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ORIGINAL RESEARCH

A Retrospective Study of Pediatric Patients with Inguinal Hernia in a Tertiary Hospital in Somalia

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Background: Inguinal hernia is one of the most prevalent reasons for transfer to the pediatric surgery department. The incidence varies from 0.8–4.4% of term babies and up to 30% of preterm babies. Surgery for inguinal hernia has become one of the most frequently carried out operations, with better outcomes and very few complications.

Methods: This is a retrospective cross-sectional study of all children diagnosed with inguinal hernia (under 15 years of age) was conducted from April 1th, 2018 to July 31th, 2022, in a tertiary hospital in Mogadishu, Somalia. All cases of inguinal hernia are operated on using a modified Ferguson surgical technique.

Results: During the 51 mounts, 119 cases with inguinal hernia were operated. 94.1% of cases (n=112) were male and 5.9% (n=7) of were female; the ratio of inguinal hernia from male to female was 16:1. The right side was slightly more common and the proportion of bilaterally affected cases was about 6.7%. The median age at presentation was 52 months, and the mean waiting period for patients to be operated on was 2 months. The rate of incarcerated cases was 4.2%. Infants had a greater risk of incarceration than other children.The total wound infection and recurrence rates following surgery were 1.6% and 0.8%, respectively.

Conclusion: Babies with inguinal hernias are at an increased risk of incarceration and it would be wise to consider surgery soon, depending on current waiting lists. Surgical therapy should be performed as soon as possible to minimize associated morbidities and mortality.

Keywords: inguinal hernia, outcome, recurrence, ligation sac

Introduction

Inguinal hernia (IH) is the most prevalent defect that the pediatric surgeons operate on.[1] IH have been reported to occur in 0.8–4.4% of term babies and up to 30% of preterm babies. Clinical history and physical examination are used to make the diagnosis, which includes the basic clinical feature of a bulge or swelling that transmits a cough impulse and frequently follows crying. Imaging, especially ultrasonography, is helpful for clinical presentations that are unclear or less apparent.[2]

Children usually suffer from indirect IH, which are treated surgically. In most cases, surgery is carried out as an outpatient operation soon after the diagnosis is made.[3] Recent data suggests that shorter waiting times are necessary for all children younger than 2-year old who need hernia repair because the risk of incarceration for these children doubles if surgery is delayed for more than 14 days after diagnosis.[4] Traditionally, repairs were performed via an open approach. However, there has been significant progress since the description of minimally invasive procedures two decades ago. Laparoscopic hernia repair is related to reduced postoperative pain and better cosmetic results.[17] Recurrence of an inguinal hernia is a surgical complication of inguinal hernia repair, although it is less common in children than in the adult population. Children's hernia recurrence estimates have been reported widely, ranging from 0.3% to 10.9% in different series.[5]

Methods and Materials

A 4-year 3-months retrospective cross-sectional study of all children diagnosed with IH (under 15 years of age) was conducted from April 1th, 2018, to July 31th, 2022, in a Mogadishu-Somalia Hospital. A total of 119 pediatric patients,

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infants and children with inguinal hernias (IHs), were seen, examined, and operated on by seven pediatric surgeons with their assistants. All cases of inguinal hernia are operated on using a modified Ferguson surgical technique. The operation was the same throughout the series (all under general anesthesia), and the method of hernia repair was simple high ligation of the sac for all children. Skin crease incision, modified Ferguson repair, absorbable sutures, external oblique and ring opened, high suture ligation of twisted sac double tied, and as much of the distal sac/hydrocele as could be safely excised. The closure was in layers, with a subcuticular suture for skin. The type of suture used was all absorbable Vicryl, and the wound closure method was subcuticular in all patients. The pediatric surgery team followed each patient after surgery for six weeks or until the surgical site had fully healed. The documents were reviewed retrospectively.

Each patient's data was entered into an SPSS. Age, gender, type of IH, presence of hydrocele, side of hernia, presence of contralateral hernia, recurrence, incarceration and strangulation were evaluated. The ethical research board committee of Mogadishu Somalia Turkish Training and Research Hospital (REF. MSTH-11629) approved the research. In addition, all study participants and parents of participants under 15 years of age previously consented to the use of their medical and surgical data in this study. This was carried out in accordance with the Helsinki declaration's contents.

Inclusion Criteria

All children under the age of 15 years diagnosed with an IH were eligible for inclusion, regardless of the child's condition.

Results

Over the period of this research, 119 cases with inguinal hernia were performed. Across all of the patients, 94.1% (n=112) of the research subjects were male and 5.9% (n=7) were female. 64.7% (n=77) of hernias was on the right side, 28.6% (n=34) of patients was on the left side, and 6.7% (n=8) of the patients were bilateral. At the time of presentation, age ranged from 2 days to 15 years, with a mean of 52 months (SD 50), the median age at the time of diagnosis was 52 months (a range of 2 days to 15 years).

