



Journal Homepage: -www.journalijar.com
**INTERNATIONAL JOURNAL OF
 ADVANCED RESEARCH (IJAR)**

Article DOI:10.21474/IJAR01/16046
 DOI URL: <http://dx.doi.org/10.21474/IJAR01/16046>



ORIGINAL ARTICLE

INGUINAL HERNIA IN FEMALE CHILDREN - A CASE SERIES OF 19 PATIENTS

Shams Ul Bari¹ and Naveed Nabi²

1. MS,FICS, FACS, FIAGES, Department of Surgery Skims Medical College, Bemina Srinagar Jammu and Kashmir.
2. MBBS, MS, Department of Surgery Skims Medical College, Bemina Srinagar, Jammu and Kashmir.

Manuscript Info

Manuscript History

Received: 20 November 2022
 Final Accepted: 24 December 2022
 Published: January 2023

Key words:-

Hernia, Herniotomy, Incarceration, Omentum, Ovary

Abstract

Background;Inguinal hernia is quite uncommon in females as compared to males and may pose a diagnostic as well as a surgical challenge to the surgeons. Thorough knowledge of the anatomy of the region and the variable nature of contents is essential to prevent any complications. The cumulative incidence of inguinal hernia from birth to 15 years of age has been reported as 6.62% in males and 0.74% in females.

Aims and objectives;The aim of the study was to study the clinical profile and management of inguinal hernia in female children.

Material and methods;The study, "Inguinal Hernia in Female Children – A case series of 19 patients" was conducted prospectively in the department of Surgery at Sheri-Kashmir Institute of Medical Sciences Medical College Srinagar from March 2017 to February 2022. All the female children in the age group of 1 to 14 years who presented with clinical or Sonographic evidence of inguinal hernia were included in the study.

Results and observations; Total number of patients studied was nineteen. All the study patients had indirect inguinal hernia, with right sided hernia in 8 (42.10%), left sided hernia in 10 (52.25%) patients and bilateral hernia in one patient(5.26%).At the time of surgery, indirect sac alone was found in 50% patients, indirect sac containing omentum was seen in 18.75% patients and a sac containing small bowel was seen in 25% patients. One patient had a sliding hernia containing ovary and fallopian tube. All the patients underwent herniotomy under general anesthesia.

Conclusion; Thorough knowledge of female inguinal anatomy is essential before attempting any surgical intervention for inguinal hernia. The possibility of a sliding inguinal hernia with uterus, fallopian tube and ovaries should be considered and may present as an incarcerated inguinal hernia in females. Herniotomy is the surgical procedure of choice in all patients.

Copy Right, IJAR, 2023,. All rights reserved.

Corresponding Author:- Dr. Shams Ul Bari

Address:- MBBS, MS,FICS, FACS, FIAGES

Associate Professor Department of Surgery Skims Medical College, Bemina Srinagar Jammu and Kashmir, India.

Introduction:-

Inguinal Hernia is a common surgical problem in paediatric patients^[1] and relatively less common in females as compared to males. It is six times more common in boys than in girls^[2-4] with an overall incidence of 1.9% in females. As reported in literature, 1 male in 5 and 1 female in 50 will eventually develop inguinal hernia during their lifetime. In females, symptomatic but non-palpable hernias often remain undiagnosed. As reported in literature right sided hernia is seen in 68.15 %, left sided in 23.4%, while as bilateral is seen 8.5%^[5]. Bilateral hernias are more common in premature infants.^[3, 6]

Around 99 % inguinal hernias in females occur as indirect protrusions and is related to congenital weakness at the internal abdominal ring^[7,8]. The sac is formed by the unobliterated portion of the prenatal peritoneal invagination of the canal of Nuck that runs along the round ligament and in some cases may partly cover it. Many of these are sliding hernias and may contain genital structures such as ovaries, fallopian tubes or even the uterus. In females no definite risk factors for inguinal hernia are known except for a positive family history. Around 15% of the childhood hernias are incarcerated, especially those in young infants.^[9,10] Immediate operation should be done in all patients who are ill with obstructed or locally inflamed hernia.

