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Original Research Article

Herniotomy and its outcome in congenital inguinal hernia at a tertiary care hospital: descriptive study

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ABSTRACT

Background: Herniotomy has been a standard mode of treatment for inguinal hernia which is a frequently encountered problem in children. It is considered to be easy to perform along with a good rate of success and low frequency of complications. Present study describes our experience with management of inguinal hernia in children by herniotomy with respect to operative procedure details and outcome at a government tertiary care referral centre in Aurangabad district of Maharashtra in India.
Methods: The present prospective observational study was done between July 2014 and July 2016 at Surgery Department, Government Medical College and Hospital in Aurangabad district of Maharashtra state in India. 99 patients of age group 0-10 years diagnosed clinically as congenital inguinal hernia and managed by elective herniotomy were included in the study. Details like age at operation, type of anaesthesia, length of incision, whether superficial inguinal ring opened or not, whether sac was found or not, contents of sac, method and material used for skin closure, experience of operating surgeon, duration of hospital stay and complications were described.
Results: In our study of 99 cases, 64 patients weight was between 9 - 16 kg. Most of the cases (89) were managed under general anaesthesia. Few cases among those aged above 5 years were operated under spinal anaesthesia (8) and caudal block (2). In 89 cases herniotomy was successfully done by 1 - 1.5 cm incision. In 10 cases we were required to extend our incision up to 2 cm or more. As in patients of 2 years or below age group, the superficial and deep rings are near to each other, in such cases we needed to open superficial ring. We have opened superficial ring in 8 cases. Content of the sac was omentum in most cases (87) whereas sac contained bowel in 5 cases. Subcuticular method of skin closure was used in most cases (72). Vicryl 3-0 suture material was used in most cases (85). 89 cases were operated by lecturers and senior surgeons of Surgery department whereas 10 cases were operated by doctors pursuing postgraduate course in surgery. Herniotomy is day care procedure but most of our patients (87) required 2 day stay in hospital. Reactive hydrocele was noticed in 22 cases and all of them resolved by second week. On the day of stitch removal, 6 patients were having pain while there was no patient with complaint of pain in second week.
Conclusions: Thus, as per our study observations, herniotomy was a fairly effective procedure with no unresolved complications observed at the end of second week.

Keywords: Inguinal hernia in children, Reactive hydrocele, Superficial inguinal ring

INTRODUCTION

Herniotomy has been a standard mode of treatment for inguinal hernia which is a frequently encountered problem in children. It is considered to be easy to perform along with a good rate of success and low frequency of complications.[1,2] Inguinal hernia management by herniotomy is also considered to be the most commonly employed elective surgical procedure in paediatric age group.[3,4] It has been found that

laparoscopic repair of hernia in children is safe, feasible, gives a clear view of anatomical structures and vas is not touched, opposite side ring is also seen and can be managed in the same setting. Also, the recurrence rate with laparoscopic repair is similar to conventional open approach with a better cosmetic outcome.[5] However, as the complication rate of conventional herniotomy in children is low, any novel method for treatment must be duly justified especially in cost conscious health care set-ups.[6] There is a need for studies with data from centres employing conventional herniotomy and also from the centres using laparoscopy or other recent modalities of surgical repair of inguinal hernia in children. Present study describes our experience with management of inguinal hernia in children by herniotomy with respect to operative procedure details and outcome at a government tertiary care referral centre in Aurangabad district of Maharashtra in India.

METHODS

The present prospective observational study was done between July 2014 and July 2016 at Surgery Department, Government Medical College and Hospital in Aurangabad district of Maharashtra state in India. Institutional ethics committee approval was taken prior to commencement of the study.

99 patients of age group 0-10 years diagnosed clinically as congenital inguinal hernia and managed by elective herniotomy were included in the study. Patients presenting with acute scrotal conditions like incarcerated hernia, strangulated hernia, obstructed hernia, associated with other abdominal pathology or other associated congenital anomalies were excluded from the study. All patients underwent through clinical examination and were evaluated for systemic disease. All patients were admitted one day prior to surgery.

All relevant investigations were done for all patients including Haemoglobin, urine examination and pre-operative anaesthesia evaluation. Nature of hernia and method of surgery was explained to parents in their language. Nil orally 6 hours prior to surgery was advised. Diagnosis was based on history of scrotal swelling, intermittent bulge, swelling on examination, palpation along inguinal canal and occasionally it was an incidental finding on ultrasonography. Pre-operative xylocaine sensitivity test was done. Written and informed consent of both parents was taken after giving information about procedure and possible complications in their own language. Pre-operative antibiotics were given half an hour prior to surgery.

