ORIGINAL ARTICLE

Comparison of Early Outcome of Laparoscopic with Open Inguinal Mesh Hernioplasty

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ABSTRACT

Aim: To compare the early postoperative outcome of laparoscopic with open inguinal mesh hernioplasty in patients with inguinal hernia.
Study design: Randomized controlled trial
Place and duration: Surgical department, CMH Lahore medical and dental college , Lahore**.**6 months 01-01-2013 to 30-06-2013
Methods: Seventy cases of inguinal hernia diagnosed clinically were registered who fulfilled the inclusion criteria. The allocation of cases to two study groups was settled by random number table. The principal operative technique for Group A was laparoscopic hernioplasty and for Group B was open inguinal mesh hernioplasty.
Results: Seventy patients with diagnosis of inguinal hernia were included in study. 48 hours post operatively, 7(10%) patients experienced moderate to severe pain in group A while in group B, 14(20%) experienced moderate to severe pain. Similarly on 7th post operative day, 3(4.3%) patients in group A and 7(10%) in group B experienced moderate to severe pain. 1(1.4%) patient in group A while 2(2.9%) in group B developed wound infection.
Conclusion: Laparoscopic hernioplasty is superior to open repair in the treatment of inguinal hernia, with less post operative pain and less risk of wound infection.
Keywords: Laparoscopic, open hernioplasty, Inguinal hernia

INTRODUCTION

Inguinal hernia is the commonest external abdominal hernia. Irrespective of country, race or socio-economic status, inguinal hernia constitutes a major health-care drain[1] and its repair is frequently performed accounting for 10–15% of all operations[2,3]**.** Since the widespread adoption of mesh in primary hernia repair, recurrence has decreased from 10% to 1%[4]**.** This has been documented by evidence-based studies that show a significant reduction in recurrence without an increase in complications like infection, pain, or disability[5]**.**

In essence, an inguinal hernia is the result of weakness of posterior wall of inguinal canal. In the past, stretching of the transversalis fascia was considered to be the most important factor[6]**.** Now it is believed that the strength of posterior wall of inguinal canal is due to muscles fibres of internal oblique and traversus abdominis[7]**.** There is evidence of increased risk of right inguinal hernia after appendicectomy[8]**.**

Although some patients with inguinal hernia may be asymptomatic[9], however most common clinical feature is lump in the groin. The hernia may be best shown with the patient standing.

In general if patient is fit, an inguinal hernia should be repaired surgically. Worldwide, some 20 million inguinal hernia repairs are accomplished each year[10]**.** The various repair procedures fall under two categories: Fascial repairs and tension free prosthetic repairs which may be performed by open anterior approach or laparoscopically. The fascial repairs are the oldest and they carry the highest incidence of post operative complications and recurrence[11]**.** In 1986 Lichtenstein introduced "tensionless" hernioplasty showing that the single most important factor in both recurrences and complications of hernioplasty comprised of ill-conceived attempts at approximating normally unopposed tissues under tension. This category of hernia repair is much more favored now a days[12]**.**

The laparoscopic approach has a number of advantages that include less post operative pain, earlier return to full activity and work, improved cosmesis and fewer recurrences. M C Misra et al compared laparoscopic with open repair of incisional and primary ventral hernia, showing remarkably lower rate of wound infection in laparoscopic group (6% versus 33%)[13]. Similarly, Ziya A Anadol et al published a difference of 37.24 versus 20.92 in mean pain score (0-100) while comparing laparoscopic trans-abdominal approach with open repair.[14] That, patients experience less postoperative pain after laparoscopic repair than after open mesh repair, has been reported in several randomized

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studies[15,16,17,18,19,20]. The initial higher morbidity (including major vascular, bowel injuries etc) and high recurrence rates reflected inexperience with this technique[21].

Thus the key question about laparoscopic inguinal hernia repair at present is whether it provides a significant advantage over the tension-free open repair. In practice, however, the advantages are not invariably realized; a laparoscopic approach is not always minimally invasive and various disadvantages accrue from the current requirement for general anesthesia, the need to traverse the abdominal cavity in TAPP technique and the increase in operating room time and costs.[22] It may be many more years before the true safety and efficacy of laparoscopic hernioplasty can be determined and the correct indications for its use established. That's why I wanted to undertake this study comparing efficacy of laparoscopic technique with that of conventional open anterior mesh hernioplasty in our local set up.

