A Retrospective study analyzing Operative Interventions in Inguinal Hernias - in a rural area of a Third World Country

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ABSTRACT

Background: Inguinal Hernias are among the most common clinical entities requiring surgical intervention in general surgery. **Aim:** To analyse the different surgical approaches chosen for the inguinal hernia repair in the rural areas of the third world country, the complications thereof and the hospital stay retrospectively. **Methods:** 365 patients presenting to the hospital between November 2017 to November 2019 were analysed for the surgical intervention in inguinal hernias. **Results:** 349 patients out of 365 underwent the open surgical intervention and 16 were dealt laparoscopically. Average duration of 45 minutes to 1 hr and 1 hr 45 minutes to 2 hrs was noted in open and laparoscopic method respectively. Recurrence was seen in 2 cases which had undergone open method. : 4 cases of wound infection were noted, out of which mesh removal was done in 1 case. **Conclusion:** Open surgery is the preferred method of surgical intervention in socially backward area.

Keywords: Hernia, Inguinal Hernia, Laparoscopy, Open surgery, Recurrence

INTRODUCTION:

Surgical conditions account for a large burden of disease, but 5 billion people do not have access to timely, high-quality surgical services at an affordable cost.[1] Capacity to meet the immense need for surgical care remains very limited. The

human resource crisis includes a pronounced scarcity of specialist surgeons in rural areas.[1]

Inguinal hernias are one most common problem dealt by general surgeons and have statistically significant morbidity and mortality. Globally, inguinal hernias comprise 75% of all abdominal wall hernias. Inguinal hernia repair is one of the most common general surgical operations worldwide accounting for about 10–15% of all surgical procedures second only to appendectomy.[2]

It has been estimated that worldwide over 20 million repairs of inguinal hernia are carried out each year, the specific operation rates varying between countries from around 100 to 300/100,000 population/year.[3]

A minority of patients is asymptomatic; however, even a watch-and-wait approach in this group results in surgery in approximately 70% within 5 years [4, 5]. Surgical treatment is successful in the majority of cases [4]. The expected rate of recurrence following inguinal hernia repair is still 11% today [6]. Only 57% of all inguinal hernia recurrences occurred within 10 years after the previous hernia operation. Some of the remaining 43% of all recurrences happened only much later, even after more than 50 years [6]. A further problem after inguinal hernia repair is chronic pain lasting more than 3 months, occurring in 10–12% of all patients [4]. Approxi- mately 1–3% of patients have severe chronic pain with long-term disability, thus requiring treatment [4].

The inguinal hernia surgical repair represents the treatment of choice for inguinal hernia and it is a common surgical operation done globally with more than 800,000 inguinal hernia repairs implemented annually [7]. Hernia repair aimed to alleviate symptoms, improving quality of life and preventing inguinal hernia adverse events like incarceration, obstruction and strangulation, in addition to lower rate of post-repair complications [8]. Surgical repair is the definitive treatment of inguinal hernia, which is done through open approach (tissue repair or prosthetic repair) or laparoscopic repair (Transabdominal preperitoneal procedure or Total extraperitoneal procedure) [9]. The laparoscopic surgery is mainly implemented by posterior approach and applying mesh, while the open surgical repair is based on suturing by classical anterior approach.

AIMS & OBJECTIVES:

To analyse the different surgical approaches chosen for the inguinal hernia repair in the rural areas of the third world country, the complications there of and the hospital stay retrospectively.

MATERIALS AND METHODS:

This retrospective study analysed patient data over a period of 24 months from November 2017 to November 2019 & included a total of 365 patients who underwent operative intervention for repair of inguinal hernia.

The study was conducted in Alfalah Medical College and research centre, Dhauj, Faridabad. All the clinically diagnosed cases of hernia (both direct and indirect) were included in the study.

The study population was all patients with inguinal hernia admitted to hospital during study duration. Ethical considerations were obtained according to Alfalah Medical College and research centre, Dhauj, Faridabad. Informed written consent was obtained after explaining the nature of the operation and its risks. A convenient sample of 365 Indian patients with inguinal hernia was selected after eligibility to inclusion and exclusion criteria.

Three hundred and twelve (85.4%) patients received general anaesthesia, forty nine (13.42%) received spinal anaesthesia, four (1.09%) received local anaesthesia.

The usual oblique inguinal skin incision was used, extending from just above pubic tubercle, and 1 cm above and parallel to the line of inguinal ligament. The external oblique aponeurosis (EOA) is divided from the external ring till the level of the internal ring, care being taken to avoid injury to the ilio-inguinal nerve.

The spermatic cord along with the cremasteric muscle is separated from the inguinal floor. Excision of the sac is done in all cases except in small direct hernias where it is inverted. Prolapsed preperitoneal fat "lipomas" was excised.

