Congenital Inguinal Hernia: Results of 2207 Procedures

MOHAMED KORANY, M.D.; MOHAMED A. OSMAN, M.D.; GAMAL MAKHLOUF, M.D. and MAHMOUD A. MAHMOUD, M.D.*

The Department of Surgery, Faculty of Medicine, Assiut University Hospital and South Valley University*

Abstract

Aim of Work: To evaluate the type, prevalence, presentation, and complications of congenital inguinal hernia in children at Assiut University Hospital and South Valley University.

Patients and Methods: Between 2000 and 2011, at Pediatric Surgery Unit, Assiut University Hospital and South Valley University, a retrospective study of 1957 patients with congenital inguinal hernia, the medical records were reviewed for patient data including age, sex, type of presentation, side of hernia, operative findings, type of intervention, and post-operative complications.

Results: From 2000 to 2011; more than 2207 procedures for 1959 patients with congenital inguinal hernia had been done. The male to female ratio was 1588 (81.1%) to 371 (18.9%); age at presentation was 322 (16.4%) neonates, 975 (49.8%) infants, and 665 (33.7%) children. 1055 right sided hernia, 652 left sided, and 252 bilateral. 345 cases have different type of complications. The sac was complete in 1454. Irreducibility was common complication, and more common in male. Incarceration was the second complication.

Conclusion: Congenital inguinal hernia is commonest hernia facing pediatric surgeons. It may have a different demography all over the world.

Key Words: Congenital – Inguinal – Hernia.

Introduction

An inguinal hernia is usually only intermittently detectable swelling, becoming most obvious on straining or crying. It is a type of ventral hernia that occurs when an intra-abdominal structure, such as bowel or omentum, protrudes through a defect in the abdominal wall. The cause of inguinal hernia in children is probably congenital in nature, due to simple opening of the peritoneal vaginal canal. However, they always require surgical treatment for the definitive occlusion of the orifice.

Inguinal hernia repair is the most common operation performed in pediatric surgical practice. In children, the quintessential step of the standard surgical repair procedure is ligation of the inguinal hernia sac at the internal ring either through a standard inguinal incision or using laparoscopy. This is a simple surgical procedure, which has given successful results in the treatment of hernias [1].

In children the quintessential step of the standard surgical repair procedure is ligation of inguinal hernia sac at the internal ring either through a standard inguinal incision or using laparoscopy. Examination of the child in both supine and standing position is important step for diagnosis of inguinal hernia. Differentiation between a hernia and a hydrocele is not always easy. Complication may be the first presentation, particularly irreducibility or strangulation.

Patients and Methods

A retrospective study was carried out, at Pediatric Surgical Unit, Children University Hospital, Assiut, over a period from 2000 to 2011. 1957 patients with 2207 inguinal hernias were admitted to our unit. All 2207 inguinal hernias were repaired surgically, after carrying out simple routine investigations. Medical records were analyzed regarding the following data; age at presentation, type of presentation, side of hernia, type and time of surgery, type of sac (complete or not), intra or post-operative complications, and recurrences. All these data was tabulated and analyzed.

All patients were examined in both supine and standing positions for diagnosis. Most of the children were presented by a palpable inguinal swelling. All patients were subjected to simple routine investigations as cbc; prothrombin time and concentration, and sometime to additional investigations if recommended. Sometime, diagnosis was obtained from parents, in addition to the palpation of the thick cord of the affected side. All operations have been done under general endotracheal intubation anesthesia.
Results

Our patients were segregated into three groups according to the age, and the hernias were distributed as (322) 16.4% in neonates, (975) 49.7% in infants, and (665) 33.9% in children.

The rate of hernia in male patients in our study was (1588) 81.1%, and their side distribution was (957) 60.2% on right, (461) 29% on left, and (170) 10.7% bilateral.

The rate of hernia in female patients was (371) 18.9%, and the side was (98) 26.4% on the right, (191) 51.4% on the left, and (82) 22.1% bilateral.

The right side hernia in neonates was (268) 83.2%, (500) 51.2% in infants, and (287) 43.4% in children. Whatever; the left side was (45) 16.77%, (337) 34.56%, and (259) 39.29%, in neonates, infants, and children respectively. The rate of bilateral hernia in neonates was zero, 7% in infants, and 5.8% in children.

The relation between presentation and age in our study was distributed as; Reducible hernia (262) 81.6% for neonates, (811) 83.2% for infants, and (539) 81.6% for children. Irreducible hernia (56) 17.4%, (127) 13%, and (96) 14.5% for neonates, infants, and children respectively. Incarceration was distributed as; (2) 0.6%, (23) 2.4%, and (17) 2.6% for neonates, infants, and children respectively. However; the strangulated hernia was (2) 0.6%, (14) 1.4% and (8) 1.2% in neonates, infants, and children respectively.

The table shows presentation related to gender; Reducible hernia was (337) 91% in female and (1275) 80.3% in male. Irreducible hernia was as (24) 6.5%, (257) 16.2% for female and male respectively.

