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Surgery

Laparoscopic Needle Assisted Repair (LNAR) Technique for Repair of Inguinal Hernia in Children's

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Abstract: Conventional inguinal hernia repair in children performed by ligation of hernia sac only. This study aimed t0 document the author's experience with laparoscopic inguinal hernia repair in children. A total 25 patients of inguinal hernia were operated in this time period. Our primary outcome measurement was feasibility of the procedure, operative time and complication. In the total cohort no significant intra operative complication occurred. In our new technique a Percutaneous insertion of purse string suture using Spinocan needle is straight forward procedure. In conclusion LNAR in children is a really very simple, feasible surgery technique.
Keywords: Inguinal hernia, laparoscopic repair, Paediatric hernia.

INTRODUCTION

Paediatric inguinal hernias are due to persistent processus vaginalis. Conventional inguinal hernia repair in children performed by ligation of hernia sac only. Since the adaptation and new advancement in laparoscopic surgeries, laparoscopic repair of inguinal hernia in children has been widely practiced [1-5], and repair is based on same principle.

There are numerous procedure of minimal invasive surgery for repair of inguinal hernia in children which including Percutaneous techniques [6-11]. This study aimed to document the author's experience with laparoscopic inguinal hernia repair in children.

METHODS

The prospective study was conducted and followed up in Department of Surgery RUHS College of Medical Science and MG Medical College Collectively between March2016 to Feb 2017. A total 25 patients of inguinal hernia were operated in this time period.

Inclusion criteria were

- Patients age<13 years
- Direct/indirect hernia
- Male/Female
- Unilateral/bilateral

Exclusion criteria were

- Recurrent hernia
- Hernia in morbid obese pt
- Complicated hernia (incarcerated hernia)
- Patient with Congenital heart Defects

All children were properly examined; history taken and routine preoperative investigating were done. Our primary outcome measurement was feasibility of the procedure, operative time and complication.
Secondary outcome of study was cosmetic results

Surgical Technique

The principle of our repair is closure of internal inguinal ring using a laparoscopic guided suture that is placed through anterior abdominal wall with help of 18G Spinocan needle.
Surgical steps as followed-

- Patient supine trendelenburg position
- Camera port at supra umbilical site 5mm/ 30^0 degree
- Pneumoperitoneum created
- Another accessory working hand 5mm port at left/right pararectus site created.
- Internal organs properly examined
- Contra lateral hernia site examined

- A Spinocan needle 18G mounted with prolene 1-0 suture pass through anterior abdominal wall at level of internal inguinal ring.(Figure-1)
- Then Spinocan needle manipulated extraperitonealy around the margin of internal inguinal ring to encircle the ring as much as possible, that breach the peritoneum on margin of internal inguinal ring.
- Then end of prolene picked up by lateral working hand port and prolene head was pulled outside.
- Then after loop of prolene as shown in figure mounted on Spinocan needle and reinserted at same puncture site of internal ring to encircle the remaining peritoneum. (Figure-II)
- Then this loop pass through the previous prolene thread in abdomen as shown in figure
- This manoeuvre brought the end of thread out through the same puncture wound on the skin completing the circle around internal ring.(FigureIII)
- A secured tight knot at this point completed the hernia repair

RESULTS

- 25 patients with inguinal hernia underwent hernia repair
- Demographic preoperative, intraoperative and postoperative data was collected and analysed
- Mean age of operation was 5.89±3.19 years (2-13) And 21 were males and 4 females
- 7 cases were bilateral
- Mean operative time was 42.14±7.16 min.(30.51-64 min)
- In the total cohort no significant intra operative complication occurred
- 2 patient post operative had some Hydrocele which resolve by scrotal support
- 1 patient recurrent at 15 day, probably due to post operative severe cough of the patient
- All parents were satisfied with cosmetic results

The follow up time was 9 months, till that patient had no significant problem encountered.