MATERIAL AND METHOD

Seventy cases of inguinal hernia fulfilling the inclusion criteria were selected from outpatient department. Patients were randomly allocated to two groups; group A for laparoscopic and group B for open mesh hernioplasty. The principal technique for group A patients was totally extra-peritoneal mesh hernioplasty and for group B was open anterior mesh hernioplasty (Lichtenstein's repair).

Patients were evaluated post operatively at 48 hours and at one week to assess the severity of post operative pain. Then they were further followed up at day 7 and day 14 for any evidence of wound infection and post operative pain. Data was analysed by using SPSS version 11. The variables analyzed were age, weight, sex, severity of post operative pain and presence or absence of wound infection. The variables obtained were described as simple statistics. They were listed as types, frequencies and proportions. The numerical outcomes like age, weight and severity of post operative pain (mild, moderate or severe) is presented as mean and standard deviation. Qualitative data like presence of wound infection is presented as frequency and percentage. Chi Square test will be applied on severity of post operative pain and presence of wound infection for comparison of significance between the two groups. P value be considered significant if < 0.05.

RESULTS

Seventy patients with diagnosis of inguinal hernia were included in study. Minimum age was 20 years and maximum 60 years with mean 43.23+13.37 yrs. All the subjects included in study were males. On clinical examination of either of the inguinal area, lump with expansile cough impulse was elicited in all 70(100%) patients. 63(90%) patients had unilateral (right or left) inguinal hernia and the rest 7(10%) had bilateral inguinal hernia. Another 7(10%) patients had history of recurrence from previous surgery of inguinal hernia. Taking the treatment options in account, 35(50%) patients in group A were operated with laparoscopic (TEP) technique. While other 35(50%) patients included in group B were treated with conventional open mesh hernioplasty (Lichtenstein Repair). After 48 hours, 49(70%) patients experienced mild or no pain. However 15(21.4%) had moderate pain and 6(8.6%) had severe pain.

Laparoscopic Hernioplasty group: 28(40%) patients had only mild or no pain while only 1(1.4%) patient experienced severe pain. 6(8.6) patients had moderate pain. Open Mesh Hernioplasty group: Only 21(30%) had mild or no pain. 9(12.9%) had moderate and another 5(7.1%) had severe pain. Similarly on 7th post operative day, 60(85.7%) patients were having either no pain or mild pain. Out of remaining 10(14.3%) patents, 6(8.6%) had moderate pain while 4(5.7%) had severe pain. Laparoscopic Hernioplasty group: 32(45.7%) had mild or no pain while only 1(1.4%) had moderate and 2(2.9%) had severe pain. Open Mesh Hernioplasty group: 28(40%) had mild or no pain. 5(7.1%) had moderate and 2(2.9%) had severe pain. Wound infection occurred in 3(4.3%) cases, out of which 2(2.9%) wounds were infected in group B (Open Mesh hernioplasty) and 1(1.4%) wound got infected in group A (Tables)

Table 1: Frequency of various treatment modalities used

Group	Frequency	%age
Group A Laparoscopic mesh hernioplasty	**35**	**50**
Group B Open mesh hernioplasty	**35**	**50**

Table 2: Age distribution

	Age of patient
N	70
Minimum	20
Maximum	60
Mean	43.23
Std. deviation	+13.37

Table 3: Proportion of various types of hernias (n=70)

Diagnosis	Frequency	%age
Right inguinal hernia	30	42.9
Left inguinal hernia	26	37.1
Recurrent rt. inguinal hernia	6	8.6
Recurrent left inguinal hernia	1	1.4
Bilateral inguinal hernia	7	10

Table 4: Frequency of pain at 48 hours (n=70)

Pain	Frequency	%age
Middle	49	70
Moderate	15	21.4
Severe	6	8.6

Table 5: Frequency of pain at Day 7 (n=70)

Pain	Frequency	%age
Middle	60	85.7
Moderate	6	8.6
Severe	4	5.7

Table 6: Comparative frequency of pain at 48 hours with both operative procedures (n=70)

Pain at 48 hours			Total
Mild	Moderate	Severe	
Laparoscopic mesh hernioplasty			
28(40%)	6(8.6%)	1(1.4%)	35(50%)
Open mesh hernioplasty			
21(30%)	9(12.9%)	5(7.1%)	35(50%)

Chi square test; 4.267 p value; Insignificant

Table 7: Comparative frequency of pain at day 7 in both operative procedures (n=70)

