Management of Inguinal Hernia in Children Our Experience at Tertiary Care Center M.T.I. L.R.H. Peshawar

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Abstract

Objective: To analyze and research the results of inguinal hernia surgery performed on children at MTI/LRH, Peshawar.

Methods & Material: From September 1, 2017, to August 31, 2022, 104 young patients (aged 12 and under) who had inguinal hernia surgery were included in a retrospective cross-sectional analysis. Children between 0 and 12 who had inguinal hernia surgeries between September 2017and August 2022 were included in a retrospective cohort research to report their age and gender- specific features. Age, sex, side, term/preterm, any problem, and family history of the targeted Patients were estimated using inpatient and O.P.D. claim data from 2017 to 2022.

Results: 104 patients had open surgery, with incisions made either in a high or a low skin crease. 4.4%–8% of kids have inguinal hernias. Infants under three months old have the most inguinal hernias. Premature newborns (16-25%) have greater hernias. Eighty percent of women have a patent processus vaginalis (PPV) at birth, but this drops to six months. The processes likely cause all indirect hernias vaginalis to fail to close during fetal and neonatal development. Males had 10:1 hydroceles and 3:1 inguinal hernias. Premature babies have more hernias. 60% on the right and 10.6% on both sides impacted men and women equally. Possible explanation: men descended the right testicle after the left, whereas females did the opposite. After five months, individuals underwent surgery at 15 months on average. 11.5% are genetically linked. 10.6 malesper 4 female twins. Twenty-four percent were jailed, and 3.8 percent were smothered. Arrest and strangulation were more common in infants. 53/84 of elective operations were outpatient.

Surgery had 0.9% death, 11.5% complications, and 9.6% recurrence. Symmetrical injuries worsened postoperative problems. Premature boys require inguinal hernia repairs more thanfemales. Repairing hernias required high and low inguinal incisions.

Conclusion: The prevalence of inguinal hernias was 19 times higher in men than women. Bilaterality was seen in roughly 10.6% of instances, with a little right-side predominance. Patients typically waited five months before surgery; the median age at presentation was 15 months. Therefore, it is crucial to be aware of the risk factors for inguinal hernia in children, toscreen them promptly, and to begin hernia surgery as soon as possible, especially in males, preschoolers, and children born prematurely.

Keywords: Indirect inguinal hernia, Open surgery, day case surgery, outcome.

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Introduction

Hernias in the inguinal region have been reported for centuries. A hernia is Greek for a bud or sprout. Inguinal hernias are discussed, along with their diagnosis and treatment, in the Egyptian Ebers papyrus, written about 1550 BC[1]. Hernias were mentioned in the ancient Greek Hippocratic Corpus. Celsus, a Greek physician from 25 BC to 50 A.D., wrote about hernias and their treatment (ligation, preserving the testis) in his book de Re Medica [2]. Hernias were first defined by Galen (born 129 AD) as tears in the peritoneum, and Galen also characterized the processus vaginalis[3]. Sacrificing one's testicles and cutting one's umbilical cord were among his proposed solutions. It was not until Arabic physicians (Albucasis, 114-1187) recommended the cauterization of inguinal hernias by certain medieval Western surgeons[4]. Rather than removing testicles, Ambrose Pare (1510-1590) advocated tying up inguinal hernias in infants. Midway through the 1800s, anesthetics and antisepsis revolutionized the treatment of inguinal hernias[5]. Tables 1 and 2 provide approximations of the demographic characteristics of the intended patients, including their ages, sexes, sides, pregnancies, delivery outcomes, and medical histories. In 18878, Bassini detailed a procedure for strengthening the posterior canal and tightening the internal inguinal ring[6]. The recurrence and infection rates were 5% after 200 repairs. Gross reported a recurrence frequency of 0.45 per thousand in 3874 pediatric hernia operations in 19539. Ger initially reported laparoscopic hernia repair in 198210. (which is not included in this study) [7]. The gubernaculum follows a local chemotactic gradient11, modulated by CGRP release. A lack of calcitonin in the genitofemoral nerve's veins leads to hernias' development. Hydrocele and indirect inguinal hernia result from PPV dysfunction. Premature birth is associated with a 10-30% inguinal hernia risk[8]. The symptoms and causes of inguinal hernias are summarised in Table 4. The most common kind of inguinal hernia in children is an indirect inguinal hernia that occurs laterally to the inferior epigastric arteries. Viscera (the intestines, the bladder, and the reproductive organs) are among the most frequent organs to undergo a sliding hernia13, whereas pantaloon (from wide pants gathered at the angles) hernias are more prevalent in newborns[9]. They named inguinal hernias to include Amyand, Littre, and Richter[10].

