A Prospective Clinical Study to Evaluate Recurrence and Infection in Laparoscopic Hernia in a Tribal Area

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Abstract

Background: Safe surgical service is mostly inaccessible to most of the poor tribal population of the Gadchiroli district of Maharashtra. Temporary multidisciplinary surgery camps can be the answer, but its safety and cost-effectiveness were always questioned.

Method: This is a prospective interventional study included 172 laparoscopic ally operated cases of inguinal hernia at Hemalkasa camp from 2015 up to 2020. Along with a study of clinical parameters like demography, infection and recurrence were evaluated.

Results: Most of cases in an age group of 20- 40 years and belong to the male gender with a presentation as indirect inguinal hernia. The right side was outnumbered than left. Mesh was not fixed and a single dose of antibiotic prophylaxis was administered. A promising zero infection rate was observed with recurrence was only in 4(2.3%) cases. Most of the patients were operated by the TEP method. Clinical presentation was reducible swelling in groin in maximum patients. The average operative time was 60 minutes. There were no intraoperative (neurovascular, visceral) and any post-operative complications. 4 days early return to work time was noted with very high acceptability laparoscopic surgery in tribals was observed.

Conclusions: Laparoscopic hernia repair in tibal people in multi diagnostic camps is found to have acceptable and good results. It is a safe as having zero infection and minimal recurrence rate. This procedure is also having less postoperative pain and discomfort, cosmetically good with early return.

Keywords: *Inguinal, Mesh, Prophylactic, Madias.*

Introduction

The word "hernia" means torn in Latin and branch or bud in Greek[1]. In the medieval era, up to the 19th century, inguinal hernia surgery had poor results. At the end of the 19th century there was a fast understanding of anatomy, surgical asepsis, and anesthesia leads to development of improved techniques of hernia repair. Bassini introduced his landmark technique on tissue repair for hernia surgery in 1887[2]. Actual preperitoneal mesh repair by the laparoscopic way was reported by Arregui and Dion in the 1990s was an actual throughgoing idea in hernia repair[3]. Dr. Prakash and Dr. Mandakini had first come to Hemalakasa with some co workers after becoming medical graduates. The couple started a type of open hospital, in which tribal patients were admitted for the proper administration of medicines. This was because there had been a few instances of over-medication by the patients. To overcome hurdle of the availability of modern health facilities, the team of Datta Meghe

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Institute of medical sciences has got an opportunity to serve tribal by participating in laparoscopy surgery camps from 2015, operating around 172 hernia patients by laparoscopic method with Lok Biradari Project . Today, the Lok Biradari Project hospital treats thousands of patients. Dr. Prakash not only care for humans but also loves wild animals. The Amte couple look after many such wild animals. He started a school for tribal children. Dr. Prakash Amte was awarded a Padma Shri, and both Dr. Prakash and Dr. Mandakini Amte are recipients of the prestigious Ramon Magsaysay Award, besides many others.[4]

It is of our great surprise that even tribal peoples are having great favor about the laparoscopic hernia surgery. The first camp was conducted in 2015 at Hemalkasa tribal area was lasted for four days. Most of the hernias were operated by open method but few by laparoscopic method. It was of surprise that in next camp onwards almost all operated by laparoscopic method on request of these tribal patients. Laparoscopic technique getting favor because of less postoperative pain and hospital stay and more cosmesis probably. The results of mesh repair, both open and laparoscopic are encouraging.

Method

This is a prospective interventional study conducted in the Dept. of General Surgery at Datta Meghe Medical College, Shalinitai Meghe Hospital and Research Centre, Nagpur in collaboration with Jawaharlal Nehru Medical College,Datta Meghe Institute of Medical Sciences Wardha; included 172 laparoscopically operated cases of inguinal hernia at Hemalkasa camp from 2015 up to 2020. A surgeon's team from, Datta Meghe Medical College Hingana, Nagpur, in collaboration with Jawaharlal Nehru Medical College, Datta Meghe institute of medical science (DMIMS), Sawangi, Meghe, Wardha, Maharashtra India, participating in the camp and operate various types of laparoscopic surgeries including hernia surgery. Ethical approval for the study was obtained from the DMIMS ethical clearance committee. Patients were given both the option of open or laparoscopic repair after taking informed consent. Those who opted for laparoscopic hernia repair were included in the study and underwent laparoscopic TEPP and TAP repair.

Inclusion criteria: Patient of all ages and both gender including unilateral or bilateral inguinal hernia and epigastric hernia.

Exclusion Criteria: Pregnant females, uncorrectable coagulopathy and patients unfit for general anaesthesia with a past history of abdominal surgery below umbilicus.

Preoperative Assessment: Proper assessment with necessary investigations done along with careful physical examination.

Preoperative check-list of the patient:

- The type of surgery and anaesthesia is explained to the patient. To see that the patient has consented for surgery including, conversion to open method, if necessary
- To identify correctly, side of the hernia.
- The patient was kept nil by mouth for 6 hours before surgery
- A prophylactic preoperative single dose of injection Ampicillin was given IV 30 min before surgery.
- To see that, the patient is shaved from Xiphoid to Groin and mid-thigh

Intraoperative: Patients are routinely catheterized before an operation. Operative time, and intraoperative complications, if any are noted.

