospital after operation ranged between 2 to 4 days in the open mesh repair group with a mean of 2.5 and a SD of 0.57, whereas the duration of stay in the hospital after the laparoscopic procedure was between 1 to 2 days with a mean of 1.17 and a SD of 0.38 (p value is extremely significant, $p = 1.92E^{-14}$).

Table 3: Showing incidence of complications in both the groups

Post-Operative complications	Open repair		Laparoscopic repair	
	No.	%	No.	%
Urinary retention	3	10	1	3.33
Wound related complications	2	6.67	2	6.67
Chronic pain	3	10	-	-
Wound infection	1	3.33	-	-
Lung related complications	-	-	-	-
Recurrence	-	-	-	-

Among the 30 cases that underwent open mesh repair, 3 cases required urethral catheterization for urinary retention, 3 cases suffered chronic pain, 2 cases had wound related complications and 1 had wound infection. The total complication rate of the open group was 30%. Among the 30 cases that underwent laparoscopic repair, only 1 required urethral catheterization for urinary retention and 2 cases had wound related complications, total complication rate for this group being 10%.

Discussion

In the study conducted by Rutkow IM *et al.*, the highest incidence of inguinal hernia was in the age group of 45-64 years of age [7].

Ruhl CE *et al.* reported the highest incidence of inguinal hernia in the age group of 40-59 years of age in a study conducted in the United States of America^[8].

Prior MJ *et al.* reported the highest incidence of inguinal hernia in the age group of 60-69 years of age in a study conducted in the United Kingdom^[9].

Indranil B *et al.* reported the highest incidence of primary inguinal hernia in the age group of 47-52 years of age in a study conducted in the northern part of India^[10].

In our study, distribution of maximum number of cases with inguinal hernia have a bimodal peak, with the highest incidence seen in the age groups of 31-40 and 51-60 years of age, similar to the above stated studies, hence proving that inguinal hernia is essentially a disease of the middle-aged and the elderly people.

In a study done on the outcomes of open mesh repair by Shaikh *et al.*, 90.7% of the patients had uneventful recovery and 5% developed surgical site infection^[11].

Gianetta *et al.* in his study on open anterior mesh repair reported 2.7% scrotal hematoma, 2% cord edema, 0.7% orchitis and 0.7% wound infection^[12].

Neumayer L *et al.*, in his study found out the rate of complications to be higher in the laparoscopic-surgery group (39%) than in the open-surgery group (33.4%). The laparoscopic-surgery group had less pain initially than the open-surgery group on the day of surgery and at two weeks^[13].

In a study comparing open and laparoscopic inguinal hernia repairs, Juul P *et al.* concluded that the complication rates in the two groups were similar^[14].

In our study, the mean duration of hospital stay after a laparoscopic hernia repair was seen to be 1.17 ± 0.38 days and 2.5 ± 0.57 days following open mesh repair, with an extremely significant p value and is comparable to the above stated studies suggesting a shorter hospital stay following a laparoscopic hernia repair than open mesh repair.

Conclusion

- Among the 30 cases that underwent open mesh repair, 10% cases required urethral catheterization for urinary retention, 10% cases suffered chronic pain, 6.67% cases had wound related complications and 3.33% had wound infection. The total complication rate of the open group was 30%.
- Among the 30 cases that underwent laparoscopic repair, 3.33% required urethral catheterization for urinary retention and 6.67% cases had wound related complications, total complication rate for this group being 10%.
- The mean duration of hospital stay after a laparoscopic hernia repair was seen to be 1.17 days (SD ± 0.38) and 2.5 days (SD ± 0.57) following open mesh repair, with an extremely significant p value (<0.00001).

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