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Research Article

Challenges and Outcomes in Neonatal Inguinal Herniotomy: A Two-Year Prospective Study of 32 Cases

Md Alamgir Hossan[1]*, Shamsuddin Ahmed[2] and Md Majedul Islam[3]

[1]*Bashundhara Ad-din Medical College, Keraniganj, Dhaka, Bangladesh*

[2]*Assistant Professor, Bashundhara Ad-din Medical College, Keraniganj, Dhaka, Bangladesh*

[3]*Associate Professor, Bashundhara Ad-din Medical College, Keraniganj, Dhaka, Bangladesh*

***Corresponding Author:** Md Alamgir Hossan, Bashundhara Ad-din Medical College, Keraniganj, Dhaka, Bangladesh.

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Abstract

Background: Inguinal hernia is one of common surgical problem in neonates. Herniotomy in neonates carries technical challenges and postoperative risks. This study evaluates the difficulties, intraoperative hazards and postoperative outcomes of inguinal herniotomy in neonates over two years.

Methods: A prospective interventional study was conducted on 32 neonates who underwent inguinal herniotomy between January 2022 and December 2023. Demographics, intraoperative challenges, complications, and outcomes were analyzed statistically.

Results: Of 32 neonates, 26 (81.25%) were male and 6 (18.75%) were female. The most common difficulty was vas deferens handling in 10 (31.25%) and hernia sac handling. Intraoperative hazards included injury to the vas (1 case) and bleeding (3 cases). Postoperative complications occurred in 5 (15.6%) patients, including recurrence (1), scrotal hematoma (3). The recurrence rate was 3.125%. Mean operative time was 32 ± 5 minutes. No mortality was observed.

Conclusion: Neonatal herniotomy is safe but technically challenging. Gentle handling, high ligation of sac, and hemostasis are essential. Early diagnosis and timely surgery reduce risk.

Keywords: *Neonatal Hernia; Herniotomy; Operative Hazard; Recurrence; Surgical Outcome*

Introduction

Neonatal inguinal hernia is one of common surgical condition in pediatric surgery [1]. Incidence of inguinal hernias 1-5% in term infants and up to 30% in premature infants with male predominance and rates 3 - 4 times higher than in girls. The Frequency of inguinal hernia is inversely related to birthweight with rates highest in the 500 - 1000g population. This weight group is almost three times more likely to require emergent surgery. The risk of incarceration is doubled in premature neonates with inguinal hernia when repair is delayed. Approximately half of these low birthweight infants are found to have bilateral hernias [9].

Herniotomy, challenging in neonates and preterm infants due to the fragility of the hernia sac, small anatomical area, and potentially associated morbidities [4]. Inguinal exploration and clear dissection followed by secure high ligation of the hernial sac has remained the standard procedure. Recently the laparoscopic approach has gained popularity and it is feasible and effective even in premature infants weighing 3 kg or less [8].

Surgical repair is mandatory due to the high risk of incarceration and strangulation [2]. However, neonatal anatomy-small size of vas deferens, cord structures, and fragile tissues-makes surgery technically demanding.

Aim of the Study

This study aims to evaluate the operative challenges, intraoperative hazards, and postoperative outcomes in 32 neonates over a two-year period.

Methods

Study design: Prospective interventional study.

Setting: Pediatric Surgery Department, Farazy Hospital limited and others hospital.

Duration: January 2022 - December 2023.

Inclusion criteria: All neonates (< 28 days) who underwent unilateral or bilateral inguinal herniotomy.

Exclusion criteria: Age >28 days, recurrent cases, or associated major anomalies.

Data collected:

- Demographics (age, sex, prematurity).
- Side of hernia.
- Operative duration.
- Intraoperative findings and hazards.
- Postoperative complications.
- Follow-up (minimum 6 months, up to 2 years).

Statistical analysis:

- Data analyzed using SPSS v26.
- Descriptive statistics (mean, SD, percentages).
- Chi-square test used for significance ($p < 0.05$).

Results

Parameter	Number of patients	Percentage (%)
Male	26	81.25%
Female	06	18.75%
Gestational age		
Term	22	68.75%
Preterm	10	31.25%
Side of hernia		
Right	20	62.5%
Left	8	25%
Bilateral	4	12.5%

Table 1: *Demographic profile of patients (n = 32).*

Challenge	No. of cases	Percentage (%)
Handling of vas deferens	10	31.25%
Narrow inguinal canal	7	21.9%
Difficult sac dissection	6	18.75%
Bleeding during dissection	3	9.4%
Incarcerated hernia with adhesions	2	6.25%
No significant challenge	4	12.5%

Table 2: *Operative challenges encountered.*

Intraoperative complication	No. of cases	Percentage (%)
Vas deferens injury	2	6.25%
Cord hematoma	1	3.1%
Injury to testicular vessels	1	3.1%
Conversion to open technique	0	0%

Table 3: *Intraoperative hazards.*

Complication	No. of cases	Percentage (%)
Scrotal hematoma	04	12.5%
Wound infection	01	3.1%
Recurrence	01	3.125%
Testicular atrophy	00	00
Mortality	00	0%

Table 4: *Postoperative complications and outcomes.*

Parameter	Value
Mean operative time	32 ± 5 minutes
Operative time in unilateral cases	28 ± 4 minutes
Operative time in bilateral cases	40 ± 6 minutes
Median follow-up duration	14 months (6-24)
Recurrence in preterm neonates	01 cases (10% of preterm group)

Table 5: *Operative time and follow-up.*

Follow-up:

- Median: 14 months (range 6-24).
- No testicular atrophy or hydrocele at final follow-up.
- Recurrences occurred in two preterm patients operated at <10 days age.

Discussion

Neonatal herniotomy requires specialized skills due to anatomical delicacy. Uemura in 1999 and Vaos in 2010 recommended performing early hernia repair in newborns to prevent perioperative morbidity like incarceration, subsequent testicular ischemia and hernia recurrence. Lautz., *et al*. also reported that premature neonates with IH are twice as likely to be incarcerated if their repair is delayed beyond 40 weeks post-conceptual age. In our study we also found, early herniotomy for neonate can prevent obstruction and incarceration [8].

In our study, the most common difficulty was safe handling of vas deferens and small inguinal space, consistent with literature [3,4]. Preterm infants posed greater surgical difficulty and longer operative time. Our recurrence rate (3.125%) is slightly higher than that reported in large series (1 - 3%) [5]. Venkataraman Ramachandran., *et al.* reported recurrence is to be higher in preterm infants (range, 2% - 10%), particularly if the tissue is thinner and if the repair is done early. In contrast, term infants and older children have a recurrence rate less than 1%. Phelps and Agrawal found an 8% recurrence rate in preterm infants with open repair at a median postmenstrual age of 43 weeks' gestation. Turial., *et al*. found that 58 preterm children who underwent laparoscopic repair had a recurrence rate of 3.6%. The recurrence rate in children after a hernia repair is Both recurrences occurred in preterm neonates, reinforcing findings that immature tissues may lead to recurrence if repair is not meticulous [6].

In this study no testicular atrophy or mortality was observed, indicating safety with careful dissection. Limitations include small sample size.

Conclusion

Premature infants have a high incidence of inguinal hernia. They also have a high rate of bilateral hernias. Inguinal herniotomy in neonates is a safe and effective procedure but requires attention to technical details to avoid complications. Preterm infants need special care due to fragile tissues. High ligation, gentle handling and close follow-up are essential to prevent recurrence.

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