Aims and objectives:-

The present study was designed with the aim to study the clinical presentation, age of presentation, any family history, and contents of the hernia sac and the management of inguinal hernia in female children.

Materials and Methods:-

The study entitled, '**Inguinal Hernia in Female Children-A case series of 19 patients**' was conducted prospectively in the department of Surgery at Sheri-Kashmir Institute of Medical Sciences Medical College Srinagar from March 2017 to February 2022. All the female children in the age group of 1 to 14 years who presented with clinical or Sonographic evidence of inguinal hernia were included in the study. Total number of patients studied was nineteen.

All the study patients presented to out-patient department of our hospital with a history of inguinal bulge noticed by their parents with pronounced increase in bulge during crying or playing. A thorough clinical examination was done on the side of presentation as well as on the opposite side to rule out any bilateral component. All the study patients were subjected to various baseline investigations. Ultrasonography of bilateral inguinal regions was performed in all the patients to confirm the clinical findings. After thorough evaluation, patients were subjected to surgical repair under general anaesthesia. All patients underwent herniotomy with ligation of sac at the deep inguinal ring after reduction of contents. The round ligament is often intimately adherent to the hernia sac. In these cases we include it in the suture ligation of the neck of the sac. Child with sliding hernia containing ovary and fallopian tube also underwent herniotomy after careful dissection of the sac from the contents to avoid any trauma to ovary. All the patients were discharged within 24 hours after surgery and were followed up initially weekly for three months with further follow up at three months for a period of one year. All the relevant data was collected and entered into the already prepared Proforma.

Results and Observations:-

Over a study period of five years from March 2017 to Feb, 2022, a total of 19 female children presented to our OPD with a diagnosis of inguinal hernia. Out of 19 patients, 15 (78.94%) patients were in the age group of 5-10 years and 4 (21%) were less than 5 years of age (table 1). All the study patients had indirect inguinal hernia. Right sided hernia was seen in 7 (36.84%), left sided hernia in 11 (57.89%) patients and bilateral hernia in one patient (6, 25%) (Table 1). None of our patients had any family history of hernia. Hernia was reducible in 18 (95%) patients, while as in a patient with fallopian and ovary as its contents, hernia was irreducible sac.

Intra-operative findings in all the patients correlated with the sonographic findings. At the time of surgery, indirect sac alone without any contents was found in 10 (52.63%) patients (Fig 1). Indirect sac containing omentum was seen in 4 (21%) patients (Fig.2), while as small bowel was seen as a content of the sac in 4 (21%) patients (Fig.3). A sac containing ovary and fallopian tube as sliding component was seen in one patient (5.26%) (Fig.4). Recurrences or postoperative complications were not seen in any of our patients.

Discussion:-

Inguinal hernia repair is the most commonly performed operation in paediatric age group. Various studies have reported an incidence of 3.5% to 5.0% for the inguinal hernias in full term infants and an incidence of 44 to 55% in premature and low birth weight babies.^[1,12] However, the overall incidence is less in female children.

Early repair of inguinal hernias should be carried out in females as there are high chances of incarceration.^[13] Ovary has been found as the incarcerated viscera in majority of girls particularly infants. It has solid almond like feel and is slightly mobile. An incarcerated ovary especially if oedematous is less likely to be reduced than intestine as was seen in one of the patients in our study. The round ligament of the uterus which runs along an inguinal hernia sac in females is actually the suspensory ligament of the ovary and terminates in the hernia sac.^[13] It is believed to be a female gubernaculum with altered anatomy and location due to lack of response to androgen. Its modified presentation in a processus vaginalis raises the suspicion that it is not a simple prolapse of ovary in the hernia, but is a descended gonad mimicking the descent of the testis.^[13] The wall of the sac is thickened in the medial or lateral quadrants and it may be difficult to reduce the contents. In such cases, the sac should be opened in a normal appearing portion and the walls inspected for a sliding component. The mesenteric attachment of the inner sac wall is divided in the bloodless plane within the sac. Once the tube and ovary is freed, reduction becomes easier without compromising the blood supply followed by ligation of the neck of the sac.