METHODS & MATERIAL

This retrospective 5-year study analyzed 104 pediatric inguinal hernia patients (under 12 years old) operated on between September 1, 2017, and August 31, 2022. Open surgical methods were performed to detect the spermatic cord in all inpatient and outpatient department (O.P.D.) patients. The sac, vas, and testicular vessels were severed from the spermatic cord. Vicryl lowers sac content. Drawing the testis to the scrotum avoided iatrogenic undescended testis. Silk wrapped it. Targeted patient incidence, age, sex, side, term/preterm, problems, and family history.

Most pediatric surgical referrals include inguinal hernia surgery. Preterm babies have 10–30% inguinal hernia, and children have 1–5%—inguinal hernias before 1550 BC. Better anatomy led to modern surgery in the late 19th century17. Patent processus vaginalis causes 99% of indirect inguinal hernias in children. Direct inguinal and femoral hernias are infrequent (0.5–1%)18. A bulge or lump induces coughing and crying19. Ultrasonography is useful for ambiguous clinical presentations20. Inguinal hernia patients need surgery to avoid bowel incarceration, gonadal infarction, and atrophy21. Infant imprisonment is higher22.

Hernia problems increase morbidity, mortality, and hospitalization23. To get the best results, inguinal hernia surgery should be done within ten days of diagnosis and 48 hours after incarceration reduction24. Inguinal hernias may be repaired openly or laparoscopically. 25. Childcontralateral inguinal probing is controversial26. Asia had less research than Pakistan. Thus, this study at the country's biggest tertiary specialized hospital will serve as a baseline for other researchers, especially those in developing nations, who wish to explore this topic. Inguinal hernia treatment is herniotomy for about 20 million patients27. Epidemiological data on inguinal hernia repairs in children and adults is sparse and warrants study. 27% of men and 3% of womenhave had an inguinal hernia repair, with 100,000 in the U.K. and 500,000 in the US28. Inguinal hernias are 4–10 times more prevalent in males and 5% of full-term and 30% of preterm newborns29. Premature babies had inguinal hernia surgeries in the 1980s30. Our study analyses inguinal hernia repair frequency and gender discrepancy in children under 12 and term and preterm babies.

RESULTS

Table 1: Patients' Socio-Demographic Characteristics Before and After Inguinal HerniaSurgery

Variables	Frequency	Percent (%)
Sex		
Male	99	95.2
Female	5	4.8
Age group (months)		
<3	34	32.7
3–12	27	26
13–36	33	31.7
>36	10	9.6
Gestational age at delivery		
Term	66	63.5
Preterm	18	17.3
Unknown	20	19.2

Table 2: Predicting Outcome in Inguinal Hernia Surgery Patients: What Patients Need toKnow

Variables	Late Postoperative Complications	
	Yes	No
Age group during surgery (months)		
0–12	7	59
>12	1	37
Bilateral		
Yes	3	8
No	5	88
Complication before surgery		
Addis Ababa	3	27
Other regions	5	68
Operating surgeon		
Resident	3	52
Fellow	3	27
Consultant	2	17
Type of operation		
Daycare	3	50
Admission	5	46
Type of surgery		
Elective	5	69
Emergency	3	27
Known comorbidity		
Yes	1	17
No	7	79
Duration of surgery		
≤56 minutes	3	50
>56 minutes	5	37
Hydrocele		
Yes	3	14
No	5	82

Table 3: Factors Associated with Patient Outcome Among Patients Operated for InguinalHernia

Variables	Late Postoperative Complications	
	Yes	No
Age group during surgery (months)		
0–12	7	59
>12	1	37
Bilateral		
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Operating surgeon		
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Prematurity
Family history
Cystic fibrosis and meconium peritonitis
Hydrocephalus (ventriculoperitoneal shunt)
Peritoneal dialysis
Ascites
Genitourinary abnormalities
Connective tissue disorders
Mucopolysaccharidoses
Glycogen storage diseases
Abdominal wall defects
Chronic lung disease

Table 4. Symptoms of an Inguinal Hernia

All 104 inguinal hernia patients analyzed here received care at MTI/LRH, Peshawar. Onehundred four medical cards were studied (from September 1, 2017, to September 31, 2022). Ninety-nine males and five women. 42 (40.4%). Presentation averaged 15 months—66 (63.5%)

