Study of 50 Cases: Open VS Laparoscopic Ventral Hernia Repair

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Abstract: Introduction: The estimated incidence of ventral hernia is 15-20%. Although open repair, preferably with mesh, has been the standard approach, Laparoscopic repair is becoming increasingly popular among the surgeons and patients following the development of minimally invasive techniques. This study is done to study the risk factors for development of ventral hernia and to make comparison between open and laparoscopic methods of ventral hernia repair in view of:-Post-operative pain, Operative time, Patient morbidity and mortality, Complication, Recurrence rate, Patient compliance, Hospital stay, Return to routine work. Method: This was prospective study of comparison of open vs laparoscopic ventral hernia repair conducted during the period from December 2013 to May 2015 total 50 cases were taken for study. Results: In this study out of 50 cases, in 30 cases open ventral hernia repair and in 20 cases Laparoscopic ventral hernia repair done. It is more common in females (60%) and maximum patient (32%) belongs to age group 41-50 years. In this study, patients with chronic cough - 6(12%) ,constipation - 9(18%) and prostatism or dysuria - 4(8%). Mean duration for open ventral hernia surgery is 107 min and Laparoscopic ventral hernia repair is 126 min. Out of 50 patients, 25 patients had history of previous surgery. In laparoscopy surgery, 18(90%) patient mobilized from 1st post operative day, 17 (85%) patient returned to work within 11th to 15thpost operative day , 3(15%) patients returned to work on 16th to 20thpost operative days and in open surgery, 24(80%) patient mobilized on 2nd post operative day, 9 patient return to work on 11th -15thpost operative day while, 16 patients on 16th to 20thpost operative day and 5 patient on 21th to 25thpost operative day. Post operative pain (>2 days) was seen in 12(24%) patients among them 3(15%) in laparoscopic repair and 9(30%) in open ventral hernia repair. Conclusion: In our prospective study, comparing 50 cases of different types of ventral hernia repair open mesh repair and laparoscopic repair we concluded that there is definite difference in outcome between laparoscopic and open ventral hernia repair in selected patients. Laparoscopic approach has shown promising results and is being widely accepted. Majority of patients of ventral hernia are female (60%). Chronic cough, constipation, prostatism or dysuria is predisposing causes. Advantages of laparoscopic repair are less post-operative pain, less surgical site infection, less ambulatory period, less hospital stay, early return to work and allows to treat multiple defect through same incision. [K Parmar Natl J Integr Res Med, 2018; 9(1):52-56]

Key Words: open; laparoscopy; ventral hernia; meshplasty

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Introduction: The term "hernia" derived from Greek word, which means off-shoot or a bulge. "HERNIA is defined as an abnormal protrusion of a part or whole of viscous through a normal or abnormal opening in the wall of the cavity containing it." The estimated incidence of ventral hernia is 15-20%. Unfortunately, incisional hernia is relatively common clinical problem after the abdominal surgery. This complication has been reported in up to 11% of the patients after open abdominal operations. Most hernia occur in midline abdominal incisions, since these are currently most commonly used incisions for open abdominal procedures. This incisional hernia can be better repaired by open as well as laparoscopic route. Laparoscopic ventral hernia repair was first described by Karl Leblanc[2] in 1992. Retromuscular, sublay repair described by Stoppa, Rives et al[3] and Wantz[4], the laparoscopic repair of ventral defects capitalizes on the physics of Pascal's principle of hydrostatics by using the forces that create the hernia defect to hold the mesh in place. With the advancement of laparoscopic skill, laparoscopic hernia repair is gaining popularity. Although open repair, preferably with mesh, has been the standard approach, Laparoscopic repair is becoming increasingly popular among the surgeons and patients following the development of minimally invasive techniques. Hernia occurs due to either increased intraabdominal pressure associated with coughing, chronic obstructive pulmonary disease, obesity, straining (constipation, prostatism), pregnancy, ascites, cigarette smoking, heavy weight lifting, physical exertion or weakness of abdominal muscle[5, 6].