In females with inguinal hernias particularly those with bilateral hernias, the possibility of nuclear sex should be always kept in mind.^[14] Around 1.6% of children presenting with inguinal hernia and having apparent female genitalia prove to be genotypic males with intra-abdominal testes but have female anatomy and endocrine function.^[14]

The current prospective study showed that female paediatric hernias are always indirect type with slight predilection to the left side. Direct inguinal hernias in children are rare and represent only 0.5% of all groin hernias.^[15] The processus vaginalis (canal of Nuck) persists in some children resulting in herniation of intra-abdominal contents or female gonads with or without fallopian tube or even uterus.

The incidence of ovarian herniation and ovarian strangulation has been reported to be 15-31% and 2-33% respectively^[16-18]. In our study, ovarian herniation was seen in 5.26% patients. In a study conducted by Chawla, S., 2 patients presented with incarcerated hernia and while as one infant had sliding component containing ovary.^[13] Corresponding to our study results, Kelly MA,^[19] also concluded in their retrospective cohort study that inguinal hernias are more common on left side in female children. In a study conducted by Goldstein IR and Potts WJ,^[1] analysis of 173 patients showed that 102 (59 %) had right-sided hernias, 34 (20 %) had left-sided hernias and 37 (21 %) had bilateral inguinal hernias. In their study simple indirect inguinal hernia sac was seen in 148 (85.5%), small bowel in 2 (1.15%), while as fallopian tube and ovary were seen in 8 (4.6%) patients.

In 95% of our patients, hernia was completely reducible with obvious prominence seen at the time of increased intra-abdominal pressure. Being less obvious and asymptomatic may be considered as the explanation for late presentation to the hospital in our series, as 15 out of 19 presented at or after 5 years of age. One of our study patients had incompletely reducible hernia because of sliding component of hernia containing ovary along with fallopian tube. An incarcerated ovary in a girl is usually a part of a sliding hernia as was seen in the study conducted by Chawla, S.,^[13] The mesenteric attachment of the tube and ovary often form part of the hernial sac in girls^[22]. Hernia uterus inguinale is a rare congenital anomaly and operating surgeon should be careful to preserve and reposit the ovary in the abdominal cavity during exploration.^[23]

Some authors have recommended bilateral inguinal exploration in all female patients^[20], because bilateral patency of the processus vaginalis has been seen in 90% of these girls. However, this procedure was not followed in our study, as there was no clinical or Sonographic evidence of bilateral hernia. Routine exploration of contralateral inguinal area may not be justified as only 10% of children with unilateral repair subsequently developed a contralateral hernia^[21]. Various methods can be used to detect possible patency on contralateral side such as creating a Pneumoperitoneum^[17], preoperative herniography, intraoperative laparoscopy^[20] and probing.

Goldstein IR and Potts WJ^[1] reported a recurrence in one patient in their study in a 14-month-old girl who had a repair of bilateral sliding hernias of the ovaries eight months before. The recurrence was again a sliding hernia of the ovary which was repaired successfully. In contrast to this, recurrences were not seen in any of our patients.

Conclusion:-

Thorough knowledge of female inguinal anatomy is essential before attempting any surgical intervention for inguinal hernias. The possibility of a sliding inguinal hernia with uterus, fallopian tube and ovaries should be considered. The round ligament should be preserved as far as possible to prevent any weakening of uterine support. Incarcerated inguinal hernia in female children should raise the suspicion of sliding type of hernia. Premature and low birth weight babies constitute an important risk group for development of paediatric inguinal hernias. Parents and care-givers need to be extra vigilant for earlier diagnosis and timely management. Ultrasonography plays a pivotal role in diagnosis of asymptomatic and clinically inapparent cases. Herniotomy is the surgical procedure of choice in all patients and careful dissection of sac is needed in patients with sliding component. Currently, there is no level I evidence to recommend routine exploration of contralateral groin. Further studies with more sample size should focus on evaluating possible antenatal risk factors for development of paediatric inguinal hernia in females.

Table 1:- Clinical parameters of the patients.

