

An Analytical Study of Pediatric Inguino- Scrotal Swellings

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Abstract

Background: Inguino-scrotal swellings are one of the commonest anomalies in infancy and childhood throughout the world. Delay in diagnosis and treatment leads to loss of testis, ovaries or portion of bowel to incarceration or strangulation. This study was undertaken to evaluate the age, sex and side-wise distribution and the complications like incarceration, strangulation and gonadal infarction. **Methodology:** A total of 50 children were selected ranging in age from 5 months to 12 years presenting to the hospital with inguino-scrotal swelling which will be examined, followed up and managed. The data will be used to interpret results. **Results:** Of the 50 cases, 30 were on the right side, 16 on the left side, 4 were bilateral. Prematurity was associated in 2 cases. Parents noticed the swelling in 64%, 30% by grandmother, 6% by doctor. Undescended testis, encysted hydrocele of the cord and congenital hydrocele were simultaneously presenting in 2, 6 and 16 cases respectively. There were 2 cases of incarceration. Post-operative complications were noticed 3 cases of wound hematoma, 1 case of wound infection and 1 of stitch granuloma. **Conclusion:** Childhood inguinal hernias are more common on right side due to delay in descent of right testis and males are more commonly affected. Congenital hydrocele may involute spontaneously, so we should observe at least up to 2 years of age before considering repair but not in the case

of congenital inguinal hernia. Parents are usually the first person to notice the swelling.

Keywords: Incarceration; Strangulation; Inguinal Hernia; Hydrocele; Hematoma; Herniotomy; Stitch Granuloma.

Introduction

Inguino-scrotal swellings are one of the commonest anomalies in infancy and childhood throughout the world. Among the inguino-scrotal swellings, inguinal hernia and hydrocele top the list in frequency. They represent the conditions most frequently requiring surgical repair in the pediatric age group.

Approximately 1-2% of male newborns have a hydrocele. Most are non-communicating hydroceles. The estimated incidence of inguinal hernias in children is 5-50/1,000 live births. It is seen more frequently in males than females with a ratio of about 5:1 with a definite familial tendency. About 50% of cases present before 12 months of age with most occurring in the first 6 months of life. Approximately 99% of all inguinal hernias in children are indirect inguinal hernias. Direct hernias are rare. Most inguinal hernias are unilateral with about 60% occurring on the right side and 30% on the left side. Ten percent are bilateral (i.e., clinically apparent at initial presentation). Of note, inguinal hernias are more common in premature infants with an incidence of 5-30%. Most cases are bilateral, occurring in about 62% of affected premature infants.

As a result of improved neonatal intensive care, more and more premature babies are being delivered and consequently the incidence of neonatal inguinal hernia and hydrocele is increasing.

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Normally, in the male fetus, the testes descend to the vicinity of the internal ring of the inguinal canal by approximately 28 weeks gestational age. Then, by about 29 weeks gestation, the testes descend into the scrotum. With testicular descent, the lining of the peritoneum referred as the processus vaginalis extends into the inguinal canal and scrotum. In the female fetus, a similar mechanism with descent of the ovaries into the pelvis occurs. The processus vaginalis in females extends through the inguinal canal into the labia majoris and is referred to as the canal of Nuck. In the weeks prior to birth or shortly after, the processus vaginalis closes spontaneously in the area of the internal ring.

Premature infants will often develop a symptomatic hernia while remaining hospitalized for prematurity. These infants should have surgical correction of the hernia prior to discharge from the hospital. Other significant risk factors for development of an inguinal hernia include presence of a ventriculoperitoneal shunt or peritoneal dialysis catheter. These devices cause increased intra-abdominal pressure resulting in a high incidence of inguinal hernias in affected infants. They are also associated with greater risk for surgical complications.