ventral hernia is classified as spontaneous: Further classified according to their location(1) Epigastric hernia: - occur from xiphoid process to umbilicus, (2)Umbilical hernia: - occur at umbilicus, (3)Paraumbilical hernia, (4) Spigelion hernia and Acquired: - occurs after the surgical incision known as incisional hernia. Another option for the repair of complex or large ventral defects in which primary

fascial closure is under tension or not possible is the component separation technique. This involves separating the lateral muscular layers of the abdominal wall to allow their advancement. Primary fascial closure at the midline is often possible.

Aims And Objectives: To study the risk factors for development of ventral hernia and to make comparison between open and laparoscopic methods of ventral hernia repair in view of post-operative pain, operative time, patient morbidity and mortality, complication, recurrence rate, patient compliance, hospital stay,return to routine work.

Method: Patients admitted in various surgical wards of our Hospital having ventral Hernia are included in our study by applying the following inclusion & exclusion criteria. The study was conducted during the period from December 2013 to May 2015 total 50 cases were taken for study. This is cross sectional study. Patient selection for the study has been on random basis.

Inclusion Criteria:

1. Patient having uncomplicated ventral hernia
2. BMI < 30 kg/m2
3. Patient willing for surgery
4. Patient having at least 6cm wall defect or in whom primary closure of rectus sheath was not possible or under tension were considered for open component separation.

Exclusion Criteria:

1. Complicated hernia
2. BMI >30 kg/m2
3. Conversion of laparoscopic repair to open repair
4. Pregnant and lactating mother.

All the patients were inquired about the duration of hernia, progression and the main associated symptoms like pain, vomiting, cough, dysuria, reducibility of the swelling, association with pregnancy. Past history pertaining to previous surgery- its nature, duration, type of surgery and closure was recorded. Patients were also asked about the complications associated with previous surgery like infections. Recording about the scar of the previous surgery, the hernia defect – its position, size, shape, cough impulse, reducibility and the overlying skin over the defect were made. Other comorbidities like anaemia, jaundice, hypertension, hypoproteinemia, obesity, benign prostatic hypertrophy were recorded. Chest screening was done to rule out COPD. Multiparity was recorded for female patients with more than 2 children. Ultrasound abdomen was done and CT scan was done if there were multiple defects or complications.

Indications for CT scan:[7] Detect subtle sign of complication within the hernia sac including obstruction, incarceration or strangulation.

Traumatic ventral hernia: In obese patients, to detect size, shape, number of defects and the content of the hernia. In post surgical patients, with enlarged masses or exuberant scars.

Data was collected from a specially designed case recording proforma pertaining to patient's particulars, proper history, clinical examinations, investigations, diagnosis & surgical procedures, infection following surgery, length of stay in the hospital.

Analysis & Results: In this study of 50 cases it has been found that incidence of ventral hernia is more common in females (60%) than males (40%). Out of 50 cases, in 20 cases laparoscopic ventral hernia repair done and in 30 cases open ventral hernia repair done. Maximum incidence (32%) found between 41-50 years age and (28%) cases found between 31-40 years age. Out of 50 cases, 6 cases were found of epigastric hernia, 20 cases of umbilical hernia, 5 cases of paraumbalical hernia, 18 cases of incisional hernia, 1 case of spigelion hernia. Out of laparoscopically operated 20 cases, 2 were of epigastric hernia, 8 cases of umbilical hernia, 3 cases of paraumbalical hernia, 7 cases of incisional hernia. In this study, out of 50 cases, 6(12%) patient had chronic cough, 9(18%) Patients had constipation, 4 (8%) Patients had prostatism or dysuria. Out of 50 patients, 25 patients had history of previous surgery. Out of 25 patients, 2(4%) patients had history of abdominal hysterectomy, 6(12%) patients had history of lower section cessarion section and 4(8%) patients had history of Laparoscopic tubal ligation and 3 (6%) patient had history of open tubal ligation. Mean duration for open ventral hernia surgery is 107 min as compare to Laparoscopic ventral hernia repair is 126 min. In laparoscopic hernioplasty, injectable antibiotic for 2 days in all 20(100%) cases and in open ventral hernia repair injectable antibiotics given for 3 days to 23(76%) patients and more than 3 days in 7(24%)

