

## A Retrospective Study of Laparoscopic Intraperitoneal Onlay Mesh Repair of Incisional Hernias

D.K.Rani<sup>1</sup>, Dr.K.Ananthababu<sup>2\*</sup>

<sup>1</sup>Assistant Professor, Department of General Surgery, Osmania Medical College and Osmania General Hospital, Hyderabad, Telangana, India.

<sup>2\*</sup>Professor, Department of Pharmacology, Govt Medical College, Siddipet, Telangana, India.

Corresponding Author: Dr.K.Ananthababu

**Abstract: Introduction:** A hernia is defined as an area of weakness or complete disruption of the fibro muscular tissues of the body wall. Hernias are among the oldest known afflictions of humankind. The word “hernia” is derived from a Latin term meaning “a rupture”. The earliest reports of abdominal wall hernias date back to 1500 BC. During this early era, abdominal wall hernias were treated with trusses or bandage dressings. Despite the high incidence, the technical aspects of hernia repair continue to evolve.

**Materials and methods:** All patients attending at Osmania General Hospital OPD with ventral hernia were approached and counseled for laparoscopic IPOM hernioplasty, but only those who agreed were included in this study. Fifty consecutive patients underwent IPOM hernioplasty, over a time period of 20 months (January 2018- December 2018). All cases were done by a single surgeon in Osmania general hospital, Hyderabad. Preoperative evaluation was done by clinical assessment. Abdominal ultrasonogram was done in selected cases where there was confusion about the defect especially in obese patients. Location of the hernia was traced, position of the ports marked and expected location of mesh mapped, just before the patient is mounted on operation table (Fig 1). IPOM was performed using three puncture technique. Pneumoperitoneum was established by placement of a Veress needle into left subcostal area in mid-clavicular line (Fig 2). A 10mm port was introduced in left anterior axillary line at the level of the defect, and two 5mm ports on either side a little in front of the previous one.

**Results:** In this series, out of 50 cases, 11 cases were male, 39 female (M: F=1:3.5) (Table I). 35 (70%) cases were diabetic, 15 (30%) were non-diabetic. Mean age of the patients were 47.7yrs (male 47.7+9.5 years, female 47.7- 2.6 years, diabetic patients 47.7+ 2.5yrs, Non-diabetic patients 47.7-5.9yrs). Indications for IPOM (Table II) was paraumbilical hernia 29cases (58%), incisional hernia 14 cases (28%), multiple incisional hernia (Swiss cheese hernia) 2 cases ( 2 large defect in one case, 5 defects of varying size in another patient), umbilical port hernia 2 cases, parumbilical along with incisional hernia 1case, epigastric hernia 1 case, lumbar hernia 1 case.

**Conclusion:** Laparoscopic intraperitoneal onlay mesh (IPOM) repair was observed to be an effective surgical procedure for ventral hernia repair. It provides many benefits with low complications and recurrence in experienced hands. Hence it can be considered as primary procedure for ventral hernia repair.

**Key Words:** hernia, Laparoscopic intraperitoneal onlay mesh, Abdominal ultrasonogram

Date of Submission: 24-10-2019

Date of Acceptance: 09-11-2019

### I. Introduction

A hernia is defined as an area of weakness or complete disruption of the fibro muscular tissues of the body wall. Hernias are among the oldest known afflictions of humankind. The word “hernia” is derived from a Latin term meaning “a rupture”. The earliest reports of abdominal wall hernias date back to 1500 BC. During this early era, abdominal wall hernias were treated with trusses or bandage dressings. Despite the high incidence, the technical aspects of hernia repair continue to evolve.<sup>1</sup>

Leblanc and booth published the first report of laparoscopic incisional hernia repair in 1993. Over the course of time, this approach has gained popularity with patients who seek a “minimally invasive” solution to their hernia problem and with surgeons who believe that the laparoscopic approach offers advantages over traditional repairs.<sup>2,3</sup>

Even after nearly two decades of experience with laparoscopic incisional hernia repair, there is a surprising paucity of good data clearly proving the benefits of this technique over standard open procedure. Although, the pioneers of LVH felt that this approach would be less invasive and therefore less painful than traditional surgery, many other advantages became apparent as the procedure was developed.<sup>4,5,6</sup>

