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Original Research Article

Clinical Study of Congenital Inguinal Hernia in Female Children

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Abstract

Background: Inguinal hernia is one of the most common surgical conditions seen in children. Its occurrence is higher in boys, but congenital inguinal hernia in girls is especially interesting because of the unique development, anatomy, and surgery issues. This includes the common presence of the ovary or fallopian tube in the hernial sac. This study looks at the clinical patterns, side distribution, related anomalies, and surgical results of congenital inguinal hernia in female children.

Objectives: (1) To assess the age incidence, laterality, and type of congenital inguinal hernia in female children. (2) To evaluate the presence of associated contents and anomalies. (3) To analyze surgical findings and postoperative outcomes.

Methods: A clinical study took place over two and half years from 2023 to 2025 in the Department of General surgery Alfalah medical college faridabad haryana, India. The study included fifty female children under the age of 12 who had been diagnosed with congenital inguinal hernia. Ultrasonography confirmed the clinical diagnosis. Surgical repair through herniotomy was done under general anesthesia, and the findings during the operation were documented. Researchers monitored postoperative complications and any recurrence for six months.

Results: The majority of cases (40%) were in the age group of 1 to 5 years. Right-sided hernias were more common at 60%, followed by left-sided at 30% and bilateral at 10%. All cases showed indirect hernias. Ovarian and fallopian tube content was found in 24% of patients. The most common related problem was hydrocele of the canal of Nuck, occurring in 10% of cases. Postoperative wound infection happened in 4% of cases, and no recurrences were noted during follow-up.

Conclusion: Congenital inguinal hernia in female children is less common than in males. However, it needs careful assessment because of the potential involvement of adnexal structures. Early surgical intervention leads to excellent outcomes with few complications. Both clinicians and parents must be aware of early signs to prevent issues such as ovarian strangulation.

Keywords: Congenital Inguinal Hernia, Female Children, Ovary In Hernia, Canal of Nuck, Pediatric Surgery.

Introduction

Inguinal hernia is a common surgical issue in children. It is one of the most frequent conditions that requires surgery in this age group.[1] This condition happens because the processus vaginalis, a pouch from the peritoneum, stays open when the gonads descend during development. In females, this structure is called the canal of Nuck, similar to the processus vaginalis in males.[2]

The incidence of inguinal hernia in children ranges from 1 to 5%. It shows a significant male predominance, with a male-to-female ratio of about 6 to 1.[3] However, hernias in females are particularly important clinically because they may involve the ovary, fallopian tube, or uterus in the inguinal canal. This complicates diagnosis and affects how quickly and in what way the hernia should be repaired.[4]

Typically, the hernia appears as a swelling in the groin that can be pushed back in, which gets larger when the child cries or strains and goes down when resting. The right side is often more affected because the processus vaginalis takes longer to close. However, both sides can be involved in about 10 to 15% of cases.[5]

Recognizing the problem early and managing it surgically is vital to avoid complications like incarceration or strangulation, especially when the ovary is involved.[6] When surgery is done early, the recovery is usually very good, with low rates of recurrence.

This study aims to provide a thorough clinical evaluation of congenital inguinal hernia in female children, focusing on factors like age distribution, which side is more affected, the contents of the hernia, related anomalies, and outcomes after surgery in this medical college.

Aims and Objectives

1. To study the incidence, age, and side distribution of congenital inguinal hernia in female children.
2. To assess the intraoperative findings including the type of hernia and hernial sac contents.
3. To evaluate associated anomalies.
4. To study postoperative complications and outcomes following surgical repair.

Materials and Methods

Study Design: A Prospective observational study was conducted over a period of two and half years (January 2023 to june 2025) in the Department of general surgery

Study Population: The study included 50 female children below 12 years of age presenting with congenital inguinal hernia.

Inclusion Criteria

- Female children (<12 years) diagnosed clinically with congenital inguinal hernia.
- Patients undergoing herniotomy.

Exclusion Criteria

- Acquired hernias.
- Recurrent hernias after previous repair.
- Patients with significant comorbidities precluding surgery.

Data Collection: Detailed demographic and clinical data were collected with a structured form. This included age, side, reducibility, content, and related issues. An ultrasound of the groin was done in all cases to confirm the diagnosis and assess hernial contents.