patients. In Laparoscopic hernia repair, oral antibiotics for 5-6 days 20(100%) patients and for open ventral hernia repair, oral antibiotics were given for 7-8 days in 23 (76%) patients and more than 8 days in 7(24%) patients. In Laparoscopic ventral hernia repair, analgesic were given for 5-6 days in 20(100%) patients and in open ventral hernia repair , analgesic given for 7-8 days in a 23(76%) patients and more than 8 days in 7(24%) patients. In laparoscopy surgery, 18(90%) patient mobilized from 1st post operative day and 2(10%) patients were mobilized on 2nd post operative day because of post operative pain. In open surgery, 24(80%) patient mobilized on 2nd post operative day and 6(20%) were on 3rd post operative day because of post operative pain. In this study in laparoscopic surgery 23 (90%) patient discharge after 3rdpost operative day and only 2(10%) patient discharge after 4th day and in open surgery 10 (40%) patient's discharge within 4th to 6thpost operative day and other were about 60% within 7th to 10thpost operative day. In laparoscopic surgery, 17 (85%) patient returned to their work within 11th to 15thpost operative day and 3(15%) patients returned to their work on 16th to 20thpost operative days. In open surgery, 9 patient return to the work on 11th - 15thpost operative day while 16 patients return to the work on 16th to 20thpost operative day and 5 patients return to work on 21th to 25thpost operative day. Post operative pain (>2 days) was seen in 12(24%) patients among them 3(15%) in laparoscopic repair and 9(30%) in open ventral hernia repair. Other most common complication of ventral hernioplasty was wound seroma, more incidences found in open ventral hernioplasty 3 (10%) as compared to laparoscopic method 1(5%). Respiratory distress was not seen in any patient a hernioplasty a significant advantage of laparoscopic hernioplasty. Urinary retention was not seen in any patient after removal of urinary catheter, which was removed next day of surgery.

Table 1: Comparison of Duration of Surgery between Open and Laparoscopic Ventral Hernia Repair

Duration [Mins]	Laparoscopic	Open
90-120	10	20
121-150	6	8
151-180	3	2
>180	1	0
TOTAL	20	30

On applying fisher's exact probability test for two group with different age interval P value is 0.3699>0.05. There is no significance difference between two methods.

Table 2: Comparison of Pain Scoring In First 24 Hour between Open and Laparoscopic Ventral Hernia Repair

Visual Analogue	Laparoscopic	Open
Score		
P1(Mild)(1-3)	16	8
P2(Moderate)(4-6)	4	18
P3(Severe)(7-10)	00	4
Total	20	30

On applying fisher's exact probability test for two group with different age interval for pain score P value is 0.0005<<0.05. There is significance difference between two methods. Laparoscopic hernia repair is less painful than open hernia repair.

Summary and Discussion: In this study, 50 case of ventral hernia repair which were operated during 2012-2014 were included. In 30 cases open ventral hernia repair and in 20 cases Laparoscopic ventral hernia repair done. In this study, incidence of ventral hernia is more common in females (60%) than males (40%). In Carbajo study (8), 73% female patients in (30patients) laparoscopic repair and 60% in(30 patients) open repair and In Ramshaw study(9), 56% female patients in (79 patients) laparoscopic repair and 55% in(174 patients) open repair. Maximum ventral hernia occurs in age group between 41-50(32%). Mean age is 46 year. In this study out of 50 cases, 6 cases were found of epigastric hernia, 20 cases of umbilical hernia, 5 cases of paraumbalical hernia, 18 cases of incisional hernia, 1 case of spigelion hernia. In this study, 7 patients (14%) had history of smoking, 10 patients (20%) had history of diabetes and 6 patients (12%) of ishchemic heart disease. Mean duration for open ventral hernia surgery is 107 min as compare to Laparoscopic ventral hernia repair is 126 min. In our study, Duration of surgery is more in laparoscopic hernia repair.