Other conditions associated with an increased incidence of inguinal hernias include congenital dislocation of the hip, ascites, congenital abdominal wall defects, meconium peritonitis, connective tissue disorders (Ehlers-Danlos syndrome), mucopolysaccharidosis (Hunter-Hurler syndrome), ambiguous genitalia, hypospadias/epispadias, cryptorchid testes, and cystic fibrosis.

Materials & Methods

The study was conducted in the department of Surgery, S.B.K.S. Medical institute and research centre. Patients were selected from those who present to pediatric or surgery OPD, casualty or camps organized by DGH. Period of study was March 2016 to May 2018.

All the selected patients were below 12 years including both males and females including patients who present with swelling in inguino-scrotal region associated with symptoms as well as found accidentally on examination.

Exclusion Criteria in this Study

- Acute scrotal swelling- like testicular torsion, epididymo-orchitis, funiculitis, lymphadenitis.
- Some less common swelling - like varicocele, lymph varix, cuticular and subcutaneous swellings and malignant extension from testis.

All the registered patients were examined clinically thoroughly after taking detail history.

Simple investigations like hemoglobin %, bleeding time, clotting time, routine urine examination were carried out for fitness for operation.

All the operations were carried out under general anesthesia (G.A) with injection ketamine induction.

Injection Ceftriaxone 20mg/Kg/bodyweight was given before each operation. The operating field i.e., from the level of umbilicus to mid thigh was painted with 10% povidone iodine solution and finally washed with rectified spirit. This was followed by sterile skin draping.

Discussion and Conclusions

Today, inguinal hernia and hydrocele in children remain one of the most common congenital anomaly observed by pediatricians and surgeons requiring surgical intervention. In the general population, the incidence of inguinal hernia is not precisely known, however, in controlled population based studies, there are between 10 and 20 inguinal hernias per 1000 live births¹.

Age Distribution

In the present study of 50 cases, the youngest patient was 5 month of age and oldest was 12 years old. The maximum numbers of patients were in the age between 2 and 3 years, comprising 7 cases. The least number of patients were observed in the age group of 0 to 1 year. 52% of the cases were in between the age of 2 to 7 year.

The findings are in accordance with those of Okuribido et al., [2] who found 47.4% of the cases in the age group of 3 to 7 years.

Adesunkanmi AR et al., [3] reported 71% of the inguinal hernias in a study of 208 children in the age group of 5 years and below.

Sex Distribution

In our study of 50 children with inguinal hernia and hydrocele, there were 46 male and 4 female. The ratio being 11.5:1. The finding in the present study is in accordance with those of most of the previous studies.

Ralph M Larsen and Nashville Tenn [4] treated 111 patients from birth to 6 years of age for inguinal hernia of whom 102 were males and 9 were females, the ratio being 11:1.

William B Keisewetter [5] conducted a two year study on inguinal hernia in 100 children and found that 86 were male and 14 female.

Powell T.G. [6] in a study of 1074 pediatric hernias over a period of 3 years found higher prevalence of male over female in the ratio of 9:2:1.

Adesunkanmi A.R. et al., [2] in a study of 208 children for inguinal hernia and hydrocele found that 197 (19.7%) of the cases to be male and only 11 (5.3%) to be female.

Side Distribution

Childhood inguinal hernias are generally more predominant on the right side and this has been attributed to the delay in descent of the right testis. They do, however, occur bilaterally in 10-15 per cent of the cases and in as many as 40-45 per cent affect premature infants compared to 8-10 per cent of the full term infant.

In similar environments, bilateral presentation has been reported to range from 5-15 per cent (Grosfeld Jay L, 1989) [7]. In this study of 50 cases of inguinal hernia in children up to 12 years of age, 30 cases were on the right side, 16 cases on the left and 4 cases were bilateral which is consistent with most of the previous studies. Association of prematurity with bilateral hernia was observed in 1 of the 2 cases. (25%)

Ralph M. Larsen and Nashville Tenn [4] in a study of 111 cases of inguinal hernia in children found 60 cases on the right side, 39 cases on the left and 12 cases as bilateral.

