

A Prospective Study on Prevalence and Management of Inguinal Hernia in Infants and Children

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ABSTRACT

Introduction: Inguino-scrotal swellings are frequently observed in patients of pediatric age group. Inguinal hernia and Hydrocele are the most common causes of such swellings in children. For their effective management, it is essential to study various factors like age, sex etc. associated with inguinal hernia in pediatric age group. **Objectives:** To study the epidemiology, management and outcome of inguinal hernia in children. **Methods:** A prospective study was conducted on pediatric patients with inguinal hernia for a period of 18 months. Patients from newborn to 14 years of age were selected for this study on the basis of inclusion and exclusion criteria. **Result:** Inguinal hernia can occur at any age, but the majority of patients are seen between 1 to 5 years of age. It is more commonly seen in male children and incidence is slightly higher on right side. Almost all of the inguinal hernia in pediatric age group is of indirect type, which develops due to congenitally patent processus vaginalis. **Conclusion:** Early surgical intervention in form of Inguinal herniotomy is the most appropriate management of inguinal hernia in children.

Key Words: Inguinal hernia, Pediatric, Herniotomy, Hydrocele.

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INTRODUCTION

Inguino-scrotal swellings are one of the commonest anomalies in pediatric age groups. Most of them are related to the abnormalities of descent of testis and failure of obliteration of processus vaginalis.^[1] Among these, the most common congenital anomalies are inguinal hernia and Hydrocele. The incidence of inguinal hernia is even higher in preterm babies. Because of the advancement of treatment for infertility and of improvement of intensive neonatal care in last few decades, the survival of premature babies is increasing and as a result, it has indirectly increased the incidence of inguinal hernia and hydrocele in pediatric age group.

On the basis of history (given by the parents) and clinical examination of the child, pediatric surgeons evaluate and

treat the different types of Hernia. Investigations are mainly done to rule out the associated anomalies. Once the diagnosis is confirmed, surgical closure of patent processus vaginalis (inguinal herniotomy) is the most common treatment in pediatric age group.

Laparoscopic repair has made wonders in the treatment for inguinal hernia in adults, still it has got little role in the repair of pediatric inguinal hernias. Some surgeons favor the repair of inguinal hernia in pediatric age group by laparoscopic procedure, especially for bilateral cases. This study is intended to find out the relation of various factors like age, sex, side, maturity etc. with inguinal hernia in children, and also to find out the associated anomalies and outcome of

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surgical intervention in pediatric patients with inguinal hernia in our hospital.

METHODS

The present study is a prospective study conducted in the Department of Surgery, FH Medical College & Hospital, Tundla (UP), Firozabad, U.P during a period of 18 months. Pediatric patients of inguinal hernia, from newborn to 14 years of age, were selected for this study. Total number of patients studied during this period was 30. Children with congenital hydrocele were excluded from this study. Inguinal hernia was diagnosed by taking thorough history from the parents, followed by clinical examination of inguino-scrotal region of patients. Patients were admitted in surgical ward and basic investigations were performed in all cases, while special investigations like USG abdomen and inguinal scrotal region were performed in selected cases only. After proper pre-operative evaluation and preanesthetic checkup, all patients were operated for correction of the defect. All patients were operated under suitable anesthesia (General anesthesia with caudal block/ Spinal anesthesia). Inguinal herniotomy was performed by Mitchell Bank's method in patients of less than one year of age (herniotomy was done without opening the external oblique aponeurosis), while Fergusson's technique was performed for children of more than one year of age (herniotomy was done after opening the external oblique aponeurosis). After discharge, all patients were asked to attend the surgical OPD for follow-ups, as and when required.

RESULTS

Following findings have been in the present study.

1. Age distribution

This study included patients from newborns to 14 years of age, which were divided in four categories on the basis of their age: Less than 1 year, 1 to 5 years, 5 to 10 years and more than 10 years. Maximum incidence was seen in 1-5 years age group (49.3 %).

2. Sex distribution: In our study, 19 children were males and 1 children were female, thus making a male to female ratio of 7.5:1.

3. Prematurity In our study, 4 babies were born before 28 weeks of gestation, while remaining infants were full term babies.

4. Side distribution

In this study, we found a higher incidence of inguinal hernia on right side (59.7%). 26.9% hernia were left sided and 9 % were bilateral.

5. Associated anomalies: The commonest associated anomaly found in our study was undescended testis, which was seen in one patients (4%). Out of these, in two cases, testis was present in superficial inguinal pouch, while in one case, it was in inguinal canal. Orchidopexy was performed in all cases along with inguinal herniotomy. A reducible umbilical hernia was present along with inguinal hernia in 2

cases (5.7%) of our series. No surgical intervention was done for it, as all of them were of less than three years of age at the time of surgical repair of inguinal hernia. Two patients (3.3%) of our series had distal penile hypospadias and one patient had vesical calculus. Surgical correction was performed along with the surgery for inguinal hernia. In our study, n=7 female patients with inguinal hernia were additionally studied by USG abdomen to rule out intersex condition. No abnormality was found in any of the female patients. During surgery, ovary was found in hernia sac of one female patient. Two patients (3.3%) of our series had presented with incarcerated hernia, with the features of intestinal obstruction. After performing the manual reduction successfully, surgical repair of hernia was done after 48 hours. Six patients (10%) of our series had presented with bilateral hernia, which were operated in same surgery. But, we did not perform routine contralateral exploration in absence of clinical inguinal hernia on the opposite side. Post-operative period was uneventful in all of our cases, except for 2 patients who developed the complication of wound infection, which was successfully treated with antibiotics.

Table 1: Distribution of cases according to age, sex, side, maturity and associated anomalies.