(Table 1). (Table 1). (1). All diagnosed experienced symptoms: 48 right, 45 left, and 11 bilateral hernias. All had indirect inguinal hernias. Diagnosis averaged 15 months (range one day to 12 years). 17. Radiology diagnosed most 103 instances (ultrasound). Non-radiologist-diagnosed. 18 had hydrocephalus, bladder exstrophy, VACTERL, and isolated cardiac abnormalities. One patient impacted siblings. Surgery averaged 5.25 months (range 0–72 months). Surgery. Twenty underwent emergency surgery. Fifty-three elective patients had outpatient surgery, whereas 31 were hospitalized for comorbidities, early gestation, or anesthesia difficulties. Most newborns had hernia repair (Table 2). Diagnosis to surgery averages five months. 30-preoperative problems. 3.8% strangulation, 24% jail. Infants had higher pre-surgery issues. 1. Preoperative incarceration/strangulation averaged 73 days post-diagnosis. Emergency surgery with/without manual reduction was 60% (15/25), manual reduction and operation at the same admission 32% (8/25), and manual reduction and discharged for delayed surgery 8% (2/25). Sedated. Post- surgery small intestine hernias were 95 (91.3%), appendix six (5.8%), ovary and tube one (1%), sigmoid colon one, and momentum one. 21 (21.6%). Six (5.8%) got deep inguinal ring tightening, and 98 (94.2%) basic high sac ligation. Vicryl bandaged everything. None. Two (1.9%) bypassed imaging ultrasonography. Unilateral hernia surgery took 56.0 minutes (15–170) and bilateral 89.0. (range 50–160 minutes). Anesthesia mediated for 77 minutes (range 25–300 minutes). Fifteen patients (14.4%) received caudal anesthesia; the others used acetaminophen/NSAIDs—4.8%. One patient (1%) had apnea, spasm, bradycardia, and immediate recurrences—technology-enhanced anesthesia-related difficulties. Eight postoperative problems hospitalized two individuals. Bilaterality slowed difficulties (Table 3). 1.9% (2/104). Minor wound infections weren't hospitalized. One patient (1%) experienced testicular atrophy following strangulation, necessitating gangrenous ileum excision and orchiectomy after two years. Right-sided surgery showed one contralateral hernia ten months later. Inguinal hernias recurred 9.6% (n=10) during follow-up. Recurrence averaged four months (range one month to - 12 months). Severe pulmonary hypertension elective surgery with 0.9% mortality (n=1).

DISCUSSION

Among the most common pediatric surgical procedures is repairing an inguinal hernia. Inguinalhernia is 1–5% in children and 10–30% in preterm babies[11]. Early hernia repair lowers the chance of incarceration, strangulation, and death[12]. Inguinal hernia was 19:1 male-to-female.

Other research support this33. 58.7% (n=61) of patients were infants[13]. The presentation age ranged from 1 day to 12 years, with a mean age of 15 months—lower than previous studies34. Late patients anticipate spontaneous hernia closure. Himanshu Acharya et al. [14]. discovered hydrocele in 17% of patients35. More hydrocele-prone patients were under one year old. Our hernia placement ratio was 1.07:1.536, unlike previous trials. Alonzo et al.37 detected 10.6% bilateral hernia. 28.8% (30/104) required emergency hernia surgery. 24% were imprisoned, and 3.8% were strangled[15]. This equals a west Ghanaian study by Ohene-Yeboah and Abantanga38 and exceeds Nick Zavras et al., Himanshu Acharya, and Gupta and Rohatgi[16]. Infants experienced higher pre-surgery issues (<0.007). Wenk et alstudy40 .'s matches this. Our study opened the inguinal canal in 21.6% (21/104) and tightened the ring in six (5.6%). Unilateral hernia surgery took 56.0 minutes (range 15–170 minutes) and bilateral surgery 89.0 minutes (range 50–160 minutes). This exceeds Ciro Esposito et al. and Using et al.41. Ciro Esposito et al. and Nick Zavras et al.42 reported comparable hernia sac contents[17]. We

didn't study contralaterally. The contralateral examination is recommended for female neonates under six months and left-sided hernias43. Our study found early and late postoperative difficulties in only3.8% (n=4) and 7.7% (n=8) of inguinal hernia patients, respectively. Gahukamble, Khamage, Mabula, and Chalya44 reported higher. Late issues were just bilateral (=0.01) [18]. The wound infection rate was 1.9% (2/104), higher than Ciro Esposito and Himanshu Acharya45.

Recurrence was 9.6% (n=10). 46. Lack of sac ligation or early intervention following incarcerated bowel reduction may explain this high frequency. Inguinal hernia surgery had a0.9% mortality rate (n=1). One cardiac patient died early postoperatively[19].

Conclusion

All of the inguinal hernia operations were done with the standard open approach. Quick surgery reduces complications and death. Infants should be operated on quickly to avoid incarceration, despite waiting lines. Our study had several issues, recurrences, and postoperative problems. Intervention is delayed. Thus, early and suitable surgery is necessary. Children have more hernias. Prompt surgery prevents enduring therapeutic effects. Inguinal hernia screening is recommended for infants under six months and preschoolers. For hernia therapy, preterm babies should be screened for inguinal hernia within six months after birth. Boys—especially preterm boys—have more inguinal hernia procedures. in hospital deliveries, clinical awareness, rapid screening for children at risk for inguinal hernia, and early hernia treatment are crucial, especially for males, preschoolers, and preterm babies.

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