



VARIABLES IN LAPAROSCOPIC MANAGEMENT OF INCISIONAL HERNIA

Dr. Rakesh Faujdar

Assistant Professor, S.N. Medical College, Agra, Uttar Pradesh.

Dr. Padam Chandra Sethi*

Junior Resident, Department of Surgery, M.L.B. Medical College, Jhansi, Uttar Pradesh. *Corresponding Author

ABSTRACT

Background: The explosion of video - assisted surgery in past 20 years was a result of the development of compact, high resolution, charged coupled devices that could be mounted on the internal end of flexible endoscopes or on the external end of the Hopkins telescope. Coupled with bright light sources, fibre optic cables, and high resolution video monitors, the videoendoscope has changed our understanding of surgical anatomy and reshaped surgical practice

Aims and Objectives: 1.To evaluate how much overlap of mesh is optimal for the hernia repair. As the optimal method of fixation in Intracorporeal suturing 2.To analyze and evaluate the minimum number of the transfascial stitches for optimal fixation of the mesh with the abdominal wall. 3.To analyze and evaluate the minimum numbers of the tacks for optimal fixation of the mesh with abdominal wall. 4.To analyze and evaluate post-op recovery time, complications and recurrence.

Materials and methods: Our study sample comprises 42 patients who underwent laparoscopic repair of incisional hernia and primary defects of the abdominal wall from July 2009 to Sep 2011. All patients were treated by a single surgeon with expertise in laparoscopic surgery

Result: Average age of presentation was 42.97 years. The incisional (ventral) hernia was most common in females and it was 20 times higher than in males. Prolene was used in 5 patients for the fixation and vicryl was used in 27 patients either alone or in combination with tackers. Mesh 6x6 or 6x4 was placed as an intraperitoneal onlay mesh in 36 patients and 6x6 as preperitoneal in 2 patients and extraperitoneal in 4 patients. Fixation of intraperitoneal onlay mesh was done with eight transfascial fixation suture at the cranial and caudal end. Fixation of preperitoneal mesh was done at the four corners with transfixation suture and the peritoneal flap was closed with 2-0 vicryl (absorbable) as continuous sutures. Tackers are used in 13 patients, in these patients, we used exclusively tackers in 10 patients and in 3 patients we used suture along with tackers. Proline transfixation suture was used in initial 5 patients with intraperitoneal mesh fixation. Later on we shifted to vicryl exclusively for both intraperitoneal and preperitoneal fixation. Length of average post-op hospital stay was 2.4 days. Operative time was average 46 minutes Vs 60 to 90 minutes in other studies of laparoscopic management. Recurrence is seen in 1 patient 1 year post op (2.38%). Seroma formation was reported in (2) 4.76% of the patients, which is managed conservatively.

Conclusion: Laparoscopic repair of incisional (ventral) hernia requires advanced expertise of operating surgeon. Transfascial suture fixation at four corners of the mesh and midway between both cranial and both caudal suture is enough to fix the mesh. Polypropylene mesh can be placed intra peritoneally, we have found 1 patient of post-op complication as recurrence in total duration of our study. There were no mesh related complications. While placing the mesh in preperitoneum, only fixation at the four corners of the mesh is required. Mesh fixation can also be done with the absorbable suture even when it is placed IPOM. Hernia repair was possible with 2 port (one 10 mm and one 5mm working port) in few patients (2). Tack alone fixation can be done but it increases the total cost manifold depending on the number of tackers used.

KEYWORDS : Laparoscopic, ports, Incisional Hernia.

INTRODUCTION

In 1902, Georg Kelling, performed the first laparoscopic procedure in dogs and in 1910, Hans Christian Jacobaeus of Sweden reported the first laparoscopic operation in humans.

In the ensuing several decades, numerous individuals refined and popularized the approach further for laparoscopy. The start of computer chip television camera was a seminal event in the field of laparoscopy. This technological innovation provided the means to project a magnified view of the operative field onto a monitor.