Parameter	Group	No. of cases	%
Age	< 1 year	8	24.6%
	1-5 years	16	49.3%
	5-10 years	4	12.0%
	> 10 years	2	6.3%
Sex	Male	28	80.8%
	Female	2	8.7%
Side	Right	20	59.7%
	Left	8	26.9%
	Bilateral	2	9.0%
	Maturity	Full term	26
	Preterm	4	5.7%
Associated anomalies	Undescended testis	1	4.0%
	Umbilical hernia	2	5.7%
	Hypospadias	1	2.3%
	Vesical calculus	1	1.2%

DISCUSSION

Our observations are matching with the observations of Ravikumar et al^[2] and Jadhav et al^[3], who have reported an incidence of 52% and 44%, respectively, in 1-5 years age group in their studies. Okuribido et al⁴ have reported an incidence of 49.3% in children from 3 to 7 years of age. Bronsther et al^[5] have reported that one third of patients of their series were of less than 6 months of age.

In our study, 28 children were males and 2 children were females, thus making a male to female ratio of 7.5:1. In other studies, male to female ratio ranged from 7:1 to 11.5:1. It was reported as 7:1 by Grossfeld et al^[6], 6:1 by Poenarau^[7], 9:1 by Ravikumar et al^[2] and 11.5:1 by Jadhav et al.^[3]

Jadhav et al.^[3] have reported an incidence on 10% of prematurity in their study, while Ravikumar et al^[2] have found it to be 30%. Other studies have shown an incidence

3.5 to 5% of inguinal hernia in full term babies and of 44 to 55% in preterm infants.^[8,9]

In our study, we found a higher incidence of inguinal hernia on right side (59.7%). 26.9% hernia were left sided and 9 % were bilateral. Our observations matched with the observations of Jadhav et al^[3] and Ravikumar et al^[2] who have reported an incidence of 64% and 56% for right sided inguinal hernia in their studies, respectively.

Similarly, Rowe et al^[10] and Grossfeld et al^[11] have also reported a higher incidence of inguinal hernia on right side. Scorer et al^[12] found that incidence of undescended testis was 30.3% and 3.4% in preterm and full term newborn babies, respectively. According to Witherington et al^[13], a patent processus vaginalis with undescended testis is a clear indication for orchidopexy.

Rowe et al^[10] have recommended elective surgery after reduction in such cases, as the rate of complications is low as compared to the emergency surgery (1.7% vs 22.1%).

We did not find any case of direct hernia in our study. Direct inguinal hernia are rare in pediatric age group and they represent only 0.5% of all groin hernia.^[14,15] One male patient in our series had right sided sliding hernia which was containing cecum inside it. Sliding hernia are uncommon in children, more commonly seen in female babies. Grossfeld et al^[16] had found ovaries and fallopian tubes in 15% of hernias in girls in one series.

CONCLUSION

Inguinal hernia is a common cause of congenital inguino-scrotal swelling in pediatric age group. It is more commonly seen in male children and incidence is more common on right side. Though it can develop at any age, even in the neonates, but majority of children develop it between the age of 1 to 5 years. Incidence is higher in premature and low birth weight neonate. Almost all of the inguinal hernia in pediatric age group is of indirect type, which develops due to congenitally patent processus vaginalis. Once developed, it

cannot resolve spontaneously, and so, early surgical intervention in form of inguinal herniotomy is the most appropriate management of inguinal hernia in children.

REFERENCES

1. Gray SW, Skandalakis J.E. Embryology for Surgeons: W.B. Saunders, Philadelphia. 1972; 417-22.
2. Ravikumar V, Rajshankar S, Hareesh R.S.Kumar, Nagendra Gowda M.R.: A clinical study of the management of inguinal hernias in children on the general surgical practice, Journal of Clinical and Diagnostic Research, 2013 January, Vol-7(1), 144-147
3. Dinesh L Jadhav, Manjunath L, Vikas G Krishnamurthy : A study of inguinal hernia in children. Int J of Science and Research, Dec 2014, Vol3 (12): 2149-2155
4. Okunribido O. Ladipo J.K. and Ajao O.G. "Inguinal hernia in paediatric age group, Ibadan experience", East Afr. Med. J., 1992; 69 (6) : 347-348
5. Bronsther B, Abrams MW, Elboim C : Inguinal hernias in children- a study of 100 cases and a review of literature. J Am Med Womnes Assoc 1972;27: 522-525
6. Grosfeld JL. The current concepts in inguinal hernias in infants and children. World Journal of Surgery. 1989; 13(5): 506-15.
7. Dan Poenaru, Inguinal hernias and hydroceles in infancy and childhood: A consensus statement of the Canadian Association of Paediatric Surgeons: Paediatr Child health, 2000 Nov-Dec; 5(8): 461-462.
8. 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.
9. 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.
10. Rowe MI, Lloyd DA et al., Inguinal Hernia in Pediatric Surgery. Year Book Medical Publishers. 4th edn. 1968.
11. Grosfeld et al., Inguinal hernia in children - the factors which affected the recurrence in 62 cases. Journal of Paed Surgery. 1991; 265 - 83.
12. Scorer CG, Farrington GH. Congenital deformities of the testis and the epididymis. Butterworth. London: 1971; 15-102.
13. Witherington R. Cryptorchism and the approaches to its surgical management. Surgical Clinics of North America. 64:2 April 84, 367 - 83.
14. Rescorla FJ, Grosfeld JL. Inguinal hernia repair in the perinatal period and in early infancy: the clinical considerations. J Pediatric Surg. 1984; 19(6):832.
15. Holder TM, Ashcraft KW. Groin hernias and hydroceles. Pediatric Surgery. Philadelphia: WB Saunders Co. 1980;594-608.