



A NOVEL OPERATING APPROACH FOR INGUINAL HERNIA IN GIRLS

Paediatrics

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ABSTRACT

Background: Inguinal hernia repair is one of the most commonly performed surgeries in children. The standard operating procedure is an open inguinal herniotomy from inguinal skin crease incision. In this study, we have described a novel operating approach for inguinal hernia repair in girls which is based on embryology and anatomy of female pelvis. In this technique, we approach the hernia sac from a much lower down incision on mons pubis adjacent to the labia majora on the affected side.

Materials & method: It is a retrospective analytical study on girls with inguinal hernia who underwent open herniotomy with this novel approach between January 2004 to December 2016.

Technique: A small transverse incision was given over mons pubis just above and lateral to the labia majora on the affected side. Hernial sac is dissected along the round ligament of uterus, sac opened, contents reduced to the peritoneal cavity and the sac is transfixed at the level of deep inguinal ring (as in open inguinal herniotomy)

Results: Seventy-five girls with inguinal hernia were included in the study. Forty girls had right sided inguinal hernia, 26 had left side hernia and 9 had bilateral inguinal hernia. The hernia sac was empty in 49 cases, ovary and fallopian tube in 15 cases, omentum in 4 cases, ovary & fallopian tube as sliding component in 7 cases. Only two patients developed a minor wound infection and none developed any hematoma, wound dehiscence, chronic pain or paraesthesia and recurrence of hernia. Median operating time was 15 min and it was cosmetically better as the scar is well hidden.

Conclusion: We described a novel operating technique for inguinal hernia in girls which is quick, safe, cosmetically better and anatomically less damaging to the inguinal canal than conventional inguinal hernia surgery.

KEYWORDS

Inguinal hernia, Female child, Herniotomy, Novel technique, Labial approach

Introduction:

Inguinal hernia is one of the most commonly performed surgery in children which results from a persistent patent processus vaginalis. The reported incidence of inguinal hernia in children varies from 0.8% to 4.4% in full term new-borns and approximately 13% in infants born less than 33 weeks of gestation. The male to female ratio varies from 3:1 to 10:1.^[1-3] The incidence of female inguinal hernia is 1.9%. The standard operating procedure is open inguinal herniotomy from inguinal skin crease approach and by cutting the external oblique aponeurosis, as described by Ferguson and gross.^[4] In this study, we have described a novel operating approach which is a modified version of Mitchell-Bank's Technique for inguinal hernia repair especially in girls.

Material & Method:

This is a retrospective analytical study and data were obtained from 2 hospital settings. Between January 2004 to March 2016, 55 cases of inguinal hernia were operated in girls by this novel approach by the first author (MKM) at Jawaharlal Nehru Hospital & research centre, Bhilai and the rest 20 cases were operated at AIIMS Bhubaneswar from April 2016 to December 2016. Informed consent was obtained from the parents explaining the procedure, its novelty, advantage and risk of the novel approach.

Technique – Under laryngeal mask airway and caudal anaesthesia, in supine position, a small transverse incision is given just above and lateral to the labia majora over the mons pubis on the affected side [Figure 1].



Fig. 1: Incision site above and lateral to the labia majora

Most of the time, the round ligament of uterus with hernia sac can be palpated over this area. The skin and the subcutaneous tissue is cut using sharp and blunt dissection, the hernia sac is identified. The round ligament of uterus is generally splayed over on the wall of the hernia sac. The sac is dissected free from surrounding attachments taking care to achieve haemostasis [Figure 2].



Fig. 2: Dissection of the hernia sac

The hernia sac is always opened to check for any content [Figure 3].



Fig. 3: Opening of the hernia sac before transfixation

The fallopian tube or ovary if present is reduced into the peritoneal cavity. If a sliding component is present, the ovaries & fallopian tubes are carefully dissected with sharp and blunt dissection till it easily gets reduced to peritoneal cavity. The external ring is never opened and in all cases, the hernia sac can be dissected till the deep ring by retracting the superficial inguinal ring (If required). The sac is twisted and transfixed. Then the wound is closed in layers [Figure 4].