William B. Kiesewetter [5] while treating 100 children for inguinal hernia and hydrocele found that 61 children had hernia on the right side, 29 on the left and 10 bilateral.

Associated Congenital Anomalies

i. Undescended Testis

During the course of this study, 2 cases of undescended testis were detected, all of them on the left side and situated in the superficial inguinal pouch. These patients had orchidopexy at the time of hernia repair and testis was placed in the subdartos pouch.

ii. Encysted hydrocele of the cord

There were 6 cases of encysted hydrocele of the cord, 4 on the left side and 2 on the right. All had patent proximal processus vaginalis which were proved by passing probe and injecting fluid.

iii. Congenital hydrocele

There were 16 cases of congenital hydrocele of which 12 were on the left side and 4 on the right. All of them had high ligation at deep ring while the distal portions were kept slit open.

iv. Hypospadias

Out of 50 cases in this study, association of hypospadias was not observed in any of these cases.

Hugh B. Lynn [8] studied 240 inguinal hernias in children and found hydrocele to be associated in 17% of the cases and undescended testis in 8%.

Venugopal S. [9] while treating 271 cases of inguino-scrotal hernias and hydrocele at the University Hospital of West Indies found that 12.5% of the cases were hydroceles. Unlike the hernias, 20 of the 34 cases of hydrocele were on the left side. There were 5 cases of undescended testis.

Duckett J. S et al., [10] conducted 380 hernia operations in children during a period of 6 year. In their series, 51 hydroceles, 25 hydroceles of the cord and 15 undescended testis were found in association with the hernias.

Complications and Recurrences

In this series, infants and children required general anesthesia for operative repair of inguinal hernia and hydrocele. Simple herniotomy was done for all the cases of hernia except one where the internal ring was wide and repair of the transversalis fascia was done. In those 2 cases which were operated as emergency, the hernial sac was opened to evaluate for incarceration or sliding structures. In all the cases of encysted hydrocele of the cord, the proximal part of the processus vaginalis was checked for its patency by the passage of a probe and or injection of fluid. Surprisingly, in our study all the 6 cases had proximal patency.

For congenital hydrocele, the procedure followed was high ligation of the patent processus vaginalis at the deep ring and keeping the distal portion slit open.

After unilateral herniotomy, appearance of a hernia on the opposite side (metachronous presentation) occurred in two cases and both were males. The time interval between initial herniotomy and appearance of the opposite hernia was 4 days in one case and 5 months in the other.

In the present study, there were 2 cases of incarceration. But there were no case of strangulation and gonadal infarction. The less number of complications in this series could be attributed to larger number of elective cases and fewer emergencies that too operated in time.

The post operative complications comprised 3 cases of wound haematoma, 1 case of wound infection and 1 case of stitch granuloma. All of them responded to conservative treatment.

Carneiro P.M.R. [11] had six years retrospective review of 397 herniotomies in 380 children up to the age of 10 years and encountered 16 minor post operative complication.

Lawrence R. Moss and Edwin I. Hatch [12] in a study of 384 patients who underwent inguinal hernia repair during a 5 years period found 9 minor post operative complications.

There was no recurrence during the period of 1 & ½ year study and follow up for a period of 12 weeks to 26 weeks in 50 children.

Recurrent inguinal hernias are relatively uncommon. Reports from most children's document an incidence of 1% to 2%. The recurrence may be associated with co-morbid conditions including increased abdominal pressure, prematurity, malnutrition, anemia and connective tissue disorders. Other causes of recurrence include a missed sac and injury to the floor of the inguinal canal resulting in a direct hernia. Recurrence is also seen more frequently after an initial operation for incarcerated hernia.

Conclusion

Childhood inguinal hernias are more common on right side due to delay in descent of right testis and males are more commonly affected. Congenital hydrocele may involute spontaneously, so we should observe at least up to 2 years of age before considering repair but not in the case of congenital inguinal hernia. Parents are usually the first person to notice the swelling.

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