



Laparoscopic Intra Peritoneal Onlay Mesh Repair: Our Experience

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Abstract

Ventral hernia are among the most common pathologic conditions encountered with estimated prevalence of one fourth individuals being born with it, developing, or acquiring a ventral hernia in their lifetime. Ventral hernias include both primary abdominal wall hernia and incisional hernia. Management of ventral hernia is a complex entity owing to heterogeneity of the disease and existing co morbidities like malnutrition, obesity, malnutrition, diabetes, smoking etc.

The laparoscopic intra peritoneal onlay mesh (IPOM) is the new popular emerging technique for repair of ventral hernias. The advantages of laparoscopic IPOM in comparison to open technique have been proved in multiple randomised control studies. The advantages of Laparoscopic IPOM includes lesser post operative pain, less duration of hospital stay, early recovery, lesser seroma formation and lesser recurrence in follow up and better cosmesis and concurrent management of swiss cheese fascial defect. Laparoscopic IPOM can be combined with bariatric procedure, cholecystectomy, appendectomy, diagnostic laparoscopy and gynaecological laparoscopic studies. In our study done at tertiary care hospital 60 patients with ventral hernia underwent laparoscopic IPOM PLUS repair.

Keywords: laparoscopy, IPOM, IPOM plus, outcome, complications, ventral hernia.

Introduction

Ventral hernia remains a vexing problem for the surgeon and the public alike. It represent an incredibly varied clinical entity with a wide spectrum of disease. Laparotomy is associated with an incisional hernia rate of 3-23%^[1]. Ventral hernia repair is often a culmination of complex decision making process by the surgeon. Defect size, location, patient co morbidities, the presence of

contamination, acuity of the patient's presentation and the necessity of an ostomy and history of prior repair with or without prosthetic all way into the ultimate repair approach. is a very common condition seen by General surgeon in practice. Ventral hernias are quite debilitating to the patient leading to chronic pain, abdominal asymmetry and rarely obstruction. It is advocated that the defect be repaired by technique of hernioplasty rather than herniorrhaphy. Mesh repair has decreased the long

term rate of recurrence from 63% for primary repair to 32%^[2]. While many open approaches have been developed for the correction of this ventral wall defect; the main focus currently is on the minimally invasive approach of Laparoscopic Intra Peritoneal Onlay Mesh repair. The obvious advantages of this approach include less post operative pain, smaller scar, shorter hospital stay which in turn translates to early overall recovery of the patient. However the technique does have complications of its own. These include the general complications of laparoscopic surgery such as those of general anaesthesia, pneumoperitoneum related complications and the complications specific to the surgery which include port site herniation, pain, recurrence, vascular and visceral injuries.

Aims and Objectives

- 1) To assess the outcome of ventral hernia patients after Lap IPOM repair.
- 2) To classify and enumerate the various complications of Lap IPOM repair over predefined time limits.

Materials and Methods

We performed a prospective study of 60 patients with ventral hernia who presented at our institute over 6 months. All the patients underwent the same treatment modality of Lap IPOM repair by the same surgeon using a composite mesh. Preoperatively a thorough history was taken and physical examination of the patients was done by senior surgeon. An Ultrasound abdomen was done in each of the patients and the size, location and contents of the defect of ventral hernia noted. After reviewing the inclusion and exclusion criteria, the patient was then planned for an elective Laparoscopic IPOM repair. Laparoscopic IPOM was done in each patient. The immediate complications of injury, infections, pain was noted in all cases. We then followed up each patient prospectively in the postoperative period at 1month, 3months and 6months to assess the incidence of port site hernia, recurrence and overall patient satisfaction.

Inclusion criteria

1. Patients aged 20-60 years
2. All the patients planned for elective Lap IPOM repair who were deemed fit for surgery.

Exclusion criteria

1. Patients not willing for Laparoscopic surgery.
2. Patients not fit for general anesthesia
3. Patients presenting in emergency with strangulated ventral hernia
4. Patients who had to be converted to open due to technical considerations



Fig 1 . CT scan showing ventral hernia

Procedure

After valid written consent patient was induced under general anesthesia in the reverse Trendelenberg position. After draping the patient with aseptic precautions, pneumoperitoneum was created by closed technique at the Palmers point. This site was used as camera port using 12mm optical trocar. After inspecting the abdomen and the site and contents of the defect, 2 lateral 5mm ports were introduced in the flanks opposite to the side of herniation. The contents in the defect were then reduced carefully by a combination of blunt, sharp and electrocautery dissection. Once the defect was free of the contents, appropriate size Polypropylene composite mesh was introduced from the 12mm port site into the abdomen. The mesh was prepared by placing 4-6 sutures at the corners and in the centre using Prolene 1-0 keeping both the ends of the knot long. The centre and corners of the mesh were lifted transfascially using Aberdeen Needle

and tied on the outside thereby placing the knot anterior to the fascia. This led to hitching up of the mesh to the anterior abdominal wall. The mesh was then fixed by spiral tacks every 1cm. After confirming the hemostasis, the ports were removed and pneumoperitoneum was reversed. Port sites were sutured with Port Vicryl and skin with Ethilon 2-0. Sterile dressing applied.

Results

Out of the total 60 patients, 42 were male (70%) and 18 were female (30%) with a M:F ratio being 2.33.