Anaesthesia used was general anaesthesia, spinal anaesthesia or caudal block. Patient was taken on table for operation in supine position. Under all aseptic precaution, painting and draping was done. Anterior superior iliac spine and pubic tubercle were marked out. 2 finger breadth upward and laterally skin crease incision was taken approximately 1-1.5 cm. External oblique aponeurosis was identified and incision taken over external oblique aponeurosis and extended medially as well as laterally along the fibres of aponeurosis. Superficial ring was not disturbed at all, two folds of aponeurosis held with forceps. Then along infero - lateral fold of external oblique aponeurosis, cord structure hooked without disturbing neighbouring structure.

Longitudinal incision was taken over cremastric tube and opened, pearly white sac was visualized easily on superomedial aspect of spermatic cord. Sac was identified properly, sac only held and rest of structures reduced inside. Then sac was separated from cord structure without disturbing vas, pampiniform plexus and testicular vessels. Sac was separated up to deep ring and patency of processus vaginalis was confirmed. Then transfixation of the sac as high as possible towards the deep ring, high ligation of sac was done.

After high ligation of sac at internal ring, ligated stump of sac retracted into abdominal cavity and haemostasis achieved. One to two sutures were taken over external oblique aponeurosis to approximate opened folds with vicryl 3-0 RB. Skin was closed with subcuticular vicryl 3-0. Dressing was applied. After surgery, all patients transferred to surgery ward. In the post-operative period, patient was kept nil by mouth for at least 4-6 hours. Early ambulation was done.

Most of the patients were discharged on next day of operation. Inspection of surrounding area was done on discharge. Patient reviewed after 3-5 days in OPD. At review, complaints of patients were asked and operative site was examined. Inspection of surrounding area was done and specifically looked for scrotal hematoma, seroma formation, wound infection.

Stitch removal was done after 8 days or according to status of wound and age. A complete address of each patient was noted down and they were all advised for regular follow up. Details like age at operation, type of anaesthesia, length of incision, whether superficial inguinal ring opened or not, contents of sac, method and material used for skin closure, experience of operating surgeon, duration of hospital stay and complications were described.

RESULTS

Table 1: Weight at operation.

Weight (kg)	Number of patients
4-8	22
9-12	35
13-16	29
17-20	10
21-24	3
Total	**99**

Table 2: Anaesthesia required for operation.

Anaesthesia	Number of patients
General anaesthesia	89
Spinal anaesthesia	8
Caudal block	2
Total	**99**

All cases below 5 years were managed under general anaesthesia. Some cases above 5 years were operated under spinal anaesthesia (8) and caudal block (2).

Table 3: Length of incision.

Length in cm	Number of Patients
1 - 1.5	89
1.6 - 2	7
> 2	3
Total	**99**

In 89 cases herniotomy was successfully done by 1 - 1.5cm incision. In 10 cases we were required to extend our incision up to 2 cm or more.

Table 4: Superficial inguinal ring opened/not opened.

Superficial inguinal ring status	Number of patients
Opened	8
Not opened	91
Total	**99**

Table 5: Content of sac.

Content	Number of Patients
Omentum	92
Bowel	5
Fallopian tube / ovary	2
Total	**99**

Table 6: Skin closure.

Method of closure	Number of Patients
Single stitch	2
> 1 stitch	25
Subcuticular	72
Total	**99**

Table 7: Material used for skin closure.

Material	Number of patients
3-0 ethilon	10
3-0 vicryl	85
Stapler	4
Total	**99**

In cases where we have taken skin sutures, we used 3-0 ethilon in 10 cases and 3-0 vicryl in 85 of cases.

Table 8: Operating surgeons.

Operated by	Number of patients
PG student	10
Lecturer	25
Senior Surgeons	64
Total	**99**

Majority of the patients were operated by senior surgeons.

Table 9: Hospital stay.

Duration	Number of patients
2 days	87
3 days	12
Total	**99**

Herniotomy is day care procedure but most of our patients required 2 day stay in hospital.

Table 10: Post operative complications.