Prior to its conception, laparoscopy was a surgical approach with very limited application, used mainly for purposes of diagnosis and performance of simple procedures in gynecologic applications.

In 1981, Semm, from the Universitäts Frauenklinik, Kiel, Germany, performed the first Laparoscopic Appendectomy.

Semm established several standard procedures that were regularly performed, such as ovarian cyst enucleation, myomectomy, treatment of ectopic pregnancy and finally laparoscopic-assisted vaginal hysterectomy (nowadays termed as cervical intra-fascial Semm hysterectomy).

Although the term minimally invasive surgery (MIS) is

relatively recent, the history of its component part is nearly 100 years old. What is considered the newest and most popular variety of MIS, laparoscopy, is in fact the oldest.

In the late 1950s, Hopkins described the rod lens, a method of transmitting light through a solid quartz rod with no heat and little light loss.

By the mid-1970s, rigid and flexible endoscopes made a rapid transition from diagnostic instruments to therapeutic one.

The explosion of video-assisted surgery in past 20 years was a result of the development of compact, high resolution, charged coupled devices that could be mounted on the internal end of flexible endoscopes or on the external end of the Hopkins telescope. Coupled with bright light sources, fibre optic cables, and high resolution video monitors, the video endoscope has changed our understanding of surgical anatomy and reshaped surgical practice.

Although there is no doubt that minimal access surgery has changed the practice of surgeons, it has not changed the nature of the disease. The basic principles of good surgery still apply, including appropriate case selection, excellent exposure, adequate retraction and a high level of technical expertise.

The advantages of minimal access surgery are decrease in wound size, reduction in wound infection, dehiscence, bleeding herniation and entrapment, decrease in wound pain, improved mobility, decreased wound trauma, decreased heat loss & improved vision.

Despite early controversies regarding surgeon training and complication related to lack of experience with this new technique it has become very popular. This success, as expected, led to the application of laparoscopy to other procedures, though often with less resounding result. Management of ventral hernia is one such rapidly developing field.

AIMS:

Aims of our study were:

1. To evaluate how much overlap of mesh is optimal for the hernia repair. As the optimal method of fixation in Intracorporeal suturing
2. To analyze and evaluate the minimum number of the transfascial stitches for optimal fixation of the mesh with the abdominal wall.
3. To analyze and evaluate the minimum numbers of the tacks for optimal fixation of the mesh with abdominal wall.
4. To analyze and evaluate post-op recovery time, complications and recurrence.

MATERIALS AND METHODS:

Our study sample comprises 42 patients who underwent laparoscopic repair of incisional hernia and primary defects of the abdominal wall from July 2009 to Sep 2011. All patients were treated by a single surgeon with expertise in laparoscopic surgery.

MATERIALS

Study was conducted on patients presenting with complaints suggestive of ventral (incisional) hernia in the Outpatients Department of surgery M.L.B. Medical College, Jhansi.

All patients were interrogated for a detailed history and were then investigated for :

1. Appropriate laboratory studies: Complete haemogram (Hb, TLC, DLC, ESR), Blood sugar.
2. Evaluation of urine routine and microscopic, blood group and urea, serum creatinine.
3. Any other comorbid conditions viz, cough, constipation, obesity, connective tissue disorder etc.
4. Any other prior surgical procedure done.
5. USG abdomen to map the size of the defect.

METHODOLOGY

Laparoscopic Incisional Hernia Repair

- Position: Supine with slight tilt opposite to the defect.
- Anaesthesia: Spinal anesthesia (SA).
- Intra abdominal Pressure: 10-12 mmHg

DISCUSSION:

Age/sex:

In several prior studies, average age of presentation of ventral hernia was 35-40 yrs. No study has shown repair of incisional hernia before puberty. The lowest age in one study conducted by Bruce Ramshaw et al., was 16 yrs. The maximum age in various several studies was 70 yrs.

In our study, youngest patient was aged 24 yrs eldest patients was 72 yrs.