Our technique consist of three steps; first step is narrowing of the internal ring if its more than 1 cm, by using 2–3 Polypropylene stitches number 0 after doing herniotomy. Second step is hernioplasty, to strengthen the posterior wall of the inguinal canal by applying polypropylene mesh sutured continuously above to the conjoined tendon, and below to the reflection of the inguinal ligament making a fish tail in order to allow the passage of the spermatic cord, using polypropylene suture number 0. Third step is obliteration of the inguinal canal by doing double

breast suturing of the EOA, the medial leaf is sutured to the inguinal ligament from the pubic tubercle to the level of 1–2 cm beyond the internal ring using number 1 Polypropylene interrupted stitches, the lateral leaf is sutured to overlap the medial leaf behind the cord, by doing double breasting to form a new posterior wall. The cord is made to lie subcutaneously by bringing it through a slit in the lower flap of the EOA without constricting it, to prevent occurrence of varicocele. So it works as a shield to prevent recurrence, that the external oblique muscle gives additional strength to the weakened internal oblique and transverse abdominis muscle.

Ambulation was permitted from the day of surgery and normal activity was permitted after a week. All patients were discharged from hospital according to the condition of the patient. The skin subcuticular suture was removed on the 8th day. Ciprofloxacin 500 mg tablets bid, and diclofenac 50 mg tablets bid, were given for a week as prophylaxis. Follow up of patients was done after 1, 3 months and then every year, by outpatient visit, for assessing the early postoperative complications such as Odema of the cord, wound seroma, wound hematoma, scrotal hematoma, wound infection, and late complication like recurrence, chronic pain, testicular atrophy, and varicocele.

The data collected were analyzed statistically by Statistical Package of Social Sciences software version 22. The Chi square and Fishers' exact tests were used for analysis of categorical variables accordingly. Level of significance (p value) was regarded statistically significant if it was 0.05 or less.

INCLUSION CRITERIA:

All cases with clinically diagnosed inguinal hernia upto 70 years of age.

EXCLUSION CRITERIA:

All clinically and radiologically proven cases of groin swellings other than the inguinal hernia.

RESULTS:

Majority of the study population was among the 51 to 60 years of age with Mean ±SD= 48.72±12.11 years (Table 1). Among the sample size of 365 patients, 90.1% were males and 9.86% were females. Out of 365 patients, open repair of inguinal hernia was done in 95.6% of cases and in 4.38% cases repair was done

laparoscopically (TEP & TAPP method) Table 2. Right sided inguinal hernia was observed in 220 (60.27%) of patients, 109 (29.86%) showed left sided inguinal hernia while as 36 (9.86%) represented with bilateral inguinal hernia table 3. Mean duration of hospital stay was 5 days in cases who underwent laparoscopic surgery, and 8 days in cases who underwent open surgery for the repair of inguinal hernia table 4. Complications were seen in 11.23% of cases; with recurrence in 2 cases, persistent - pain at the wound site in 20 cases, hematoma formation in 15 cases and wound infection in 4 cases; out of which mesh removal was done in one case Fig 1.

Table.1: Age distribution among the study population

Age (Years)	Frequency	Percentage (%)
0-10	50	13.6
11-20	15	4.1
21-30	21	5.7
31-40	55	15.0
41-50	116	31.7
51-60	97	26.5
61-70	11	3.0
Mean ±SD= 48.72±25.11		

Table.2: Nature of surgery

Nature of surgery	Frequency	Percentage
Open surgery	349	95.61
Laparoscopy surgery	16	4.38

Table.3: Nature of hernia

Nature of hernia	Frequency	Percentage
Right sided IH	220	60.27
Left sided IH	109	29.86
Bilateral IH	36	9.86

Table.4: Duration of hospital stay

Duration of hospital stay	Mean	Min	Max
Laparoscopic method	3.5	2.5	5

Open method	**4.7**	**3.2**	**8**

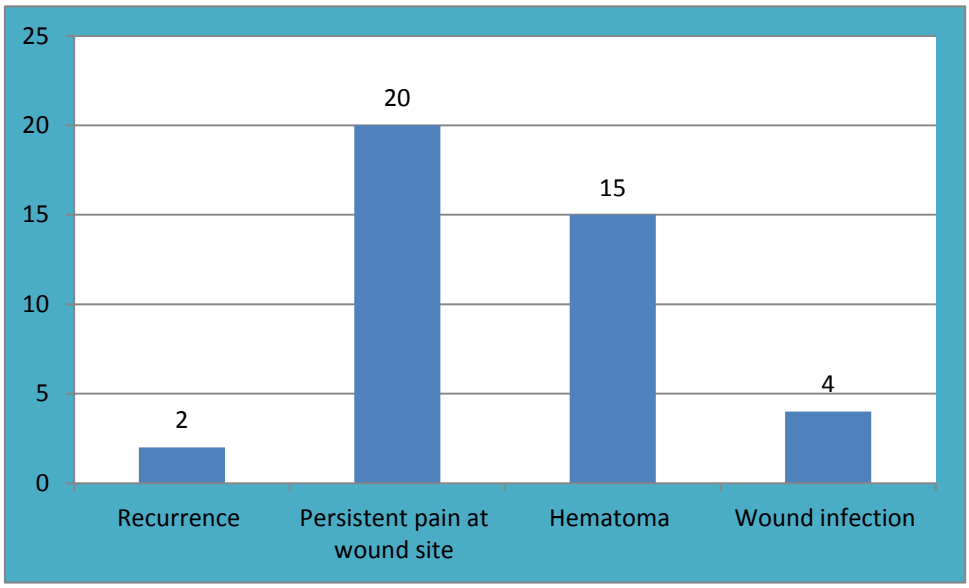

Fig.1. Post operative complications among the study population

DISCUSSION:

Inguinal hernia repair is a commonly performed general surgical operation, and therefore comprises a significant proportion of surgical workload in many centres [10,11,12-14]. Inguinal hernias are undoubtedly the commonest hernia type.

This study was done to understand the demographics, clinical presentation, and treatment outcomes of patients with inguinal hernia. In our study, we found that inguinal hernia affected mostly men with a mean age of 48.72±12.11 years. However, studying the distribution of age, we found that there were maximum numbers of patient in the age group of 41–60 years followed by 31–40 years. It has been said that inguinal hernia is a disease of infants due to defect in inguinal canal[15] by some, whereas others have found higher incidence of inguinal hernia in higher age groups.[16] Our study demonstrated that though inguinal hernia was seen with increase in age but there are many pediatric patients with congenital inguinal hernia as well. The mean age of presentation was comparative with other studies in literature. Increased incidence of inguinal hernia in the productive age group of 40–60 years causes a burden on the economy of the country by increasing the morbidity in its working population.

A Cochrane meta-analysis reviewed 41 trials of open versus laparoscopic inguinal hernia repair in adults.[17] The analysis showed that laparoscopic repairs took an average of 15 minutes longer than open repair, and the risk of rare, serious complication was higher. However, postoperatively, there was less persistent pain and numbness, the return to usual daily activities was faster, and hernia recurrence rates were similar after open mesh and laparoscopic techniques in adults.[18] The added costs resulting mainly from the use of disposable instruments represents a major drawback of laparoscopic hernia repair over the open repair.[19]

General endotracheal anesthesia is almost always necessary for laparoscopic operations in children. This is another disadvantage of laparoscopy over open hernia repair. The cost of setting up and running the laparoscopic procedure in rural settings or in developing countries makes it an inviable option in such situations.[20]

Literature suggests that inguinal hernias are more common in males than in females (20:1).[21] In our study also, we found that there were more males with inguinal hernias than females. The exact mechanism for this is not known but it postulated that it is probably because males are involved in more strenuous activities than females. However, in our study, the females were very less which may be due to the cultural dynamics of the society where females tend to seek medical care quite late. Some studies have shown a higher incidence in females and the factors that were independently associated with a higher incidence of inguinal hernia among women were middle or older age, rural residence, height in the upper two‑third, chronic cough, and umbilical hernia.[22]

A main complication of inguinal hernia repair is hernia recurrence.[23] The factors affecting recurrence seem to be failure to ligate the hernia sac high enough at the internal ring, operative trauma leading to injury of the floor of the inguinal canal, failure to close the internal ring tightly in females, and postoperative hematoma and wound infection.[24] Some authors hypothesize that these possible causes of recurrence can be avoided by the laparoscopic technique.[25] Insufficient suture material and use of absorbable sutures represent other significant causes of recurrence.[26]

When comparing the recurrence rate of inguinal hernias after laparoscopic and open repair, no significant difference was noted in a systematic review of the literature published during the last 2 decades.[27] However, it must be kept in

mind that in this systematic review, shorter follow-up intervals were noted after laparoscopic inguinal hernia repair when compared with open repair.[27]

Inguinal hernias are reported to be more common in low socioeconomic strata. This is very well reflected in our study where in most of the patients had a median income and were educated only up to primary or secondary level and this is comparative to other studies.[28,29]

Advantages of laparoscopic herniorrhaphy include less postoperative pain, faster recovery, and better cosmesis.[30,31] In adults,the reduction of postoperative pain is probably associated with single-port access surgery or single-site laparoscopic surgery.[32] Patients who underwent open hernia repair required more postoperative analgesics than those treated laparoscopically. However, the difference was not significant.[33] In contrast, Chanet al[34] reported the need for more postoperative analgesics after laparoscopic than open herniorrhaphy, but the limited data in this meta-analysis did not permit conclusive comparisons.

No difference in short-term adverse events, such as seroma/ hematomas, wound infections, pneumonia, urinary retention, and ileus was found between open versus laparoscopic hernia repairs in a meta-analysis focusing on postoperative complications.[35] A significant reduction of postoperative wound infection and abscess formation with the laparoscopic approach compared with open hernia repair in adults was reported by Salvilla et al.[36]

In our study, postoperative problems were observed in the form of recurrence (2), persistent pain at wound site (20), hematoma (15) and wound infection (4) patients among the study population.

Conclusion:

Open surgery is the preferred method of surgical intervention in socially backward area as the people in this demographic are illiterate and financially poor, with the belief of open method being better than the laparoscopic one. Lack of a laparoscopic setup initially and unavailability of the laparoscopic expertise in surgeons due to long learning curve were also contributing factors to this outcome.

Conflict of interest: None.

Funding: None.

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