Parameter	No. Of Patients (n=19)
Age	
a)1-5 years	4
b)5-10 years	15
Clinical Characteristics	
a)Right Sided Hernia	07
b)Left Sided Hernia	11
c) Bilateral inguinal hernia	01
d)Completely Reducible hernia with Positive cough Impulse	18
e)Incompletely reducible with Positive Cough Impulse	01
USG Findings	
a)Indirect Inguinal hernia with sac only	10
b)Indirect Inguinal Hernia with sac containing Omentum	04
c)Indirect Inguinal Hernia with sac containing bowel	04
d)Indirect Inguinal Hernia with ovary/ fallopian tube as sliding component	01
Operative Findings	
a)Indirect Inguinal hernia with empty and some fluid sac	10
b)Indirect Inguinal Hernia with sac containing omentum	04
c)Indirect Inguinal hernia with sac containing bowel	04
d)Sliding hernia containing ovary and fallopian tube along with sac	01



Fig. 1:- Bilateral inguinal hernia showing an indirect sac on left side.



Fig. 2:- Indirect sac containing omentum.



Fig. 3:- Indirect sac containing bowel.

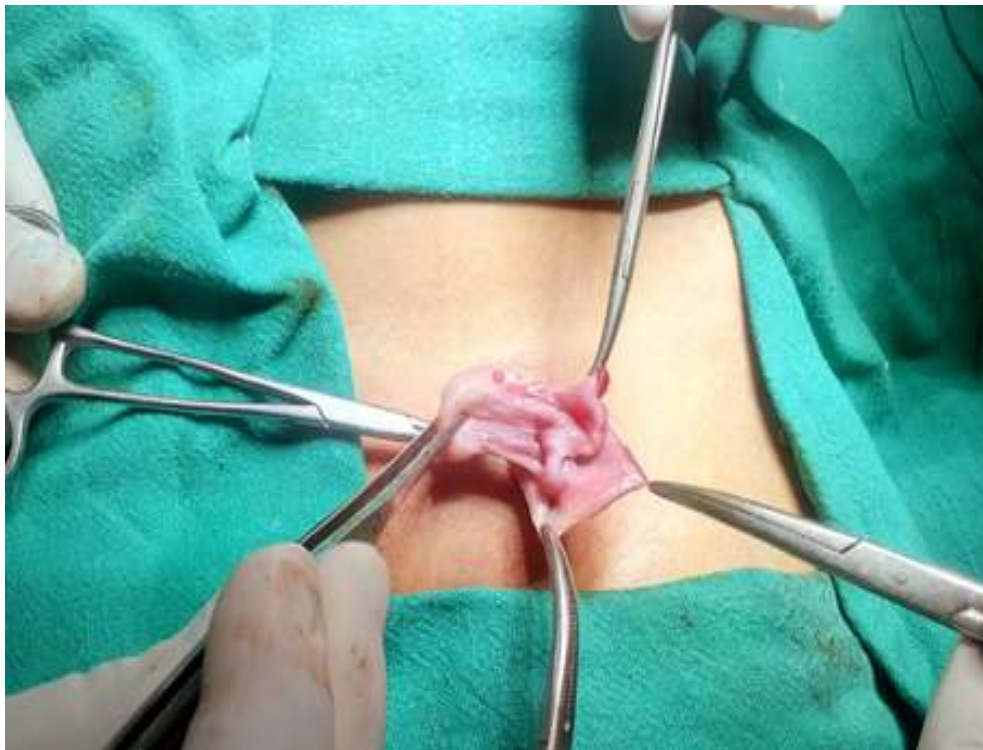


Fig. 4:- Sliding hernia with ovary and fallopian tube as its contents.

Acknowledgement:-

Authors acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript. The authors are also grateful to authors / editors / publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed.

Conflict of interest.

Nil.

Financial support.

Nil.

