

Management of Inguinal Hernia in Children

Ghulam Nabi Nasar, Irshad Nabi Sandhu, Muhammad Akhtar Sultan

ABSTRACT

Objectives: To determine best practice for the management of inguinal hernia in children. **Design:** Descriptive Study. **Place and Duration of Study:** Children Hospital Quetta from January, 2014 to January, 2016. **Patients and Method:** All the children admitted in pediatric surgery unit with inguinal hernia were included in this study, already operated patients were excluded from the study. Physical examination and relevant investigations (CBC, HBsAg, anti HCV & scrotal ultrasound) were performed. Patients were followed post operatively to observe the complications of surgery. **Results:** Total 180 patients were included in this study. Male 145 and female 35. Patients with bilateral inguinal hernia were 20 (11.1%) Age from two days to twelve years. 98 patients came for follow up until 8 months. Twenty patients had complications like haematoma in 09 (5%), scrotal oedema in 5 (2.77%), wound infection in 4 (2.2%) and recurrence in 2 (1.1%) patients. All these complications were observed in first two months of follow up. Haematoma and oedema was treated conservatively, patients of recurrent hernia were re-operated, no complications found related to scrotal size during follow up. **Conclusions:** Complications observed in our study are minimal.

Keywords: Children, Hernia, Management, Complications.

Corresponding Author

Dr. Ghulam Nabi Nasar

Associate Professor, Pediatric Surgery
Bolan Medical College, Quetta
Contact: +92 321-8124028
Email: drghulamnabi1123@gmail.com

Submitted for Publication: 06-02-2017

Accepted for Publication: 18-08-2017

Article Citation: Nasar GN, Sandhu IN, Sultan MA. Management of Inguinal Hernia in Children. APMC 2017;11(3):202-5.

INTRODUCTION

Inguinal hernia is a common condition requiring surgical repair in the pediatric age group.¹ The incidence of inguinal hernia is approximately 3 to 4% in terms infants and 12% in infants borned premature.²⁻⁴ As more infants survived in premature life, more hernias are diagnosed in this age group. Day care surgical repair of inguinal hernia was recommend since long in 1938 and now become a common practice.⁵ Although it is most commonly performed surgery in children.

Early surgery is usually advised to prevent the risk of incarceration of bowel and other complication.⁶ The frequency of complications varies in different series. The recurrence rate after primary inguinal hernia ranged from 0.8% to 3.8%, iatrogenic ascents of testis is 1.2%.⁷

However these risks must be balanced against the risk of potential operative complications. Early repair of inguinal hernia in pre-term infants must be balanced against the risk of postoperative apnea after general anesthesia. Timing of inguinal hernia repair in preterm and term infants represent a balance of the risks of inguinal hernia incarceration and of postoperative complications.⁸

The aim of this study was to determine the surgical complications of inguinal hernia in children's in our setup in Quetta.

METHODOLOGY

All the neonates and infants admitted with inguinal hernia in Children Hospital Quetta from January 2014 to January 2016 were included in this study. Patients were divided into different groups, preterm, fullterm, neonate, infant and children groups. Patients with congenital anomalies and already operated cases were not included in the study.

All the children's having inguinal hernia were evaluated and investigated, complete workup, age, weight, gender, duration of symptoms, examination of swelling and complete history of irreducibility were recorded. Routine investigations (CBC, HBsAg, anti HCV & scrotal ultrasound) performed. All the patients were operated electively.

A small incision (from 2 to 3 cm) was made in skin fold of the groin. The external aponeurosis was opened in all cases. The hernial sac containing the bulging small intestine was identified. Hernial contents reduced by pushing the intestine inside. The hernial sac was separated and divided transversely and removed. The proximal sac was transfixated at the level of internal ring.

The muscle wall was reinforced with stitches to prevent in other hernia and the subcutaneous fatty tissues has been closed by two line up interrupted sutures. The skin was closed by subcuticular

sutures. Most of the children's were discharged after 6 to 12 hours of surgery.

However premature infants with some medical conditions remain in hospital for observation. Post operative complications recorded in postoperative follow up were scrotal swelling, wound infection and recurrence of inguinal hernia.

RESULTS

In this study total 180 patients with inguinal hernia were included in which 145 were boys and 35 were girls. Sixteen patients (8.8%) were less than one month old and eighty patients (44.44%) were one month to one year old and eighty four patients (46.66%) were greater than one year old. Twenty patients (11.11%) were with bilateral inguinal hernia, one hundred twelve patients (62.22%) were with right sided inguinal hernia and forty eight patients (26.66%) were with left sided inguinal hernia.

Table 1: Percentage of side presentation

No	Side	No. of Patients	Percentage
1	Right Side	112	62.22 %
2	Left Side	48	26.66%
3	Bilateral	20	11.11%

Among these patients 16 (8.8%) were less than one month old and 80 (44.44%) patients were one month to one year and 84 (46.66%) patients were greater than one year old. Patients with bilateral inguinal hernia were 20 (11.11%), patients with right sided inguinal hernia were 112 (62.22%), and patients with left sided inguinal hernia were 48 (26.66%).