The majority of the patients, 40.3% (n=48), were infants below 12 months old, while school-age was 28.6% (n = 34), toddlers 13.4% (n=16), pre-school ages 12.6% (n=15), and teenagers 5.0% (n=6). At the time of diagnosis, all patients presented symptoms. A clinical examination and ultrasound of 7.6% (n=9) of patients revealed an associated hydrocele. The majority of the 94 patients (79%) had a radiologic diagnosis, while the other 25 cases (21%) had only a clinical diagnosis. About 7 cases (5.9%) had associated anomalies; the most prevalent ones were hydrocephalus, isolated heart anomalies, congenital pyloric stenosis, omphalocele, and transverse testis ectopia. All patients were operated under general anesthesia. All hernias were indirect inguinal hernia. The standard open procedure has been used to operate on each patient. 77 patients (64.7%) were operated on the right side, 34 cases (28.6%) on the left side, and the other 8 cases (6.7%) were operated bilaterally. Just five patients (4.2%) had been operated as an emergency. In 114 patients (95.8%), surgical procedures were done electively. Most of the patients underwent hernia repair when they were infants. The mean waiting period was 2 months, ranging from 0 to 36 months, between the diagnosis and operation. Among the patients who had an incarcerated hernia, 5 (4.2%) of required immediate surgery as manual reduction was unsuccessful. The content of the inguinal hernia during the operations was small intestine in 101 cases (84.9%), omentum in 12 cases (10.1%), appendix in 4 cases (3.4%), and ovary and tube in two cases. The complication rate among the patients who underwent surgery for inguinal repair was 2.4%, and the most prevalent complication, which occurred in two cases (1.6%), was a superficial wound infection. Reoperation was required in one male case (0.8%) due to recurrence.

Discussion

Inguinal hernia is one of the most prevalent surgical conditions in children. The incidence of inguinal hernia is 0.84–4.4% in children and much higher in preterm babies (10–30%).[2,6] It was confirmed by similar findings in earlier series that boys were more likely than females to develop a childhood hernia.[7] Only a little research has been done on the prevalence of inguinal hernia, especially in Africa, despite the fact that inguinal hernia repairs are performed almost everywhere in the world.[8]

This is the first study in Somalia to date, and this retrospective study revealed that childhood IH is more common in boys (94.1%) than in girls (5.9%).Patients are present once a parent or a care-giver notices a lump or swelling in the groin, a bulge in the groin area when the child is crying or coughing. It can be difficult to explain whether the swelling is more pronounced with crying or is associated with pain.[9] The differential diagnosis consists of hydrocele and un-descent of the testicle.[10] The male to female ratio for inguinal hernias in Africa ranges from 2.2:1 to 16.6:1.[10] Our study reveals a male to female ratio of 16:1. In accordance with previous findings in earlier series, the findings show inguinal hernias were more predominant on the right side 2.1:1.[11] This study shows that inguinal hernia is more common in males as compared to females. The ratio of the right inguinal hernia to the left inguinal hernia in this study was 2.3:1, while 6.7% were bilateral.The most important tool, diagnosis of inguinal hernia is commonly made based on the history and physical examination, and the use of imaging studies is unnecessary.[12]

In this study, diagnosis was reached in 21% of cases clinically based on history and physical examination, while in 79% used with radiological imaging. In all suspected cases for differential diagnosis or hernia on the opposite side were detected by Ultrasound. This study's results revealed that IHs were more frequently diagnosed in infants. Our result matches those from other publications.[7] According to recent research, wait times of more than two weeks from the time of diagnosis result in significant increases in incarceration. They recommended timely repair of these hernias to decrease the risk of incarceration.[4] In our study, the incarceration rate was 4.2%, with a mean waiting time of 2 months. Inguinal hernia repair is the basis of modern pediatric surgery practice. Elective surgical treatment of inguinal hernias in children should be the standard of care. The published literature reveals that elective repair of inguinal hernia are associated with low morbidity, mostly due to minor wound problems.[13] Surgical treatment of inguinal hernias constitutes a large proportion of pediatric surgical care in many parts of the world.[14]

All hernia repairs were carried out under general anesthesia, either inguinoscrotal or only inguinal hernia. Before the external oblique fascia was closed, a 0.5% bupivacaine 0.4 mg/kg block of the iliohypogastric and ilioinguinal nerves was administered if caudal analgesia was not used at the beginning of the procedure for intraoperative and postoperative pain reduction (the anesthesiologist's decision).[1] The current analysis found no difference in unilateral hernia operation time between laparascopic herniotomy(LH) and open herniotomy (OH). Subgroup analysis revealed that the extraperitoneal approach for LH required a shorter unilateral operation when compared to the open group. The difference disappeared after the sensitivity analysis excluded a study that used a laparoscope to inspect the contralateral side of an OH operation, probably lengthening the surgical time.[18] Detecting possible contralateral hernias during surgery lowers the risk of metachronous hernia and eliminates the need for a second anesthesia.[15] In contrast, in our study, there was no contralateral exploration to avoid the risk of damage to the cord and vessels, which should not be routinely recommended. When scientific principles are followed, pediatric inguinal hernia surgery is easy and is associated with an excellent outcome. Although 2% of patients develop postoperative wound infection, hematoma and hydrocele, they are treated conservatively.[16] In the widest pediatric cohort to date, a retrospective single surgeon study with 6361 inguinal hernia operations demonstrated a 1.2% incidence of hernia recurrence.[5] The authors of a review of the history of IH surgery are have been criticized for the assumption that the follow-up was limited to a median of 8 month.[15] According to our series, the complication rate in patients who underwent surgery for inguinal repair was 2.4%, and the most common complication was superficial wound infection in two cases (1.6%) and recurrence requiring reoperation in one male case (0.8%).

Limitation

This article included a limited number of patients; a single-center, retrospective study. Therefore, prospective research is encouraged.

Conclusion

All cases of IH are operated on using a modified Ferguson surgical technique. Surgical therapy should be performed as soon as possible in order to minimize associated morbidities and mortality and also to prevent potential complications. Infants are at an increased risk of incarceration, and it would be wise to consider operating on them as soon as possible, depending on current waiting lists.

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Disclosure

The authors report no conflicts of interest in this work.

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