Post-operative: Feeding is resumed soon after full regain of consciousness. A catheter is removed after 24 hours. After the surgery, injection Diclofenac sodium 75 mg IM BD given for 24 hours for pain relief. Postoperative pain is assessed at regular intervals using the VAS scale.

Post operative surgical site infection noted.

Discharge: The patients were discharged when fit and asked to come for regular follow up after 7 days, 1 month, 3 months, 6 months, and 1 year postoperatively. Oral analgesic is advised if needed. Asked them to resume to normal activity when they felt comfortable.

All the patients were encouraged to return to the pre hernia lifestyle except lifting heavy weights (till 4 weeks). All were followed up for chronic pain, interference with activities of daily living, use of analgesics, recurrence, seromas, or any other complications. All the data was entered in the proforma and analysis was done manually.

Parameters studied: Operative time

Operation time was noted from the skin incision

to the last suture. All-time measurements were approximated to the nearest multiple of 5 minutes.

Post-operative pain: A visual analog scale (VAS) was calibrated from 0 to 10 as per severity of pain. VAS was used to assess pain for 24 hours after surgery

Complications during and after surgery: Complications like intestinal or urinary bladder tear, if any were noted.

Infection: Superficial surgical site infection[5] (SSI) was identified by the basis of these standard benchmarks: Infection in 30 days after surgery affecting the cutis and subcutaneous tissue and have one out of below:

- Pus.
- Positive culture.
- Any one out of : pain or tenderness; localized swelling; redness; or heat.
- Identification of superficial infection by the treating surgeon.

Deep was identified by the basis of these standard findings: Infection in 30 to 90 days after surgery affecting deep tissues and have one of the following:

- Pus from the deep tissue.
- Burst abdomen or bursting of all layers of incision. Has any one out of: fever (>38o C); localized pain or tenderness.
- Collection of pus in deeper part by palpation or imaging.

Post-operative hospital stay: The total number of nights spent in the hospital after the operation was defined as a hospital stay. Return to daily activity in days and follow up at 7 days, 1 month, 3 months, 6 months, and 1 year.

Recurrence: Defined as the presence of lump clinically diagnosed as hernia by physician ai operated site.

Statistical analysis: All data were analyzed using SPSS software.

Results

In present study, 80 cases (51%) were in (40-60 years) age group followed by 54 cases (34%) in (20-40 years) group, 18 cases (11%) in > 60 age group and 6 cases (4%)in less than 20 years . The minimum age was 5 years and the maximum age was 76 years.

The present study, included 168 men (98%) and women (2%). The men to women ratio was 49:1. In our study, there 102 cases (59%) were right-sided and 58 cases (34%) were left-sided and 11 cases (6%) were bilateral and 1 (1%) case is of an epigastric hernia. 161 cases (94%) were indirect type, 10 cases (6%) were of direct type. Around 18 cases were in the age group of more than 60 years of age. Out of these patients, 12(67%) were of right indirect inguinal hernia,4 (22%) of left indirect inguinal hernia and 2 (11%) were of bilateral indirect inguinal hernia.

Mode of clinical presentation: In our study, 171 patients with the presentation of swelling in the groin and One female patient was having swelling epigastrium. 12 patients of them had complaints of swelling along with pain 150 patients have reducible swelling rest were partially reducible.

Possible risk factors/precipitating factors: In the present study, all cases had occupations involving strenuous activities like farming, manual labor, and hunting. In only 2 cases there were symptoms of prostatism and 5 had a history of chronic cough (COPD).

Time is taken for an operation: In our study, the mean operating time was 61.2±16.85 min (range 50-110 min).

Post-operative pain: The mean VAS score at 12 hours after surgery was 2.70±1.54 (range 0-6) median = 2.50. In the present study, 112 cases out of 172 cases (%) experienced mild pain post-operatively at 12 hours. Moderate pain occurred in 60 cases (33.33%) up to 24 hours after surgery. None of them had severe pain. Controlled with a single dose of diclofenac sodium.

Fixation of mesh: Out of 172 patients except 4 all patient operated laparoscopically undergone fixation of mesh.one patient was having an epigastric hernia and the other 3 patients needs fixation were bilateral hernia. No tucker was used to fix the mesh, it was fixed by laparoscopic suturing.

Surgical site infection: No single case of infection was observed in the present study. There were no major intra-operative (neurovascular, visceral), post-operative, and local complications.

Recurrence: Recurrence was observed in only 4 (2.35%) patients.

Other complications: Seroma, hematoma, intraoperative complications, cord related injuries, anesthetic complications not observed in a study population.

Type of surgery: TEP was performed in 168 patient and TAPP in 3 patients and one was with ventral hernia repair.

Hospitalization and discharge: In the present study, the mean duration of hospital stay was 2. + 0.56 days (range 1-3 days) and the average hospital stay was 2 days. Time taken for ambulation was 4 ±2.62 hours (range 3-8 hours).

