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An overview of Paediatric inguinal hernias, an old problem with new perspectives

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Abstract: Inguinal hernia repair is one of the most common pediatric operations performed nowadays. Majority are right sided indirect hernias and common in male gender. [1,2] Presentation varies from asymptomatic to life threatening complications. Low birth weight and prematurity are related to increased incidence. Operations are usually done under general anaesthesia in an elective setting but the acute presentations like strangulation are managed in emergency. This article covers the demographic profile, clinical presentation, different modes of treatment of groin hernias and their associated conditions like hydroceles or undescended testis etc and complication rates in the specific patient population.
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Keywords: **Paediatric; inguinal; hernias; perspective**

Objectives:
To see the clinical presentation and management outcome of paediatric inguinal hernias
Material and Methods:
A descriptive hospital based study including 4 years data of pediatric patients with inguinal hernia attending the Pediatric Surgery Department of the central hospital of Qurayat city, Kingdom of Saudi Arabia excluding patients with comorbidities or congenital malformations. Data including age, gender, clinical presentation, involvement (unilateral or bilateral), content of the sac, associated conditions, condition of the operation (elective or emergency) and complications after operation were noted. Data analysis was done using statistical package SPSS version 16.

Results:
In 4 years 520 patients (Male to female ratio 7:1) presented with inguinal hernia, majority within the age group of 3 months to 1 year(46%). Right sided hernias were most common (56.5%). Undescended testis in 12(2.4%) and hydrocele in 9(1.8%) were noted as the associated conditions. In majority of the cases the sac was empty while some cases presented with contents like Loop of large intestine (5.2%), appendix(0.8%), testis (0.6%) and Loop of small intestine or ovary(0.4%). 88.7% of cases were operated electively and 11.3% came in emergency as strangulated hernias. After operation, nearly all cases (98.5%) passed without complications, recurrence occured in 6(1.2%) cases and 2(0.4%) cases were complicated by wound infection and were more in patients aged 6 years or above. In the cases of sacs containing loop of large intestine, 24(88.9%) of them passed without complications while 3 (11.1%) showed recurrence of the hernia. In the 4 cases of sacs containing the appendix 2(50%) of them were complicated by wound infection.

Key words: Paediatric inguinal hernias, Inguinal herniotomy

Introduction:

Inguinal hernia repair is one of the most common pediatric operations performed nowadays. Most inguinal hernias that are present at birth or in childhood are indirect inguinal hernias. Other less common types of ventral hernias include umbilical, epigastric, and incisional hernias. Its international incidence ranges from 1-5% with 60% occurring on the right side.[1,2]
Its more prevelant in male gender and premature infants are the at risk population. Presentation varies

from asymptomatic to life threatening complications. Strangulation depends on the contents of the sac as it may contain small or large intestinal loop, appendix, meckels or simple omentum. In female patients, fallopian tubes, ovaries or even uterus were also find in some studies as in a study in Nigeria by Osifo OD et al and in Netherlands by George EK et al.[3,4]

In a longitudinal cohort by Pan ML etal in Taiwan, the different aspects of paediatric hernias were studied, in which out of 92,308 studied individuals, 3881 underwent hernia repairs, with an incidence of 4.20% in children less than 7years. The boy/girl ratio was 4.27:1 and the unilateral/bilateral ratio was 3.77:1. The incidence of hernia repair among boys was highest during the first year of life, but then decreased with age.[5]

Operations are usually done under general anaesthesia in an elective setting but the acute presentations are managed in emergency. Nowadays laparoscopic procedures are also performed for it with new advancements even in the emergency settings. The most important aspect of the management of neonatal inguinal hernias relate to its risk on incarceration, and emphasis is placed on this point.[6,7,8] In study by Zamakhshary M etal done in Toronto, risk of incarceration in paediatric population waiting for hernia repair was studied and early operations were found to be more safe than the waiting population.[9]

This article covers the demographic profile, clinical presentation, different modes of treatment of groin hernias and their associated conditions like hydroceles or undescended testis etc and complication rates in the specific patient population

Objectives:

To see the clinical presentation and management outcome of paediatric inguinal hernias in the study population.

Materials and Methods:

This was a descriptive hospital based study including pediatric patients with inguinal hernia attending the Pediatric Surgery Department of the Central hospital of Qurayat city, Kingdom of Saudi Arabia, from January 2010 to December 2014. All cases of congenital inguinal hernia who presented in the Pediatric Surgery Department were included in this study excluding those having comorbidities or congenital malformations or secondary hernias. Data including age, gender, clinical presentation, involvement (unilateral or bilateral), content of the sac, associated conditions, condition of the operation (elective or emergency) and complications after operation were noted. The study analyzed collected data of 520 children submitted to inguinal hernia repair, under local/ regional anesthesia.