Complication	Number of patients
Retention of urine	12
Seroma	2
Reactive hydrocele	22
Pain	12
Wound infection	1
Total	**49**

Reactive hydrocele is one of commonest complication in all herniotomy surgeries. According to our study it was noticed in 22 cases and some of the complications subsided within 24 hours.

Table 11: Follow up.

Period	Operative site pain	Hydrocele
3rd - 5th day	12	22
8th day	6	5
2nd week	Nil	Nil

On the day of stitch removal, 6 patients were having pain and there was no patient with complaint of pain in second week.

DISCUSSION

Congenital inguinal hernia repair is among the commonest paediatric age surgical procedure and it is necessary because hernia is not known to resolve on its own and has a risk of incarceration or strangulation.[7]

It has been considered to be potentially fatal risk apart from probable damage to testis or ovary or part of the bowel either due to incarceration or operative complication.[8] Herniotomy is day care procedure but most of our patients (87) required 2 day stay in hospital. Also, most of the cases (89) were managed under general anaesthesia. Few cases among those aged above 5 years were operated under spinal anaesthesia (8) and caudal block (2). Ravikumar et al study done at Hubli, Karnataka in India have also highlighted that although routine inguinal hernia repairs in children are done on day care basis, however, in their study, majority of cases were treated on in-patient basis and hospitalization period was 1-6 days.[9] They expressed that this was due to the need of investigations and the lack of adequate anaesthesia related facilities and neonatal management facilities during the postoperative period. Majority of their patients were from remote village areas.

However, data from developed countries like Netherlands as reviewed by Lange D et al in 2010 shows that the majority of patients in the country were treated according to the recommended guidelines; by the procedure of hernia sac resection in day care surgery under general anaesthesia.[10] In our study of 99 cases, herniotomy was successfully done by 1 - 1.5 cm incision in 89 cases. In 10 cases, we were required to extend our incision up to 2 cm or more. With the advent of laparoscopic surgery and minimal invasive surgery, the incision size has been reduced. Study by Ramanathan et al comparing laparoscopic surgery for hernia with conventional herniotomy have mentioned that 5 millimetre incisions in laparoscopic surgery were better cosmetically than the 2 cm incisions in conventional herniotomy. But they stressed that the significance of this difference is lost as the scar in conventional herniotomy is not visible due to clothing.

That properly done conventional herniotomy gives results similar to the laparoscopic surgery although the two main advantages of laparoscopic surgery were better cosmetic outcome and the detection and simultaneous repair of contralateral patencies of processus vaginalis. But they further suggested that considering low incidence of meta-chronicity in unilateral hernias and the relatively less significance of cosmetic outcome over groin region, conventional open herniotomy may continue as the standard of care especially in resource constrained centres of the developing world.[11,12]

As regards the complications, in our study, reactive hydrocele was noticed in 22 cases and all of them resolved by second week. Hydrocele during post-operative period is a frequent occurrence and indicates the continuing fluid secretion from the left over distal sac. More commonly, it occurs as a minor collection which gets resorbed on its own, over duration of 2-3 weeks. The occurrence is considered to be more frequent in larger hernias. It has been suggested that herniotomy procedure should be done taking this into consideration and the distal sac should be laid widely open.[13-14] When compared with laparoscopic surgery, Ramanathan et al study observed that transient hydrocele was more commonly seen in laparoscopic surgery.[11] This may be due to lymphatic embarrassment caused by thicker than the peritoneum bites.[15] In our study, on the day of stitch removal, 6 patients were having pain and there was no patient with complaint of pain in second week. Ramanathan et al study mentioned that parietal pain predominates in conventional herniotomy, in general, which can well be controlled by caudal analgesia and also concluded that postoperative pain between conventional herniotomy and laparoscopic surgery does not differ significantly enough to rate either of the surgery as superior.[11] Kareem AA et al study was done to evaluate minimal access surgery without laparoscopy in which herniotomy was done without disturbing the external ring and keeping the incision size less than 1 cm.[16]

The study concluded that laparoscopic surgery is not the most superior minimally invasive surgical technique for inguinal hernia and herniotomy can be done in a less invasive manner with low cost and fewer complications while maintaining surgeon's tactile sensation with a delicate and pleasurable surgery.

Observational design of the study, smaller hospital based sample are the limitations of the study. However, as per our study observations, herniotomy was a fairly effective procedure with no unresolved complications observed at the end of second week.

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