Return to work: All patients were given similar advice at discharge and encouraged to return to work as early as possible and requested to note down the progress in their activities. Heavy work/straining was advised after 1 month postoperatively. Actual all these tribal people start their work very early. the average return to work was 4 days and the range was 3- 5 days.

Discussion

Age at presentation: In the present study, 80 cases (51%) were in (40-60 years) age group followed by 54 cases (34%) in (20-40 years) group, 18 cases (11%) in > 60 age group and 6 cases (4%)in less than 20 years (see figure 1), and similar to the studies of Singh S et al[1], Ira M Rutkow et al[6].

The present study, included 168 men (98%) and women (2%). The men to women ratio was 49:1. (see figure 2). Gender presentation of various studies is compared in the following table 1.

Table No. 1: Comparison of gender presentation of various studies

Sex	Present study	Jain R et al[8]	Gurjar[7]	Ira M. Rutkow[6]	Sing S et al[1]
Male	98%	97%	97.33%	90%	96.30%
Female	2%	3%	2.26%	10%	3.70%

In the present study, there 102 cases (59%) were right indirect sided and 58 cases (34%) were left indirect sided and 11 cases (6%) were bilateral and 1 (1%)case is of an epigastric hernia. 161 cases (94%) were indirect type, 10 cases (6%) were of direct type (see figure 3).comparison of gender presentation of various studies is depicted in table 2.

Table No. 2: Comparisons of gender presentation of various studies

Type	Present study	Rutkow IM[6]	M. Sangwan 18[9]	Sing S et al[1]
Right- indirect	102 (59%)	36 (36%)	72 (28.92%)	19 (35.19%)
Right- direct	5 (2.5%)	15 (15%)	67 (26.91%)	12 (22.22%)
Left- indirect	15 (27.78%)	28 (28%)	53 (21.29%)	15 (27.78%)
Left- direct	5 (2.5%)	13 (13%)	37 (14.86%)	5 (9.26%)
Bilateral	11 (6%)	2 (2%)	20 (8.03%)	2 (3.70%)
Pantaloon	0	6 (6%)	0	0
Others	1 (0.5%)	0	0	1 (1.85%)

Occupation: In the present study, all 172 patients were tribal and (38.89%) had occupation (farmer, laborer, player) involve in hunting and other strenuous work. In a study by Rahul et. Al[10], the maximum number of a patient were from laborer class related to strenuous physical activity from south India.

Mode of presentation: In a study done by Sing S et al[1] 2/3 of patients had pain or discomfort in the groin along with swelling. In a study by Liem MSL et al[11], also reveals more than 90% presented with swelling in the inguinal region. Almost all patients present with groin swelling but very few with pain.

Duration of surgery: In our study, the mean operating time was 61.2±16.85 min (range 50-110 min). The study by Sing S et al[1] had average operating time was around 90 minutes.

Return to work: In our study, all the patients were given similar advice at discharge and encouraged to return to work as early as possible and requested to note down the progress in their activities. Heavy work/ straining was advised after 4 weeks post-operatively. The mean time for the return to work was 8.93± 2.66 days (range 3-15 days) and the median was 9 days. It is comparable to other studies as shown in table 3.

Recurrence: In our study, there were four cases of recurrences detected in the first week of surgery. However, there was no recurrence up to one year follow up. This recurrence is comparable with other studies as shown in table 4.

Table No. 3: Return to work after surgery comparison among various studies

Laparoscopic repairs	Return to work (days)
A Eklund et al[12]	15
Hamaza Y et al[13]	14.87
SCUR trial[14]	15
Sing S[1]	8.93±2.66
Present study	4

Table 4. Recurrences observed in various studies

Laparoscopic repair	Recurrence rate
Liem et al[11] (n = 487)	4.9% (4 years)
Yassar Hamaza et al [13](n = 50)	1 (4%) 1 year
Sing S et al[1] (n = 41)	2(3.57%) 2.43 months
Present study (n = 172)	4 (2.3 %) 1 year

Surgical site infection: In a present study, a single prophylactic dose of antibiotics 30 minutes before surgery leads to a promising zero infection rate. Another reason may be the efforts of hospital staff for strictly following principals of asepsis. A comparison with various studies is given in table 5.

Table 5. Comparisons of SSTI in various studies.

	Total infection	Superficial surgical site infection	Deep surgical site infection	Number of a patient requiring mesh removal
	N (%)	N (%)	N (%)	
Present study	0	0	0	0
Maheshwari MK et al[5].	11 (11)	11 (11)	0 (0)	0
V Gomathi Shankar et al15	29 (6.4)	27 (6)	2 (0.4)	1
Sing S et al[1]	2(3.7%)	2(3.7%)	0	0

Old age and indirect inguinal hernia: Contrary to the common belief of association of direct hernia with old age, we found indirect hernia in all patients having age more than 60 years (see figure 4).

Conclusions

Laparoscopic hernia repair in tribal people in multi diagnostic camps is found to have acceptable and good results. It is a safe as having zero infection and minimal recurrence rate. This procedure is also having less postoperative pain and discomfort, cosmetically good with potential of early return to work.

Ethical Clearance: Taken from institutional ethics committee.

Source of Funding: Self.

Conflict of Interest: Nil.

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