Table 2: Age Presentation

No	Age	No. of Patients	Percentage
1	< 01 month	16	8.8 %
2	01 month to 01 year	80	44.44%
3	> one year	84	46.44%

Associated pathologies founded were undescended testis in 4 (2.22%) patients, hypospadias in 3 (1.67%) patients and umbilical hernia in 7 (3.89%) patients.

Pre-operative antibiotics was given to all patients. Gut loops were the main contents of sac in 40 (22.22%) patients, momentum in 9 (5.00%) patients and ovary in 7 (3.89%) patients and the remaining hernia sacs were empty.

Patients sac was closed by trans fixation in 172 (95.56%) patients and in 8 (4.44%) patients applying purse string sutures. Most of the children were

discharged after 6 to 12 hours of surgery. However premature infants with some medical condition remained in hospital for observation. Out of 180 patients, 98 patients followed up to eight months. Complication notice during postoperative visits were hematoma in 09 (5%) patients, scrotal edema in 5 (2.77%) patients, wound infection in 4 (2.22%) patients and recurrences in 3 (1.67%) patients.

Table 3: Complications

Type of Complications	Frequency	Percentage
Haematoma	9	5
Scrotal Oedema	5	2.77
Wound Infection	4	2.22
Recurrence	3	1.67

Most of the patients 82 who did not come to follow up during initial period was due to long distance of patient home. One patient was newly presented contraletal inguinal hernia.

Post-Operative Complications of Herniotomy

DISCUSSION

Congenital indirect inguinal hernia is one of the most commonly performed surgical procedure in children. The procedure can be difficult even in the most experienced hands and specially when performed in emergency. The results from this study shows that age, sex, incidence and presenting side are similar to those reported in several other studies. It shows that in term of sex it is more common in male and in terms of side it is more common on right side. Although it is most frequently performed surgery in children.⁹ Very few studies are available related to post operative complications internationally and in Pakistan. In this study 145 patients were male (80.5 %) and 35 patients (19.5 %) were female. Male to female ratio was (4:1). In Ghoroubi et al 83.7 % of the patients were male.¹⁰ In a study by Nassiri on 521 infants and children 89.4 % of the patients were male.¹¹ A total of 180 patients, 122 (67.77 %) patients presented with right side and 58 (32.22%) patients with left sided hernia. Bilateral inguinal hernia observed in 12 cases (6.66%). Our findings were similar to that of other studies. In the study performed by De lange et al in 90 dutch hospital, 72.6 – 77.4 % of the patients were male. In another study performed by Farhat Mirza et al male female ratio was about 5:1.^{12,13} Regarding age distribution significant patients were presented under one year of life.

In our study Haematoma was more commonly noticed in 9 (5 %) patients in the De Lange et al study and Farhat et al study,^{12,13} haematoma was found in

12 (1.6%) cases in 2001 and 7 cases in 2005. In the study by Farhat Mirza in 1 (0.49%) on 223 patients who underwent under inguinal herniectomy. Post-operative complications include haematoma 1 (0.49%), scrotal oedema 6 (2.9%), wound infection 2 (0.99%), hernia recurrence 2 (0.99%). However surgical complications in this study was greater than that of Farhat et al. In our study recurrence is the fourth common complication and is reported to occur in 3 (1.66%) patients. The recurrence rate of recurrent inguinal hernia after uncomplicated inguinal hernia repair is generally reported at 0.5 – 1%. In the study by De Lange and colleagues, there was relatively high incidence of recurrence within one year after surgery (2001 -18% and in 2005-13%) compared with the Bonnard and Aigram's study. However, there is a report of recurrence of Inguinal hernia between 1% and 9% in different reports involving different age groups. In our study, there was no report of testicular atrophy. In this study 09 patients (5%) had haematoma. In the De Lange et al study haematoma and seroma was found in 12 (1.6%) in 2001 and in 7 (0.9%) cases in 2005. In the study by Yeung et al on 262 patients who underwent inguinal herniectomy post-operative complications include haematoma 2 (0.8%) wound infection 2 (0.8%) hernia recurrence 6 (3%) and contralateral inguinal hernia 3 (1.1%). However, in our patients who underwent surgery post-operative complications are different to that of patients who underwent surgery in the Yeung et al study. Wound infection were reported in 4 (2.22%) showed. In the study by the Tiryaki and Colleagues 1000 children underwent surgery for inguinal hernia from 1987 to 1993. Tiryaki et al 27 reported wound infection in 1.9% of their cases.^{14,15,16} Ein and colleagues reported 1.2% of wound infection in their study.^{17,18,19} There was no mortality in this study. Most of the patients were greater than 6 months old followed by those with age group of 01 month to 01 year. In the Nassiri's study 127 (24.3%) were up to 12 months of age and 394 (75.7%) patients were greater than 12 months old.^{20,21} Long term follow up these patients is needed, but follow up in our setup is a real issue. To overcome this issue in the beginning, proper counseling of the parents is necessary.