Table 3:Comparison of Mean Duration of Surgery between Open and Laparoscopic Ventral Hernia Repair with Other Studies

Study	Laparoscopic Min	Open Min
Carbajo et al[8]	87	112
Park[10]	95	78
Holzman et al[11]	128	98
Ramshaw[9]	58	82
present study	126	107

Out of 50 patients, 25 patients had history of previous surgery. Out of 25 patients, 2(4%) patients had history of abdominal hysterectomy, 6(12%) patients had history of lower section cessarion section and 4(8%) patients had history of Laparoscopic tubal ligation and 3 (6%) patient had history of open tubal ligation. In laparoscopic ventral hernia repair, 16 cases has mild pain (pain score in 1st 24 hours 1-3) and in open ventral hernia repair 18 cases had moderate pain (pain score in1st 24 hours is 4-6). In Laparoscopic ventral hernia repair, analgesic were given for 5-6 days in 20(100%) patients and in open ventral hernia repair , analgesic given for 7-8 days in a 23(76%) patients and more than 8 days in 7(24%) patients. In laparoscopy surgery, 18(90%) patient mobilized from 1st post operative day and 2(10%) patients were mobilized on 2nd post operative day because of post operative pain. In open surgery, 24(80%) patient mobilized on 2nd post operative day and 6(20%) were on 3rd post operative day because of post operative pain. In our study, mean hospital stay in laparoscopic repair is 3.2 days is less compared to open repair is 6.4 days.

Table 4: Comparison of Mean Hospital Stay Surgery between Open andLaparoscopic Ventral Hernia Repair with Other Studies

Study	Laparoscopic	Open
Carbajo et al(8)	2.2	9.1
Park(10)	3.4	6.5
Holzman et al(11)	1.6	5
Ramshaw(9)	1.7	2.8
present study	3.20	6.4

In laparoscopic surgery, 17 (85%) patient returned to their work within 11th to 15thpost operative day and 3(15%) patients returned to their work on 16th to 20thpost operative days. In open surgery, 9 patient return to the work on 11th -15thpost operative day while 16 patients return to the work on 16th to 20thpost operative day and 5 patients return to work on 21th to 25thpost operative day. Post operative pain (>2 days) was seen in 12(24%) patients among them 3(15%) in laparoscopic repair and 9(30%) in open ventral hernia repair.

In our study, Post operative infection rate is more in open hernia repair(7%). Other most common complication of ventral hernioplasty was wound seroma, more incidences found in open ventral hernioplasty 3 (10%) as compared to laparoscopic method 1(5%).

Conclusion: In our prospective study, comparing 50 cases of different types of ventral hernia repair open mesh repair and laparoscopic repair we concluded that there is definite difference in outcome between laparoscopic and open ventral hernia repair in selected patients. Laparoscopic approach has shown promising results and is being widely accepted. Majority of patients of ventral hernia are female (60%). Chronic cough, constipation, prostatism or dysuria is predisposing causes and diabetes mellitus, ischemic heart diseases are concurrent medical illness. Laparoscopic repair allows viewing of hernia defects, which are not apparent clinically and treat multiple hernias located in different quadrants of abdomen through same incision. Laparoscopic repair has less post-operative pain, less surgical site infection, less ambulatory period, less hospital stay, and early return to work. But Open repair also holds value for patients in which laparoscopic repair is contraindicated.

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