The relation of postoperative complications to gender of patients was (385) 24.2% in male, and (9) 2.4% in female. Regarding the rate of complications we were (67) 20.8% in neonates, (199) 20.4% in infants, and (127) 19.2% in children. The main postoperative complication was cord edema and its rate was (299) of total cases 15.3%, and represent 54.3% of all complicated cases. Whatever; the age relation to postoperative complication was (67) 20.8% in neonates, (199) 20.4% in infants, and (127) 19.2% in children.

The rate of recurrence was (41) 2.1% of all cases and represented 9.6% of total complications, and distributed as 4.5% of children, 4.5% of infants, and 0.1% in neonates. The rate of infection was (10) 0.5% of total cases, and represented 2.5% of complicated cases; it was distributed as 0.5% in neonates, 1.2% in infants, and 0.76% in children. The scrotal edema was present in (38) 2% of all patients and represented 10.1% of complicated cases, it was distributes 3.5% in children, 0.96% in infants, and 0.17% in neonates.

The rate of urgent procedure was 225 of 1959 (11.4%), and elective procedure was (1734) 88.5%. This rate was less than that of irreducible cases due to response of some cases to conservative treatment. The rate of urgent procedure was 54.2% for irreducible cases, 31.3% for incarceration, and 14.5 for strangulation. The total urgent procedure for male cases was 202 and 23 for female cases. Laparoscopic hernia repair had carried out for (120) 6.1%.

The complete sac was 74.3% and incomplete sac 25.7%. Congenital inguinal hernia usually associated with other anomalies, the common anomalies were undescented testis (8.2%), hydrocephalus (1.5%), hypospadias (1.2%), and bladder extrophy (0.6%).

Table (1): Collected data of the studied cases.

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
<th>Neonate</th>
<th>Infant</th>
<th>Children</th>
<th>Urgent procedure</th>
<th>Elective procedure</th>
<th>Type of sac</th>
<th>Associated anomalies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1588</td>
<td>371</td>
<td>322</td>
<td>579</td>
<td>660</td>
<td>225</td>
<td>1734</td>
<td>Complete</td>
<td>Sac 1454 30 Bladder extrophy 12</td>
</tr>
<tr>
<td>257</td>
<td>4</td>
<td>2</td>
<td>14</td>
<td>8</td>
<td></td>
<td></td>
<td>Incomplete</td>
<td>Sac 505 Undescend T. 162 Hydrocephalus 30</td>
</tr>
<tr>
<td>1275</td>
<td>337</td>
<td>255</td>
<td>776</td>
<td>533</td>
<td></td>
<td></td>
<td>Noncomplicated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>72</td>
<td>38</td>
<td></td>
<td></td>
<td></td>
<td>Laparoscopic</td>
<td></td>
</tr>
<tr>
<td>Postoperative complications</td>
<td>585</td>
<td>9</td>
<td>96</td>
<td>199</td>
<td>127</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Discussion

Inguinal hernia is one of the most common disorders in infants and children and its exact incidence is unknown. In USA the reported incidence ranges from 1-5%. Sixty percent of hernias occur on the right side. The incidence is higher in neonates. Premature infants are at increased risk for inguinal hernia, with incidence rates of 2% in females and 7-30% in males. Approximately 5% of all males develop a hernia during their lifetime [2,3]. The incidence of pediatric inguinal hernia is highest during the first year of life and then gradually decreases thereafter. One-third of children undergoing surgery for hernia are less than 6 months of age [4].

In our series the incidence in neonates is 16.4%, less than other studies; it seems to us that our tertiary hospital draining a large area that is not suitable for families to transfer their children in neonatal age. Infant and children incidence are more or less equal to other studies. The male-to-female ratio in our study is 5:1 ranges from 3:1 to 10:1 in related literatures [5,6].

The incidence rates regarding side are similar to published literatures. The rate of right side hernia in male is more than that in female.

The incidence of irreducibility of our study was 14.3%, incarceration 3.8%; it was slightly more in female, and strangulation 1.2%.

All postoperative complications (ranged from mild edema to recurrence) were 17.45%. The main postoperative complication was cord edema and its rate was 13.5%. The rate of recurrence was 1.8% of all cases. The rate of infection was 0.45%. The scrotal edema was present in 1.7%.

In Africa; complication rates for large tertiary centers, are low, as reported by Abantanga, who noted a 0.7% recurrence rate after repairing of 396 hernias [7]. Often, however, the operation may be delegated to less experienced or junior surgeons in smaller surgical centers who may not have an appreciation for how significantly pediatric hernias differ to adult hernias.

The reported incidence of incarceration in large series of pediatric hernias ranges from 10-13% in western countries [8,9] and from 4-8% in African reports [10-12].

In our series, complication rate more or less is similar in all age group (20%) Neonatal inguinal hernias have a number of characteristics which seem quite unique. They almost exclusively occur in males. There was only one female patient in this entire series. In this age group, inguinal hernias were predominantly right-sided. The 87% incarceration rate is approximately 3 times that of the 31% reported in patients less than 1 year [13]. The high incidence of incarceration in neonatal hernia indicated that this can be potentially life-threatening in the small infant. Our study showed high significant results for complicated cases in relation of female to male, and also to the age group. Furthermore it was high significant for the relation of the side of hernia to age group.

References