CONCLUSION

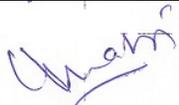
Haematoma is the most significant complication in immediate post-operative period. Long term follow up is needed to observe the other complications.

REFERENCES

1. Glick P and Boulanger S. Inguinal hernia and hydrocele. In *Pediatric surgery*, (7th edition) Philadelphia, PA; Saunders. 2012:987-988.
2. Lao OB, Fitzgibbons RJ JR, Cusick RA. Pediatric inguinal hernias, hydroceles and undescended testicles. *Surgical clinics of North America*. 2012;92(3):487-504.
3. Hebra H. Pediatric hernias, 2012 <http://emedicine.medscape.com/article>.
4. Chang SJ, Chen JY, Hsu CK, Chuang FC, Yang SS. The incidence of Inguinal hernia and associated risk factors of incarceration in pediatric inguinal hernia a nationwide longitudinal population based study. *Hernia* 2016;20(4):559-63.
5. Maillet OP, Garnier S, Dadure C, et al. Inguinal hernia in premature boys: should we systematically explore the contralateral side? *J Pediatr Surg*. 2014;49(9):1419-23.
6. Zamakhshary M, To T, Guan J, Langar JC. Risk of incarceration of inguinal hernia among infants and young children awaiting elective surgery. *CMAJ*. 2008;179(10):1001-5.
7. Shahnama A, Mehrana P, Hazhirb J, Fatemeha M. Recurrence and complications of Pediatric Inguinal hernia repair over 5 years. *Annals of Pediatric Sur*. 2013;9:558-60.
8. Sundresh JN, Narendran S. A study on groin hernias presenting as acute emergencies. *Inter J of Pharmacotherapy* 2014;4:4(2)93-96.
9. Ravikumar V, Rajshankar S, Kumar HR, MR NG. A clinical study on management of Inguinal hernia in children on the general surgical practice. *J Clin Diagn Res*. 2013;7(1): 144–147.
10. Ghoroubi J, Imamzadeh F, Askarpour S, Sayyari AA, Ahadi MM, Javaherzadeh H. Ten Years Study of Inguinal Hernia in Children. *J Surg Pak* 2008;13(4):173-174.
11. Nassiri SJ. Contralateral exploration is not mandatory in unilateral Inguinal hernia in children. A prospective 6 years study. *Pediatr Surg Int* 2002;18(5-6):470-71.
12. Taqvi SR, Akhtar J, Batool T, Tabassum R and Mirza F. Complications of inguinal hernia surgery in children. *JSPSP* 2006;16(8):532-5.
13. Delange DH, Aufenacker J, Roset M, Immermacher RKJS, Gouma DJ, et al. Inguinal hernia surgery in the Netherlands: a baseline study before the introduction of the Dutch guidelines. 2005;9(2)172-7.
14. Tiryaki T, Baskin D, Bulut M. Operative complications of hernia repair in childhood. *Pediatr Surg Int* 1998;13(2-3):160-61.
15. Nagraj S, Sinha S, Grant H, Lakhoo K, Hitchcock R, Johnson P. The incidence of complications following primary Inguinal herniotomy in babies weighing 5kg or less. *Pediatr Surg Int* 2006;22:500-502.
16. Baria M, Ankitaparmar. A clinical study on the management of complicated Inguinal hernias. *Int J Sci Res* 2014;3(7):387-9.
17. Nazem M, Heydari Dastgerdi MM, Sirous Fard M. Outcomes of pediatric inguinal hernia repair with or

- without opening the external oblique muscle fascia. J Res Med Sci 2015;20:1172-6.
18. Acharya H, Agrawal R, Agrawal V, Tiwari A, Chan Chlani R. Management of inguinal hernia in children: a single center experience of 490 patients. INT Surg J 2016;3:345-8.
 19. Wang, K. S., Committee on fetus and newborn and section on surgery (2012) assessment and management of Inguinal hernia in infants. Pediatrics 2012;130(4):768-73.
 20. Suvera MS, Damor PB, Patel SV. Surgery for Inguinal hernia in Pediatric age. Int J Res Med Sci 2013;1:112-5.
 21. Antonoff M, Kreykes N, Saltzman DA, et al. American academy of Pediatrics section on surgery hernia survey revisited. J Pediatr Surg 2005 ;40(6):1009-14.

AUTHORSHIP AND CONTRIBUTION DECLARATION

AUTHORS	Contribution to The Paper	Signatures
Dr. Ghulam Nabi Nasar Associate Professor, Pediatric Surgery Bolan Medical College, Quetta	Main author, Data collection, Final layout, References collection	
Dr. Irshad Nabi Sandhu Associate Professor, Community Medicine Jinnah Medical College, Peshawar	Methodology & Results writing	
Dr. Muhammad Akhter Sultan Medical Officer, Pediatrics Unit-1 Allied Hospital, Faisalabad	Co-Author	