Regarding sex, every study had concluded that incidence of incisional hernia is higher in females. One study conducted by Tayoshima H. in Japan 2003 had shown a significant increase in this ratio of approximately about 17 times higher incidence in females.

In our study females had about 20 times higher incidence in comparison to males.

Initial access and number of ports:

- *In our study, we used 3 ports (one 10mm ports and two 5mm ports).*
- *We used 2 port in two patients (One 10 mm and one 5 mm ports)*
- *We have accessed the peritoneal cavity by closed method using Veress needle for creating pneumoperitoneum of 10mmHg.*
- *We never used open method of first port placement (Hasson's method) as advocated by others. We never encountered any port related complication.*

Mesh:

In our series we have only used prolene mesh even for IPOM method of repair and in the following there had been no presentations of operated patients with postop subacute intestinal obstruction. This can be translated as absence of any significant adhesions developing with the intestine. A method of deciding on the adhesion could be by the slide method of diagnosis with an high resolution sonogram.

Operative time:

The time required for laparoscopic surgery of incisional hernia varied in different studies. Although the time ranges widely from 45 mins to 172 hrs, the average time for repair was approximately 1 hr.

Our operating time varied between 27-96 minutes with 1 case taking 1 hour 36 minutes time. In this case, the defect was multiple and there were dense adhesions. In our series, patient as a group had good outcome. The operating time tended to decrease with gaining of experience. *The average operative time in the later part of the study decreased to 46 minutes.*

Intraoperative complication:

The mortality rate of this operation was noted to be 0.05%. However, if an enterotomy occurred, it increased to 2.8%. A recognized enterotomy was associated with a mortality rate of 1.7%, but an unrecognized enterotomy had a rate of 7.7%.

Careful technique and close inspection of the intestine at the completion of the adhesiolysis and the herniorrhaphy is recommended. If the hernia repair proceeds, as planned following repair of enterotomy, continuation of antibiotics and the placement of an antimicrobial impregnated prosthesis are recommended. More study is necessary before firm recommendations can be made, as the majority of these events are most likely unreported. Safety concerns may require postponement of the hernia repair if an enterotomy occurs. Luckily in our study there was no intraop complication.

Postoperative morbidity:

Our study also showed that postoperative morbidity was substantially reduced as claimed by prior studies. Our average hospital stay after laparoscopic repair was 2.4 days. None of the patients had hospitals stay greater than 4 days. None of our patients had postoperative wound infection except for seroma formation in two cases, which was managed conservatively. There were no mesh infection; hence no removal of mesh postoperatively was required in any of the cases.

Suture site pain as mesh infection:

The troublesome postoperative complications include pain and infection. Infections following. In our study, no patient developed infection of the prosthesis or the surgical wound, nor did any patient report painful symptoms throughout the follow-up period of beyond 6 weeks. However, suture

placement is vital to the long term durability of the mesh repair and in none of our cases, we changed our technique except in prior cases we used prolene 2-0 suture and later we moved to vicryl 2-0 suture for mesh fixation. These suture site pains tend to resolve spontaneously within 6 weeks without any surgical intervention.

Also the suture site pain has been reported to be less if the knots were kept loose. Because tight sutures cause ischaemic necrosis and pain, our transfacial sutures were tied with some slackness.

CONCLUSION:

- Laparoscopic repair of incisional (ventral) hernia requires advanced expertise of operating surgeon.
- Transfacial suture fixation at four corners of the mesh and midway between both cranial and both caudal suture is enough to fix the mesh.
- Polypropylene mesh can be placed intra peritoneally, we have found 1 patient of post-op complication as recurrence in total duration of our study.
- There were no mesh related complications.
- While placing the mesh in preperitoneum, only fixation at the four corners of the mesh is required.
- Mesh fixation can also be done with the absorbable suture even when it is placed IPOM.
- Hernia repair was possible with 2 port (one 10 mm and one 5mm working port) in few patients (2).
- Tack alone fixation can be done but it increases the total cost manifold depending on the number of tackers used.