## II. Materials And Methods

All patients attending at Osmania General Hospital OPD with ventral hernia were approached and counseled for laparoscopic IPOM hernioplasty, but only those who agreed were included in this study. Fifty consecutive patients underwent IPOM hernioplasty, over a time period of 20 months (January 2018- December 2018). All cases were done by a single surgeon in Osmania general hospital, Hyderabad. Preoperative evaluation was done by clinical assessment. Abdominal ultrasonogram was done in selected cases where there was confusion about the defect especially in obese patients. Location of the hernia was traced, position of the ports marked and expected location of mesh mapped, just before the patient is mounted on operation table (Fig 1). IPOM was performed using three puncture technique. Pneumoperitoneum was established by placement of a Veress needle into left subcostal area in mid-clavicular line (Fig 2). A 10mm port was introduced in left anterior axillary line at the level of the defect, and two 5mm ports on either side a little in front of the previous one.

Contents were reduced by external pressure and internal traction. Adhesions were cut at a vascular line using scissors and cautery. Bowel loops were covered with omentum where possible, otherwise a non-adhesive dual mesh was used. Mesh was marked at center, suture ligatures were placed at corners (Fig 3). The center was fixed with atraumatic suture with straight needle. Then the mesh was rolled and introduced through the 10mm port. The needle was pushed out through skin puncture at the center of the defect. Suture passer puncture was done over the corners of the mesh and ligature ends were brought through the same skin puncture wound at each corner keeping intervening tissue in between separate puncture sites in inner parietal wall. The suture ends were tied, cut and the knot allowed to slip within tissue through the external puncture points. Margins of the mesh were fixed with parietal wall from inside using titanium spiral tack (Fig 4, 5). Age, sex, glycaemic status, incidental findings, additional procedure done, length of stay in hospital were evaluated.

## III. Results

In this series, out of 50 cases, 11 cases were male, 39 female (M: F=1:3.5) (Table I). 35 (70%) cases were diabetic, 15 (30%) were non-diabetic. Mean age of the patients were 47.7yrs (male 47.7+9.5 years, female 47.7- 2.6 years, diabetic patients 47.7+ 2.5yrs,

Non-diabetic patients 47.7-5.9yrs). Indications for IPOM (Table II) was paraumbilical hernia 29cases (58%), incisional hernia 14 cases (28%), multiple incisional hernia (Swiss cheese hernia) 2 cases ( 2 large defect in one case, 5 defects of varying size in another patient), umbilical port hernia 2 cases, paraumbilical along with incisional hernia 1case, epigastric hernia 1 case, lumbar hernia 1 case.

In 48 cases polypropylene mesh and only in 2 cases dual mesh was used. In addition to IPOM procedure, in same sitting laparoscopic cholecystectomy was done in 8 cases, dilatation & curettage in 1 case and adhesiolysis in 7 cases. 33patients (66%) were discharged in the first post-operative day. All patients were discharged within 60 hours of surgery. None of the cases required conversion to open. There was no intra-operative complication. One case developed recurrence of hernia 2 years after IPOM, due to excessive weight gain and mesh migration. One case developed false recurrence due to development of End Stage Liver Disease and ascites. Four patients developed seroma which were managed conservatively without any surgical intervention. There was no mortality in this series.

S.No	Parameter	N (%)
1	Male	11 (22%)
2	Female	39 (78%)
3	Diabetic	35 (70%)
4	Non Diabetic	15 (30%)

**Table I.** Demographics of Patients Undergoing Laparoscopic IPOM Hernioplasty

S.No	Indication	N (%)
1	Paraumbilical hernia	29 (58)
2	Incisional hernia	14 (28)
3	Multiple incisional hernia	2 (4)
4	Paraumbilical hernia	1 (2)
5	incisional hernia	
6	Umbilical port hernia	2 (4)
7	Epigastric hernia	1 (2)
8	Lumbar hernia	1 (2)

**Table 2:** Indications for Laparoscopic IPOM Hernioplasty



**Figure 1:** Hernia is traced, position of ports marked and expected location of mesh mapped



**Figure 2:** Making a pneumoperitoneum



**Figure 3:** Preparation of the mesh



**Figure 4:** Fixation of the Mesh at the corners and centre with vicryl



**Figure 5:** Additional mesh fixation with tackler

#### **IV. Discussion**

Incisional hernia develops in 3% to 13% of laparotomy operations. Repair of hernia by a prosthetic mesh is a well-recognized, low recurrence procedure. But whether the procedure is to be done by open or laparoscopic technique is still a topic of debate. In laparoscopic IPOM hernioplasty, the surgical wound is small. Hence, there is short hospital stay, lower wound complications, reduced post-operative pain and early recovery. In addition, in IPOM hernioplasty, the mesh is placed intraperitoneally.<sup>7</sup> So, extensive tissue dissection is not required. The mesh overlaps the defect by at least 3-5cm margin, giving a strong support. Hence, a better post-operative outcome. In our series, patients' demography is similar to other studies.<sup>8</sup>

More than three fourth of the patients are female. This is probably due to lax and weak anterior abdominal wall in females due to repeated child birth. In addition, history of caesarean section in females is an important predisposing factor. Due to the social culture in this region, females return to strenuous household activities after a major surgery too soon, resulting in high incidence of incisional hernia. Unlike our study, incisional hernias are the majority of the cases in different studies.<sup>9</sup> In our study, more than 50% are paraumbilical hernia. It is difficult to explain this difference. However one explanation maybe that in our society small paraumbilical hernias are ignored and patients seek medical help when the hernias become large and symptomatic. As a result patients present later in life.

It is observed that female patients present at least 10 years earlier to male patients. In this series, it was noticed that non-diabetic patients presented 10 years earlier than diabetic patients, but there is no relevant data in available publications.<sup>10</sup>

Most of the studies used polypropylene mesh, as is used in our series. We used polypropylene mesh as it is the most available and cheaper compared to other meshes. Recurrence is 2% in our series, in comparison to other studies (3%-11%), it is much less. This difference is probably due to the large number of cases in different studies, and because large complex hernias were attempted for laparoscopic repair.<sup>11</sup>

There are a few limitations of the study. First the number of case is small, second, it is a retrospective study. Strength of the study is inclusion of all cases with ventral hernia who were willing and able to afford expenditure irrespective of clinical state or image findings.

#### **V. Conclusion**

Laparoscopic intraperitoneal onlay mesh (IPOM) repair was observed to be an effective surgical procedure for ventral hernia repair. It provides many benefits with low complications and recurrence in experienced hands. Hence it can be considered as primary procedure for ventral hernia repair.

#### **References**

- [1]. Bauer JJ, Harris MT, Krel I, Gelernt IM, Twelve year experience with expanded poly tetra fluoro ethylene in the repair of abdominal wall defects. *Mt Sinai J Med* 1999; 66:20-25.
- [2]. Koller R, Miholic J, Jalk RJ, Repair of incisional hernias with expanded polytetrafluoroethylene. *Eur J Surg* 1997; 163: 261-66.
- [3]. Leber GE, Garb JL, Albert AI, Reed WP. Long-term complications associated with prosthetic repair of incisional hernia. *Arch Surg* 1998; 132: 1141-44.
- [4]. Park A, Gagner M, Pomp A, Laparoscopic repair of large incisional hernias. *Surg Laparosc Endosc* 1996; 6: 123-28.
- [5]. White TJ, Santos MC, Thompson JS, Factors affecting wound complications in repair of ventral hernias. *Am Surg* 1998;64: 276-80.
- [6]. Bencini L, Sanchez J, Bo B, Farsi M, Moretti R, Incisional hernia repair: retrospective comparison of laparoscopic and open techniques. *Surg Endosc* (2003) 17: 1546-51.
- [7]. Costanza MJ, Heniford BT, Arca MJ, Mayes JT, Gagner M, Laparoscopic repair of recurrent ventral hernia. *Am Surg* 1998; 64: 1121-27.
- [8]. Holzman MD, Purut CM, Reintgen K, Laparoscopic ventral and incisional hernioplasty. *Surg Endosc* 1997; 11: 32-35.
- [9]. Park A, birch DW, Lovrics P, Laparoscopic and open incisional hernia repair: a comparison study. *Surgery* 1998; 124:816-22.

- [10]. Ramshaw BJ, Esartia P, Schwab J, Mason EM, Wilson RA, Duncan TD, et al. Comparison of laparoscopic and open ventral herniorrhaphy. *Am Surg* 1999; 65: 827-31.
- [11]. D Lomanto, S G Iyer, A Shabbir, W K Cheah. Laparoscopic versus open ventral hernia mesh repair: a prospective study. *Surg Endosc* 2006; 20: 1030-35.

Dr.K.Ananthababu. "A Retrospective Study of Laparoscopic Intraperitoneal Onlay Mesh Repair of Incisional Hernias." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 18, no. 11, 2019, pp 05-09.