Pain at DAY 7			Total
Mild	Moderate	Severe	
Laparoscopic mesh hernioplasty			
32(45.7%)	1(1.4%)	2(2.9%)	35(50%)
Open mesh hernioplasty			
28(40%)	5(7.1%)	2(2.9%)	35(50%)

Chi square test; 2.933 p value; Insignificant

Table 8: Frequency of wound infection (n=70)

Wound infection	Frequency	%age
Present	3	4.3
Not present	67	95.7

Table 9: Comparative frequency of wound infection in both procedures (n=70)

Treatment	Wound infection	
	Present	Absent
Laparoscopic mesh hernioplasty	1(1.4%)	34(48.6%)
Open mesh hernioplasty	2(2.9%)	33(47.1%)

Chi square test; 0.348 p value; Insignificant

DISCUSSION

Use of a prosthetic mesh to create tension free repair as well as the laparoscopic technique has gained popularity for repair of inguinal hernia[5,23]. Use of mesh is common and increasing.[24] With the use of mesh in open hernia surgery resulting in tension free repair, the recurrence rate as well as rehabilitation period has reduced compared to sutured repairs[25]. Mesh repair has shown to reduce recurrence by 50% no matter what technique of mesh placement is used[26].

Stoppa and others have used pre-peritoneal subumbilical approach to retro-fascial space since 1969.[27] Advantages of this approach were the ease of separation of retro-fascial cellular space, direct access to posterior inguinal structures, clear understanding of hernial defects and clear exposure of the musculo-pectineal opening.[28] In laparoscopic TEP technique dissection and placement of mesh is done in the pre-peritoneal retro-fascial as done by Stoppa in his technique by open surgery. Therefore laparoscopic TEP repair is expected to combine advantages of Stoppa's approach with that of minimally invasive surgery.

Laparoscopic TEP repair of inguinal hernia is totally extraperitoneal approach as entry into peritoneal space is avoided. While the TAPP technique is trans-peritoneal approach to inguinal hernia in which abdominal cavity is entered with the possibility of injury to intra-peritoneal contents. Laparoscopic hernia repair has been criticized for technical difficulties, cost and a long learning curve[25,28].

The study was carried out to compare early post operative outcome of laparoscopic inguinal hernioplasty with open mesh hernioplasty in terms of early post operative pain and wound infection. Seventy patients presented to out-patient department Jinnah hospital Lahore, were included in study. Patients were randomly allocated to two groups; group A for laparoscopic and group B for open mesh hernioplasty. The principal technique for group A patients was totally extra-peritoneal mesh hernioplasty (TEP) and for group B was open anterior mesh hernioplasty (Lichtenstein's repair).

Pain was measured at 48 hours after procedure and on follow up at 7th postoperative day on visual analogue scale. Ziya A Anadol et al published a difference of 37.24 versus 20.92 in mean pain score (0-100) while comparing laparoscopic trans-abdominal approach with open repair.[14] In this study, considerably lower pain scores were observed after 48 hours in patients operated by laparoscopic technique where only 7(10%) patients experienced moderate to severe pain, compared with open technique. In open technique 14(20%) patients had moderate to severe pain. This is comparable with the results of Ziya A Anadol et al[14].

This significant difference in pain scores persisted even after day 7. At 7th post operative day, 3(4.3%) patients had moderate to severe pain in laparoscopic group while in open group, 7(10%) patients had moderate to severe pain.

M C Misra et al compared laparoscopic with open repair of incisional and primary ventral hernia showing remarkably lower rate of wound infection in laparoscopic group (6 % versus 33 %)[13]. In my study, rate of wound infection was over all (4.3%) lower in both the groups. Hence, laparoscopic hernioplasty

was observed to have lesser risk of wound infection, though not that much significant as shown by M C Misra et al. 2(2.9%) patients in open hernioplasty group and 1(1.4%) patient in laparoscopic group developed wound infection. However due to requirement of expensive Cidex solution to sterilize laparoscopic instruments and substandard sterilization in our setup, infection rate may be a little higher as compared to that described by Haq RN[29].

CONCLUSION

This randomized controlled trial concludes that laparoscopic inguinal hernioplasty is better than open anterior mesh hernioplasty in terms of less post operative pain and low risk of wound infection. However, requirement of general anaesthesia and increased estimated time and cost of surgery make it unpopular both among surgeons and patients. Also, long period of follow up is required to assess the exact efficacy of this technique.

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