REFERENCES:

1. Hatzinger M, Kwon ST, Langbein S, Kamp S, Häcker A, Alken P, Hans Christian Jacobæus: Inventor of human laparoscopy and thoracoscopy. *J Endourol.* 2006 Nov;20(11):848-50. doi: 10.1089/end.2006.20.848. PMID: 17144849.
2. Meljnikov I, Radojčić B, Grebeldinger S, Radojčić N. [History of surgical treatment of appendicitis]. *Med Pregl.* 2009 Sep-Oct;62(9-10):489-92. Serbian. PMID: 20391748.
3. Spight DH, Hunter JG, Jobe BA. Minimally Invasive Surgery, Robotics, Natural Orifice Transluminal Endoscopic Surgery, and Single-Incision Laparoscopic Surgery. In: Brunnicardi F, Andersen DK, Billiar TR, Dunn DL, Hunter JG, Matthews JB, Pollock RE. eds. *Schwartz's Principles of Surgery*, 10e. McGraw Hill; 2015.
4. Olmi S, Scaini A, Erba L, Croce E. Use of fibrin glue in laparoscopy repair of abdominal wall defects; preliminary experience. *Surg Endosc* (2007) 21: 409-413.
5. LeBlanc KA, Laparoscopic incisional hernia repair: are transfascial sutures necessary? A review of literature. *Surg Endosc* (2007) 21: 508-513.
6. Park A, Birch DW, Loverics P (1998) laparoscopic and open incisional hernia repair: A comparison study. *Surgery* 124: 816-822.
7. Toy FK, Bailey RW, Carey S, Chappuis CW, Gagner M, Joseph LG, et al. Prospective multicenter study of laparoscopic ventral herniorrhaphy. *Surg Endosc* 12: 955-9.
8. Kyzer S, Alis M, Aloni Y, Charuñ I (1999). Laparoscopic repair of postoperative ventral hernia. *Surg Endosc* 13: 928-931.
9. DeMaria et al (12 DeMaria EJ, Moss JM, Sugannan HJ (2000). Laparoscopic intraperitoneal PTEF prosthetic patchrepair of ventral hernia. *Surg Endosc* 14: 326-329.
10. Zanghi A, Capeellani A, DeLuca A, DiVita M, Lomenzo E(2000). Laparoscopic repair vs open surgery for ventral hernias: a comparison study. *Ann Ital Chir LXXI*: 663-668.
11. Ben-Hem M, Kuriansky J, Tal R, Zmora O, Mintz Y, Rosin D(2002) pitfalls and complications after laparoscopic incisional hernia repair of post-op ventral hernia. *Surg endosc* 16: 1720-1723.
12. Franklin ME, Glass JL, Gonzales JJ(2004). Laparoscopic ventral and incisional hernia repair: an eleven years' experience. *Hernia* 8: 23-27.
13. Eid GM, Prince JM, Matter SG(2003)medium term followupconfirms the safety and durability ofLaparoscopic ventral repairwith PTEF. *Surgery* 134: 599-604.
14. Roth JS, Mastrangelo MJ, Park AE, Witze D(1999). Laparoscopic incisional/ventral herniorrhaphy: a five years' experience. *Hernia* 8: 38-143.
15. Birgission G Park Ae , Mastrangelo Mj,Witze Db, Chu Ub,(2001)obesity and laparoscopic repair of incisional hernia *Surg Endosc* 15: 14191-422.
16. Leblenc KA, Whitaker JM, Ballenger DM(2003)Laprosopic ventral hernioplasty, lessons learned from 200 patients. *Hernia* 7: 118-124.
17. Heniford BT, Park AE,Ramshaw (2003) Laparoscopic repair of ventral hernia , nine yrs of. Experience without consecutive hernia. *Ann Surg*238: 391-400.
18. Parker HI-1, Bynoe RP (2002) laparoscopic repair of large incisional hernia. *Am Surg* 68: 530-534: