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Research Paper

Comparative Study of Laparoscopic Congenital Inguinal Hernia Repair V/S Open Congenital Inguinal Hernia Repair

Medical Science

KEYWORDS : Congenital Inguinal hernia , Laparoscopic inguinal hernia repair, , Laparoscopic vs. open congenital inguinal hernia repair.

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ABSTRACT

Background: Inguinal hernia repair in one of the most common surgical procedures in the pediatric population. Its repair is usually performed by open surgery and with low complications rates. Recently, the introduction of laparoscopic repair seems to play a significant role regarding the safety, the examination and the better cosmetic result. This article aimed to compare laparoscopic versus open congenital inguinal hernia repair.

Method: A prospective study was done on patients undergoing congenital inguinal hernia repair between March 2014 to March 2015 with the follow up of 6 months.

Results: Eighty Patients of congenital inguinal hernia (uncomplicated) were included in this study. They were divided into two groups. In group A, 40 patients were operated by laparoscopic repair and in Group B, 40 patients were operated by conventional herniotomy . All patients were operated under general anesthesia. Maximum patient 45 (56.25%) were found among 0-5 years of age group, while only 14(17.5%) among 11-16 yrs of age group. 73 patients were male and 7 patients were female, ratio 9 :1Right side of congenital hernias were more common, 49 cases (61.25%)than of left side 24 cases (30%).Average operative time was more for Group A patients, i.e.; 44.5 minutes while in Group B it was 35.5 minutes. Mean time to allow patients orally after, operation was almost equal in both groups. Group A patients required analgesic for less number of days than Group B patients (1.4 days versus 3 days) post operatively. Hospital stay was shorter for Group A patients in comparison to Group B patients (1.1 days versus 2 days).In Group A patients resumed their normal activities before than Group B Patients (1.2 days versus 2 days).In group A post operative recurrence was seen in 1 case out of 40, which account for 2.5 % . In group B post operative recurrence was seen in 2 cases out of 40 which account for 5%.

Conclusion: Laparoscopic congenital hernia repair is an effective method to correct inguinal hernia. Laparoscopic hernia repair is easy for experienced Laparoscopist . Bilaterality is of no concern, cosmesis is superb. For recurrence the technique is preferable than open technique because one enter through normal anatomy

Introduction

Inguinal hernias are among the oldest surgical challenges, having been recognised from the time of ancient Greeks (Hippocrates 400 B.C.). Irrespective of country, race or socio-economic status hernia constitutes a major health-care drain.

There are three important landmarks in the history of repair of inguinal hernia.

1. Tissue repair Eduardo Bassini 1888
2. Onlay mesh Irving Lichtenstein 1984 [tension-free] repair
3. Laparoscopic Ger, Shultz, Corbitt etc 1990

Although open hernia repair remains the standard but recurrence rates, complications such as infection, groin hematoma, ilioinguinal nerve entrapment, ischemic orchitis remain perplexing problems. Additionally recovery from open hernia repair can often be painful and prolonged and return to normal activity may take up to 6-8 weeks.

Laparoscopic hernia repair is an evolving procedure and offers new opportunities for groin hernia repair. Laparoscopy has been proposed as a logical surgical approach because it offers the most direct access to posterior inguinal wall. The majority of inguinal hernia in infant and children are indirect, resulting from persistent patent processus vaginalis. Laparoscopic approach in children is closure of neck of sac by transabdominal route

The benefit offered by the laparoscopic hernia repair must be confirmed by data addressing important issues such as long term recurrence and post operative complication. The advantages associated with repairing inguinal hernia laparoscopically must be proved beyond doubt, as this procedure is to earn regular place in general surgical practice.

The present study has been done to report the results of randomized trial comparing laparoscopic hernia repair (transabdominal ring closure) conventional herniotomy in children in terms of recovery , complication and recurrences.

Material and method

This study was conducted on patients coming to surgical ward through surgical outpatient department of S.N. Medical College and Hospital, Agra, admitted as case of congenital inguinal hernia.

CRITERIA FOR SELECTION OF CASES:

Patients fulfilling following criteria were included in this study:

1. Patients with signs and symptoms of uncomplicated congenital inguinal hernia.
2. Patients fit for general anaesthesia.
3. Patients giving written consent to be a part of study.

Patients selected were randomly divided into two groups:

GROUP A- Patients in whom repair was done by laparoscopic technique.

GROUP B- Patients in whom repair was done by conventional technique.

After surgery the following parameters were noted.

1. Duration of operation.
2. Post operative pain and discomfort.
3. Post operative complications.
4. Duration of hospital stay.
5. Mean days to resume normal activity.
6. Post operative recurrence

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Results

Eighty Patients of congenital inguinal hernia (uncomplicated) were included in this study. They were divided into two groups. In group A, 40 patients were operated by laparoscopic repair and in Group B, 40 patients were operated by conventional herniotomy procedure. All patients were operated under general anesthesia.

Patient of more than 16 yrs age were not undertaken in this study. Maximum patient 45 (56.25%) were found among 0-5 years of age group, while only 14(17.5%) among 11-16 yrs of age group. 73 patients were male and 7 patients were female, ratio 9 :1. Mean age group for Group A was 5.60 yrs and for Group B, 4.80 yrs. Right side of congenital hernias were more common, 49 cases (61.25%)than of left side 24 cases (30%).Average operative time was more for Group A patients, i.e.; 44.5 minutes while in Group B it was 35.5 minutes. In group A (Laparoscopic repair) 6 patients suffered from scrotal swelling (due to surgical emphysema in inguinoscrotal region) which account for 20%.While in group B, no cases suffered from scrotal swelling . In group A , 2 patients suffered from surgical emphysema over trunk .In group B, port site infection was not seen in any case while in group B stitch line infection was seen in 4 cases and wound haematoma was seen in 4 cases which account for 10 % each . (No wound haematoma and infection was seen in group A patients). Mean time to allow patients orally after, operation was almost equal in both groups. Group A patients required analgesic for less number of days than Group B patients (1.4 days versus 3 days) post operatively. Hospital stay was shorter for Group A patients in comparison to Group B patients (1.1 days versus 2 days).In Group A patients resumed their normal activities before than Group B Patients (1.2 days versus 2 days).In group A post operative recurrence was seen in 1 case out of 40, which account for 2.5 % . In group B post operative recurrence was seen in 2 cases out of 40 which account for 5%.

FIG -1 .DISTRIBUTION OF CASES ACCORDING TO AGE GROUPS IN GROUP A (LAPAROSCOPIC REPAIR) AND GROUP B (CONVENTIONAL REPAIR)
FIG -2 . DISTRIBUTION OF CASES ACCORDING TO SEX
FIG .3-PREOPERATIVE DISTRIBUTION OF CASES ACCORDING TO LATERALITY OF CONGENITAL INGUINAL HERNIA

TABLE.1 -OVERALL COMPARISON OF DIFFERENT VARIANTS BETWEEN GROUP A AND GROUP B

S.No	Variant	Group –A	Group- B
1	Number of Cases	40	40 cases
2	Mean Age	5.60	4.80
3	Maximum number of cases in Age group	6-10yrs 18 cases = 45% of total	0-5 years age group 33 cases 82.5% of total
4	Sex Ratio	M:F::9:1	M:F::12:1
5	Right side hernia	24	25
6	Left side hernia	14	10
7	Bilateral hernia	02	05
8	Average Duration of operation	44.5min	35.5min
9	Mean Duration of Hospital stay	1.1 day	2 days
10	Mean Days to Resume Normal Activity	1.2 days	2 days
11	Postoperative Recurrence	1 (2.5 % of total)	2 (5% of total)

Discussion

Inguinal hernia repair is one of the most common general surgical procedures, but despite the developments in traditional methods of hernia repair there continues to be a significant incidence of complications. Recurrence after repair of primary inguinal hernia by herniotomy varies between 0.8-3.8 %, although the true figure is probably high. 50% are evident by 6 months after operation and 80% by end of 2 yrs. The rest appear sporadically even into early adulthood .

Though the laparoscopic approach, is not only minimally invasive, but it has several advantages over conventional method. First is the reduced disability and decreased discomfort. Secondly, the bilateral congenital hernia can be repaired in one sitting, with same ports as its occurrence is about 8-10%. Many surgeons have not welcomed laparoscopic hernia repair with open arms. This reluctance is primarily due to the fact that at present general anaesthesia is required to perform laparoscopic repair, the long term results are unproven and the potentials for further operative complications seem extensive.

Major area for discussion has been the management of hernia sac.**GER et al** simply closed the internal inguinal ring and left the sac in place thereby reducing the damage to cord structures caused by dissection. Others have dissected the sac but have noted an increased incidence of testicular pain and hematoma.

A common problem encountered after laparoscopic hernia repair has been numbness or paraesthesia (Meralgia paraesthetica) over the lateral aspect of thigh.

COMPLICATIONS OF PNEUMOPERITONIUM:

Hypercarbia –

CO_2 insufflation results in hypercarbia through absorption and reduced tidal volume due to splinting of the diaphragm. None of the patient in our study suffered from hypercarbia.

Cardiac arrhythmia -

Arrhythmia including sinus bradycardia, AV dissociation, and nodal rhythms have been attributed to a vagal response secondary to abdominal distention and peritoneal irritation. It is important that, used insufflator should have low default setting of 100 ml/min. High flow is not so important in pediatrics. In our study none of the patient suffered from cardiac arrhythmias.

Hypothermia –

Paediatric patients are especially at risk from high flow insufflation because of relatively small body mass. Wrap the extremities of babies with cotton wool to minimise heat loss. Use a warmer and avoid high flow and keep the patient dry. In our study none of the patient suffered from

Veress needle –

The veress needle is dangerous in children. In our study none of the patient suffered from veress needle injury.

Surgical Emphysema –

Surgical Emphysema is mostly due to incorrect (extraperitoneal) placement of veress needle. It is readily detected as crepitus over abdominal wall. No specific intervention is required as it resolves quickly once the pneumoperitoneum is discontinued. In our study two patients suffered from surgical emphysema, for which no specific intervention was required.

Other general complications which must be considered are:

Haemorrhage –

During laparoscopic inguinal hernia repair there is risk to damage to external iliac vessels, while dissecting peritoneal flap in the region of triangle of doom. We had not encountered any haemorrhage during laparoscopic inguinal hernia repair.

Damage to cord structures -

To avoid damage to vas deferens during laparoscopic inguinal hernia repair, it must be identified as a cord like structure travelling from medial to lateral toward the internal inguinal ring and gonadal vessels are seen as flat structures that traverse from lateral to medial in the inguinal region.In our study we had not encountered any damage to testicular artery and vas deferens in

any type of repair.

Damage to Viscera –
This risk is particularly with laparoscopic repair .We have not experienced any damage to viscera in our study .

Urinary Retention –
In our study no patient suffered from urinary retention following laparoscopic hernia repair. After conventional repair 4 patients suffered from urinary retention, which required catheterization and cause seemed to be groin discomfort or pain.

Testicular Complication –
Testicular swelling, orchitis, and testicular atrophy are the result of interference with the blood supply and probably the lymphatic drainage of the testis. In our study after laparoscopic repair 6 patients developed scrotal swelling which was due to surgical emphysema in inguinoscrotal region. While in conventional repair no patient developed scrotal swelling.

Burst Wound –
After the laparoscopic inguinal hernia repair infection may occur at port site. In our study one port site infection was seen. In open hernia repair wound infection was seen in 4 cases which account for 10% of cases.

As the laparoscopic procedure must be carried out under general anesthesia, which has its own problems.

Conclusion
In our society congenital inguinal hernia is found much more frequently in males than females, ratio 10.4 :1.Congenital inguinal hernia is more common on right side(61.25%) than left side (30%).Laparoscopic hernia repair is an evolving procedure not an established one. Awareness of laparoscopic surgery is less popular in our society. So lesser number of patients were ready for repair by this method than conventional method. Laparoscopic hernia repair is performed as a day care procedure. Laparoscopic hernia repair takes more operative time, may be because of learning curve. Following laparoscopic hernia repair, patients require lesser analgesic for fewer number of days. Laparoscopic hernia repair offers minimal post operative complications, and shorter hospital stay in comparison to conventional repair. Laparoscopic hernia repair offers rapid return to full activity in comparison to conventional repair. Laparoscopic hernia repair can be performed safely at the time of Laparoscopy for other procedure and also during laparoscopic hernia repair we can find other anomalies. Laparoscopic congenital hernia repair is an effective method to correct inguinal hernia. Laparoscopic hernia repair is easy for experienced Laparoscopist . Bilaterality is of no concern, cosmesis is superb. For recurrence the technique is preferable than open technique because one enter through normal anatomy

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