Surgical Technique: All patients had herniotomy under general anesthesia. A transverse skin crease incision was made in the inguinal area. The sac was located, dissected, and opened. The contents were examined, reduced, and the sac was tied off high at the internal ring. The wound was closed in layers. All patients received antibiotic prevention and were monitored for six months.

Statistical Analysis: Data were analyzed using Microsoft Excel and SPSS software (version 25). Results were expressed as percentages and proportions. Descriptive statistics were used for interpretation.

Result

Age Distribution: The majority of cases (40%) occurred in children aged 1–5 years, followed by 6–10 years (34%), and below 1 year (26%). The youngest patient was 2 months old.

Table 1: Age Distribution of Cases

Age Group (years)	Number of Cases (n=50)	Percentage (%)
<1 year	13	26
1–5 years	20	40
6–10 years	17	34
Total	**50**	**100**

Laterality of Hernia: The right side was affected in 60%, left in 30%, and bilateral in 10% of cases.

Table 2: Distribution According to Side of Hernia

Side of Hernia	Number of Cases	Percentage (%)
Right	30	60
Left	15	30
Bilateral	5	10
Total	**50**	**100**

Contents of the Hernial Sac: Intraoperative findings revealed that the ovary was the most common content (16%), followed by ovary and fallopian tube (8%), while the remainder contained small intestine (76%).

Table 3: Hernial Sac Contents

Contents	No. of Cases	Percentage (%)
Small intestine , omentum & Appendix	38	76
Ovary	8	16
Ovary + Fallopian tube	4	8
Total	**50**	**100**