References:-

1. Goldstein IR and Potts WJ. Inguinal hernia in female infants and children. *Ann Surg.* 1958 Nov; 148(5): 819–822. doi: 10.1097/00000658-195811000-00013
2. Bowling K, Hart N, Cox P, Srinivas G. Management of paediatric hernia. *BMJ* 2017; 359. doi: 10.1136/bmj.j4484.
3. Öberg S, Andresen K, Rosenberg J. Etiology of inguinal hernias: A comprehensive review. *Front Surg* 2017; 4:52. doi: 10.3389/fsurg.2017.00052.
4. Weaver KL, Poola AS, Gould JL, Sharp SW, St Peter SD, Holcomb GW 3rd. The risk of developing a symptomatic inguinal hernia in children with an asymptomatic patent processus vaginalis. *J Pediatr. Surg* 2017; 52(1):60–64. doi: 10.1016/j.jpedsurg.2016.10.018.
5. Devlin HB. Rob & Smith operative surgery. In ;DudleyH, Walter P, Carter D, editors. *Inguinal hernia in babies and children* 4th ed. 1983;449-54.
6. Panabokke G, Clifford ID, Craig SS, Nataraja RM. Reduction of paediatric inguinal hernias. *Emerg Med Australas* 2016;28(2):224–27. doi: 10.1111/1742-6723.12549.
7. Viner RM, Teoh Y, Williams DM, et al. Androgen insensitivity syndrome: a survey of diagnostic procedures and management in the UK. *Arch Dis Child* 1997;77:305–9. <https://doi.org/10.1136/adc.77.4.305>.
8. Gans SL, Rubin CL. Apparent female infants with hernias and testes. *Am J Dis Child* 1962;104:82–6.
9. Jagiello G, Atwell JD. Prevalence of testicular feminisation. *Lancet* 1962;279:329. [https://doi.org/10.1016/S0140-6736\(62\)91289-8](https://doi.org/10.1016/S0140-6736(62)91289-8).
10. Sarpel U, Palmer SK, Dolgin SE. The incidence of complete androgen insensitivity in girls with inguinal hernias and assessment of screening by vaginal length measurement. *J Pediatr. Surg.* 2005;40:133–7. <https://doi.org/10.1016/j.jpedsurg.2004.09.012>.
11. Groff D, Nagaraj HS, Pietsch JB. Inguinal hernias in premature infants who were operated on before their discharge from the neonatal intensive care unit. *Arch Surgery.* 1985; 120: 962.
12. Grosfeld JL, Minnick K, Shedd F, West KW, Rescorla FJ, Vane DW. Inguinal hernia in children: the factors which affected the recurrence in 62 cases. *Journal of Paed Surgery.* 1991; 283 – 87.
13. Chawla S. Inguinal hernia in females. *Med J Armed Forces India* 2001; 57(4) : 306-308
14. Griffin JE, Wilson ID. The syndromes of androgen resistance. *N Eng J Med* 1980; 302 : 198-201.
15. Rescorla FJ, Grosfeld JL. Inguinal hernia repair in the perinatal period and in early infancy: the clinical considerations. *J Ped. Surg.* 1984; 19(6):832.
16. Cascini V, Lisi G, Di Renzo D, et al. Irreducible indirect inguinal hernia containing uterus and bilateral adnexa in a premature female infant: report of an exceptional case and review of the literature. *J Ped. Surg* 2013;48: e17–9.
17. Njere I, Ein A. Six thousand three hundred sixty-one pediatric inguinal hernias: a 35-year review. *J Ped. Surg* 2006; 41: 980–6.
18. Erdoğan D, Karaman İ, Aslan MK, et al. Analysis of 3776 pediatric inguinal hernia and hydrocele cases in a tertiary center. *J Ped. Surg* 2013;48:1767–72.
19. Kelly, MA. Inguinal hernia in girls: A retrospective analysis of over 1000 patients. *J Pediatr Surg* 55 (2020) 1908–1913.
20. Given JP, Rubin 5Z. Occurrence of contralateral inguinal hernia following unilateral repair in a paediatric hospital. *J Ped. Surg* 1989; 24(10):963-7.
21. Golladay ES, Lambert J8. Congenital inguinal hernia: Management of the contralateral side. *J Arkansas Med Soc* 1980; 76:494-9.
22. Amarín ZO, Hart DM. Inguinal ovary and fallopian tube—an unusual hernia. In *J Gynaecol Obstet* 1988; 27:141-4.
23. Kriplani A, Banerjee N, Aminni AC et al. Hernia uterus inguinale in a 46, XX female. A case report. *J Reprod Med* 2000; 45:48-50.