Fig. 4: Post-operative appearance. The site of conventional herniotomy is marked by a solid black line for comparison.

In bilateral inguinal hernia, 2 separate incision are given on each side and the procedure is essentially same.

Results:

We operated 75 girls with inguinal hernia in the study period of 13 years. Median age was 5 years (Range: 1 year to 14 years). Forty girls had right sided inguinal hernia, 26 had left side hernia and 9 had bilateral inguinal hernia. Median operating time was 15 min (12 min to 40min). The surgery was carried out safely under laryngeal mask airway with caudal analgesia; however, in 32 cases, only caudal analgesia with sedation was given. There were no intra-operative complications. The hernia sac was empty in 49 cases, contained ovary and fallopian tube in 15 cases, omentum in 4 cases, ovary and fallopian tube as sliding component in another 7 cases, which could be easily dissected and reduced. Only two patients developed a minor wound infection, which was attributed to poor personal hygiene. No patient developed any labial hematoma, wound dehiscence or recurrence of hernia. The median follow-up period was 5 years (6months to 12 years).

Discussion:

This novel approach for inguinal hernia repair in girls is based on the embryology and anatomy of female pelvis. In female fetus, due to

marked growth of upper abdomen in relation to the pelvis, by the 3rd month of gestation the maturing ovaries descend from the posterior abdominal wall to the pelvis (ovarian fossa) guided by the gubernaculum. The gubernaculum is a peritoneal fold which attaches to the caudal aspect of the ovary to the uterus. The cranial portion of the gubernaculum forms the ovarian ligament and caudal portion forms the round ligament of uterus, which runs from the uterus to the labia majora.^[5] Like processus vaginalis in male, in female the persistent peritoneal pouch along the round ligament of uterus forms the canal of nuck. Through this patent canal of nuck hernia contents protrude causing indirect inguinal hernia in female children. Round ligament of uterus originates at the uterine horns, enters the pelvis via deep inguinal ring, passes through inguinal canal and continues to the labia majora where its fibers spread and mix with the tissues of mons pubis.^[6]

The idea behind our approach is to identify the sac along the round ligament of uterus as it exits through superficial inguinal ring and mix with the labia majora and mons pubis. Hence, we dissect the area outside superficial inguinal ring to identify the sac along the ligament.

Our technique is similar to the Mitchell-Bank's technique (MBT) of inguinal hernia repair.^[7] In MBT, the hernia sac is teased out through the external ring and tied off without cutting open the external oblique aponeurosis. However, in our technique, we approach the external inguinal ring from a much lower incision on mons pubis. Turk et al (2014), in a large series of inguinal herniotomy with MBT has proven the safety of this technique in older children.^[7] They could perform high ligation of sac with MBT in 59.7% of the children in their study and their recurrence rate of hernia was only 0.12% (<1%). Similarly, we believe high ligation of sac is possible in most of the cases by retracting the external ring.

Advantages of this procedure are –

- Scar is on the mons pubis, hence well-hidden with excellent cosmesis.
- It is a quick, reliable and a day care procedure.
- It is anatomically less damaging to the inguinal canal.
- No violation of the virgin peritoneum as it is an extra peritoneal dissection
- Can be done under caudal analgesia with sedation, general anaesthesia and its related complications are hence avoided

According to our experience there are no drawbacks of this procedure, it is simple and does not need any advanced training like laparoscopic skill. In literature search, we found only one article by Zarroug AE et al (2015) from Gaza with similar approach. However, their procedure involves a single transverse supra-pubic incision and their technique was offered only for girls with bilateral inguinal hernia.^[2] They avoid their technique in unilateral inguinal hernia. The details of the technique are also not elaborated.

Conclusion:

Our novel approach to female inguinal hernia repair in children is based on embryologic and anatomical facts and is a modified version of Mitchell-Bank's technique. This is a quick, safe, cosmetically better procedure and anatomically less damaging to the inguinal canal than conventional inguinal hernia surgery in children.

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