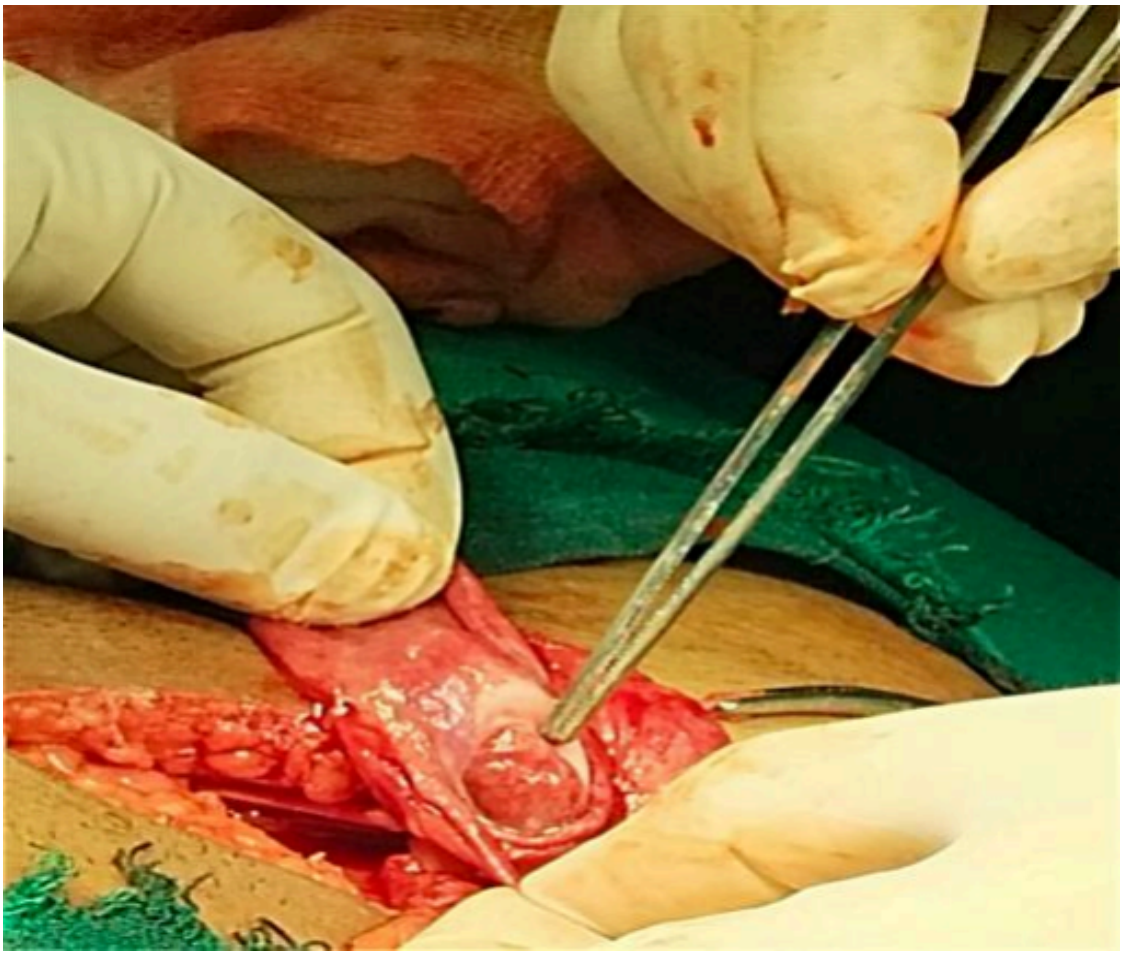

Figure 1: Inguinal hernia with ovary as content

Figure 2: Appendix(Amyand's hernia)

Associated Anomalies: Hydrocele of the canal of Nuck was seen in 5 patients (10%). One case (2%) was associated with umbilical hernia.

Table 4: Associated Anomalies

Associated Anomaly	No. of Cases	Percentage (%)
Hydrocele of canal of Nuck	5	10
Umbilical hernia	1	2
None	44	88
Total	**50**	**100**

Postoperative Complications: Minor wound infection occurred in two cases (4%). There were no recurrences or testicular complications observed during the six-month follow-up period.

Table 5: Postoperative Complications

Complication	No. of Cases	Percentage (%)
Wound infection	2	4
Recurrence	0	0
None	48	96