Data analysis was done using statistical package SPSS version 16

Results:

About half (46.3%) of cases presented at 3 months to one year of age, about third (33.8%) of them presented at 1-6 years and only 11% were presented at the age of more than 6 year. 87.7% of cases were males and only 12.3% were females with a ratio of 7:1.(Table -1)

Table (1): Age groups and sex of studied congenital hernia cases of northern area, KSA, 1436

Age	**No.**	**%**
-3m	46	8.8
3m-1y	241	46.3
1-6 years	176	33.8
>6ys	57	11.0
Total	520	100.0
Sex		
F	64	12.3
M	456	87.7
Total	520	100.0

Right sided hernia is the commonest type (56.5%) followed by the left sided (34.8%) and only 8.7% were bilateral hernia. (Table -2)There were no associated conditions in 95.0% of cases, un-descended testis in 12(2.4%) and hydrocele in 9(1.8%). (Table -3)Contents of the sac were spontaneously reduced in almost all of cases (93.1%), Loop of large intestine was in 5.2%, appendix in 4(0.8%), testis in 3(0.6) and Loop of small intestine or ovary in 2(0.4%) of cases. (Table -4) 88.7% of cases operated electively and only 11.3% come in emergency. Regarding the type of operation, combined herniotomy and herniography was the surgical intervention in (98.5%). (Table -5) After operation, nearly all cases (98.5%) passed without complications, recurrence occurs in 6 (1.2%) cases and 2(0.4%) cases were complicated by wound infection. (Table -6)

(Table -2) **Side of hernia**

Side of hernia	**No.**	**%**
Bilateral	45	8.7
Left	181	34.8
Right	294	56.5

(Table -3) **Content of the sac**

Content of the sac	**No.**	**%**
Spontaneously reduced	484	93.1
Loop of large intestine	27	5.2
Appendix	4	.8
Right or left testis	3	.6
Loop of small intestine or ovary	2	.4

(Table -4) **Associated conditions**

Associated conditions	**No.**	**%**
No **associated conditions**	494	95.0
Un-descended –testis	12	2.4
Hydrocele	9	1.8
Others	11	2.2

(Table -5) **Types of operation**

Types of operation	No	%
Combined herniotomy & herniorophy	514	98.8
Herniotomy & appendectomy	3	0.6
Herniotomy & hydrocele	1	0.2
Herniotomy & orchiectomy	2	0.4

(Table -6) **Complication after operation**

Complication after operation	No	%
No	512	98.5
Wound infection	2	.4
Recurrence	6	1.2

Discussion:

Inguinal hernia surgeries are a frequently common procedure done by the paediatric surgeons. The procedure can be difficult even in the most experienced hands and especially when performed as an emergency.[1] The results from this survey show that age at presentation, sex and presenting side are similar to those reported in several large American series and usually the presentation is a right sided involvement as was evident in this study (56%) and is justified in other studies of this patient population like by Pan ML etal and Manoharan et al.[5,8] A trend is seen of a unilateral to bilateral ratio of 10:1, which was slightly more than majority of the series like by Pan ML et al this ratio was about 3.7:1.[5]

Majority of the patient who underwent this operation were infants (55%) below the age of one year. The same pattern was seen in various other studies like by Aboagye J et al,[10] and it was seen that they were more associated with complicated presentations if not treated in earlier life.

In different studies the associated conditions were the congenital problems like connective tissue disorders, increased intraabdominal pressure, abdominal wall defects or family history of congenital hernias, but in this study such patients were excluded and the only associated conditions were congenital hydrocoeles and undescended testis.[11,12,13]

Regarding the mode of surgery about 11 % underwent emergency surgery due to acute presentations like strangulation or incarceration while 89% underwent elective groin surgeries.[9,14] As contents of the sac during the surgery were identified, majority of the patients had a spontaneously reduced sac while in only 7 % the sac contents were small or large intestinal loop, testis or appendix. In a total of 64 female patients only 2 were presented with ovary as a content of sac, while in large series of similar such studies ovaries, fallopian tubes and even uterus were found as content of the sac.[3,4,15,16,17]

Although less common but the noticeable postoperative complaints were wound infection and recurrence of hernias. In the cases of sacs containing loop of large intestine, 24(88.9%) of them passed without complications while 3(11.1%) showed recurrence of the hernia. Out of all only two cases underwent postoperative wound infection. It was found in older children, both cases in more than 6 years age group and the content of the sac was an inflamed appendix. In various similar studies it was seen that these complications were more in the patients who were operated as an acute emergency, while the elective cases were usually without any complication

Although all of these cases were operated as an open procedure in our setup but the recent advances in the laparoscopic surgery are making it a favorable procedure for elective as well as selected emergency cases especially after manual reduction of the incarcerated hernias.[18,19,20] It is also helpful in evaluating the contralateral side as majority of the patients present with an occult hernia of the other side also.[21,22,23,24]

Conclusion:

Paediatric Inguinal hernia repair is a routine surgical procedure. This study has helped in giving an overview of the different demographic details of presentation of paediatric hernias. To conclude, in the study the trend of presentation was more in children less than a year in age, with male predominance, and in most cases right side was involved, complications were less frequent but seen in late presentations and in emergency cases. Although there is a lot of advancements in the last 2 decades still numerous issues, including the need to explore the contralateral groin, use of laparoscopy and anesthetic approach, remain unsettled.

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