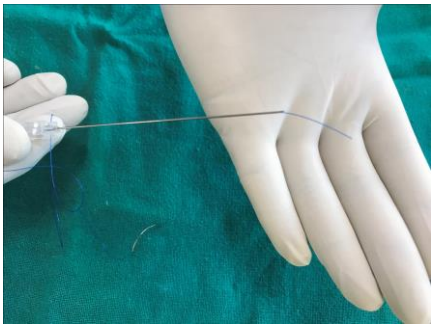

Fig-1: (Spinocan Needle with Straight Prolene Thread)

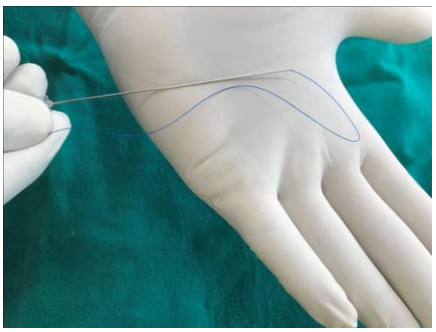

Fig-2: (Spinocan Needle with loop of Prolene Thread)

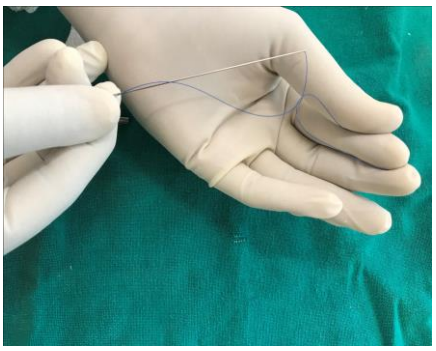

Fig-3: (Spinocan Needle with Purse String Prolene Thread)

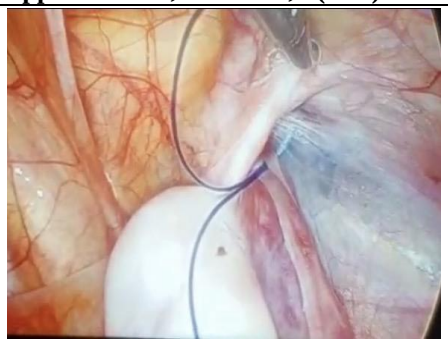

Fig-4: (Spinocan Needle encircling the Internal Inguinal Ring)

DISCUSSIONS

As we all practiced since long inguinal hernia repair by open technique which is quite effective and safe but there is risk of missing contra lateral inguinal hernia and unnecessary handling of vas deference [1-4, 12-14].

But as advancement of laparoscopic surgeries especially for hernia surgeries paediatric inguinal hernia remains a good option for surgeons. However, there is still debate over which laparoscopic technique is the most accurate and beneficial for children. Becheur *et al*. [15] concluded that paediatric inguinal hernia must be treated in same manner as that corrected at for open surgery

Lee *et al*. [16] study was on critical concern for that a purse string suture at level of internal inguinal hernia taking only the peritoneum leaving the distal sac is it enough for hernia repair but they concluded that it is safe, effective and reliable.

A review from a single paedriritric surgeon centre documented a wound infection 1.2%, recurrence 1.2% and 0.3% of testicular injury [17]. In our study we didn't encounter any such problem except single recurrence however our study is small.

Potential advantage of purely laparoscopic approach include improved cosmetic outcome, decreased post op pain [18] ease of evaluation of contra lateral groin with repair of a hernia if found. Yan *et al*. [19] reported that the rate of recurrence following laparoscopic inguinal hernia repair in children is still small and controversial.

Shalaby *et al*. [20] reported one case of recurrence and that of hydrocele out of 150 patients. In our study had one patient with recurrence. Helal AA [21] explained that the recurrence may have occurred due to skin area around internal inguinal ring.

One of major limitation of laparoscopic inguinal hernia repair is that the instrument is almost parallel to each other without triangulation (conventional laparoscopic surgery). In our new technique a percutaneous insertion of purse string suture using Spinocan needle is straight forward procedure. Furthermore use of accessory hand port using lap needle holder allow us to stretch the peritoneum in front of Spinocan needle and thus avoid the presence of any strap area.

CONCLUSION

In conclusion LNAR in children is a really very simple, feasible surgery technique, it requires short operative time and doesn't tent to recurrence and has better cosmetic outcome in addition also shows the contra lateral sites to detect contralateral hernia sites.

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