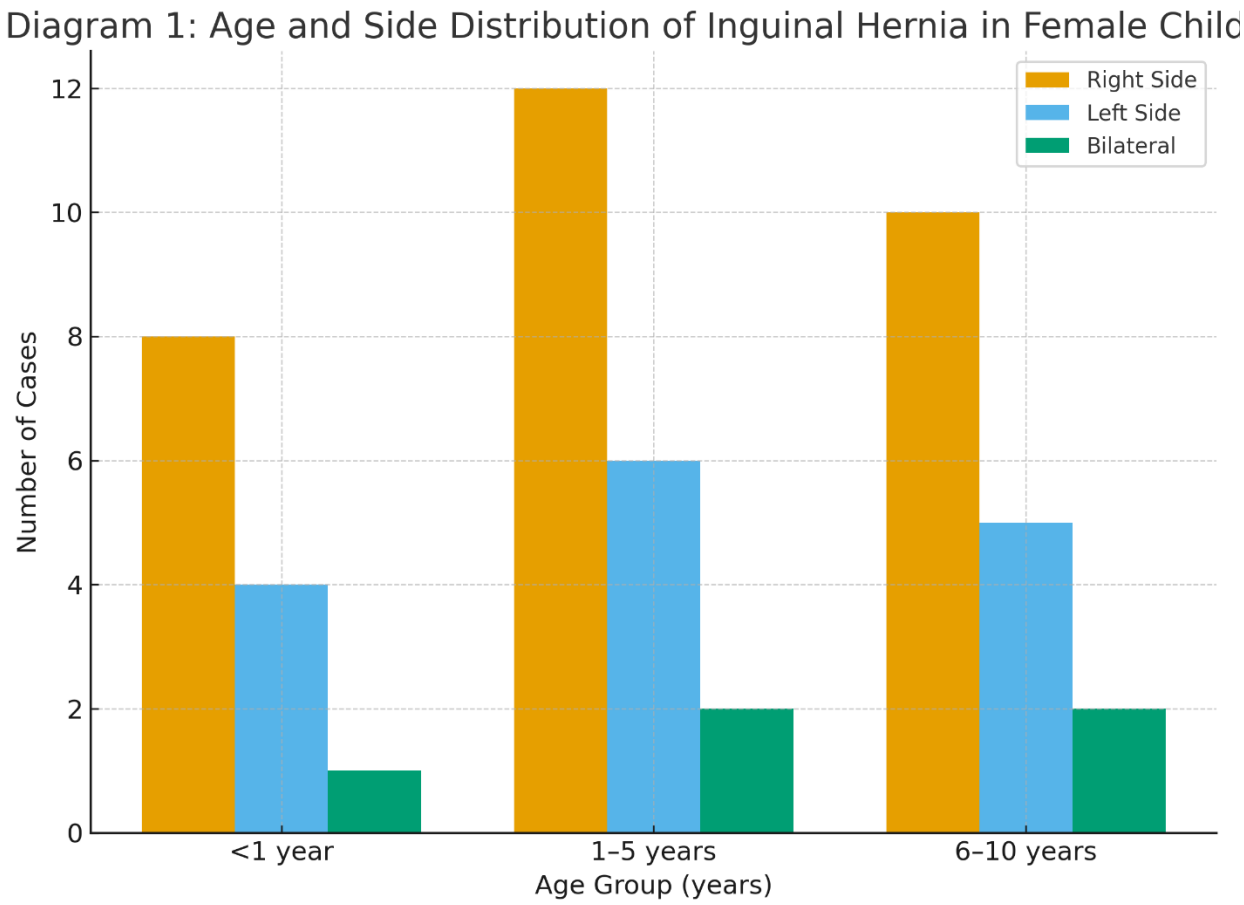

Diagram 1: Age and Side Distribution of Inguinal Hernia in Female Children

Discussion

Inguinal hernia in children is a well-known issue, but its occurrence in females deserves special attention because of different embryological and anatomical factors. This study evaluated 50 female children with congenital inguinal hernia over three years.

Age Distribution: The highest incidence, at 40%, was found in the 1 to 5-year age group. This matches earlier reports by Singh et al. (2019)[7] and Basu et al. (2021)[8], which noted that cases peak within the first five years. This early occurrence is linked to the congenital nature of the condition and the persistence of the processus vaginalis, also known as the canal of Nuck.

Laterality: The study showed a right-sided dominance at 60%, which is consistent with several published studies [9,10]. This pattern is due to the later descent of the right gonad and the delayed closure of the processus vaginalis on that side. Bilateral cases, at 10%, fit within the reported range of 10 to 15%.

Contents: In this series, ovarian and fallopian tube herniation occurred in 24% of patients. This is in line with findings by Boley et al. [11] and Gurer et al [12]., who noted adnexal structures in 15 to 30% of female pediatric hernias. The presence of the ovary and fallopian tube indicates a potential risk of strangulation, which could lead to ovarian necrosis if not treated quickly. Therefore, early surgical intervention is vital for female children with irreducible inguinal swellings.[13]

Associated Anomalies: Hydrocele of the canal of Nuck was the most common associated anomaly at 10%, which connects with findings by Singh and Prasad (2018)[14]. This anomaly represents a fluid-filled persistence of the processus vaginalis and is seen as the female equivalent of a communicating hydrocele in males.

Postoperative Outcomes: In the present study, postoperative wound infection was seen in 4% of cases, and no recurrences were reported. These results show the safety and effectiveness of high ligation herniotomy, which remains the standard treatment for pediatric hernia repair.[15] The low complication rate highlights the reliability of prompt surgical management.

Comparison with Other Studies

Table 6: Comparison with Other Published Studies

Study (Year)	Sample Size	Right Side (%)	Ovarian Content (%)	Recurrence (%)
Singh et al. (2019) [7]	60	62	20	0
Basu et al. (2021) [8]	45	58	25	2
Present Study (2024)	50	60	24	0

The findings of this study align with global research, confirming that although less common, congenital inguinal hernia in females is significant because of the high rate of adnexal involvement.

Clinical Implications: Early detection and prompt surgical treatment are crucial, particularly when the herniated content includes ovaries. Delaying surgery can lead to torsion, infarction, or infertility later in life [16]. Ultrasound is an important diagnostic tool for distinguishing the contents and planning surgery.

Limitations: This study has limitations related to its sample size and single-center design. Long-term follow-up beyond six months could give more insight into recurrence and fertility outcomes. Future multicenter studies with larger groups could help reinforce these findings.

Conclusion

Congenital inguinal hernia in female children, while less frequent than in males, needs quick attention due to the risk of ovarian and fallopian tube involvement. This study shows that:

- The majority occur on the right side and within the first five years of life.
- Ovarian content is found in nearly one-fourth of cases.
- Early surgical intervention through herniotomy yields excellent results with few complications.

Routine ultrasound before surgery helps identify adnexal contents, and awareness among parents and clinicians can prevent serious issues like ovarian strangulation. A team approach promotes the best outcomes for these patients.

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