The median age of our patients was 52 years. A total of 48 patients (80%) had a previous abdominal surgery in the past of which 44 patients (91.67%) had a BMI equal to or more than 30kg/m² and the remaining 4 (8.33%) had a BMI 26-29kgk/m². Of the remaining 12 patients with no previous operative history, 8 of them had history of smoking and all of them had BMI equal to or more than 30kg/m².

Perioperative parameters

1. **Pain-** A total of 12 patients complained of pain on Postop day 1 with need for round the clock analgesia. This number fell to 4 by day 3. At the time of discharge (maximum interval being 7 days and median being 4 days), none of the patients had complaints of pain.

2. **Major intra operative bleeding-** A total of 4 patients were noted to have a bleeding episode in the intra operative period. But in each case the bleeding was successfully tackled laparoscopically with electrocautery and gelfoam and conversion to open was not required.

3. **Major visceral injury-** In none of the cases was there any transection injury to bowel, stomach or solid organs. However in 1 patient there was a small tear in the serosa of small bowel at the time of reduction of the contents. This was managed without conversion by intracorporeal suturing using Vicryl 2-0.

4. **Hospital Stay and Recovery-** The median interval of hospital stay was 4 days while the longest admission was till Day 7 postoperatively.

The patients started liquid diet on the same day and solid diet on Day1. 32 patients (53.33%) complained of varying degrees of nausea on Day1 while 44 patients (73.33%) complained of distension of abdomen. The symptoms of nausea and distension resolved in all patients by Day 3. Bowel movements resumed on Day2 for 46 patients (76.67%) and all patients by Day5.

Remote Postoperative Parameters

Complication	1 month	3 months	6 months
Chronic Pain	4 (6.67%)	4 (6.67%)	6 (10%)
Recurrence	0	2 (3.33%)	2 (3.33%)
Port site herniation	0 (0%)	1 (1.67%)	1 (1.67%)
Mesh infection	1 (1.67%)	1(1.67%)	0 (0%)

Discussion

Lap IPOM repair was initiated as a minimally invasive approach in the technique of performing ventral hernioplasty. It follows all the sound principles of hernia surgery albeit the morbidity involved in the closure of big ventral defects by open technique. We made this case series in an attempt to assess the feasibility and outcomes of performing this surgery in a high volume referral tertiary care centre such as our institute. We then assessed the incidence of various possible complications that could occur in the perioperative and remote postoperative period in order to gain a realistic perspective of this technique before proposing it as a standard of care.

Pain as a complication was seen in 20% patients on postoperative day 1 which then decreased to 6.67% on Day 3. The incidence of chronic pain was then constant at 1 month and 3 months but was reported in upto 10% patients at 6 months. The incidence of postoperative pain is reported to be equal in both the Lap IPOM and ope groups. The reason behind this is believed to be due to extensive subcutaneous dissection and adhesiolysis that is required with the minimally invasive approach akin to the open approach albeit with smaller skin incision^[3]. Nevertheless the length of hospital stay has been reported to be shorter and the time taken to resume daily activity level was lesser for persons undergoing Lap IPOM compared to those undergoing open surgery.^[4]

Most of the RCTs, Meta analysis and comparative studies show a significantly lower rate of short term postoperative complications with Lap IPOM compared to open surgery^[5]. The reduction in complications is mostly due to reduction in the incidence of wound infection. In our study wound infection occurred in 2 patients of which 1 presented at 1 month and the other presented at 3 months. Both of them required mesh removal. In a study by Itani and colleagues the incidence of wound infection thereby mandating mesh removal was seen in 2.8% and 21.9% in laparoscopic and open hernia repair respectively^[6]. In the meta analysis by Forbes et al the rate of mesh removal secondary to infection was 0.7% in Lap IPOM and 3.5% in open surgery.^[7] Visceral injury was seen in only 1 patient intraoperatively. But this was managed by suturing of the serosal tear. In LeBlanc's 2007 review article the incidence of enterotomy in ventral hernia repair was 1.78%. This complication was associated with an increase in mortality from 0.05% to 2.8%.^[8]

The most important outcome in hernia repair surgery is recurrence. In our series the recurrence was nil at 1 month but noted to be 3.33% at 3 months which remained the same at 6 months as well. The introduction of mesh in hernia repair was a major advance in reducing the rate of recurrence^[9]. Burger et al reported a 10 year cumulative rate of recurrence of 63% and 32% for suture and mesh repair respectively^[10].

A meta analysis published in 2009 that analysed 8 RCTs found no difference in the rate of hernia recurrence between the open and laparoscopic techniques at short term follow up 3.4% and 3.6% in laparoscopic and open techniques respectively^[11]. Similar findings were published by Itani and colleagues. In this RCT, the recurrence rate at 2 years follow up was 12.5% in laparoscopic group and 8.2% in the open group (p=0.44).^[12]

Conclusion

Lap IPOM is an extremely safe and effective option in the management of patients of ventral hernias. The minimally invasive approach offers a good cosmetic outcome to the patient without

compromising on the results of hernia repair. Patients are found to return to normal activity at a much faster rate. Although technically challenging, this technique is easy to reproduce and apply. The feasibility of this technique in the emergency setting needs further study and validation. Lap IPOM should be made a part of standard protocol for the management of ventral hernia repair in moderate to high volume tertiary hospitals where facilities are available.

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