
Clinical Profile and Management of Inguinoscrotal Swellings in Paediatric Age Group

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Abstract

Background: Inguinoscrotal swellings are one of the commonest surgical conditions among all age groups throughout the world. Among the Inguinoscrotal swellings, Inguinal hernia and Hydrocele top the list in frequency. They represent the conditions most frequently requiring surgical repair in all the age groups. Hernias and hydroceles are common conditions, and inguinal herniotomy is one of the most frequently performed surgeries. The diagnosis rests on clinical history as well as examination. If the diagnosis remains inconclusive then one can go for ultrasonography to confirm the diagnosis. **Method:** This is a Prospective and observational study was conducted in Department of General Surgery, Veer Surendra Sai Institute of Medical Sciences and Research, Burla, Sambalpur. All consecutive patients of the age of 14 years and below with inguinoscrotal swellings satisfying the pro forma were selected. All the selected patients 14 years and below including both male and female patients who presented with swelling in inguinoscrotal region admitted to Department of General Surgery, Veer Surendra Sai Institute of Medical Sciences and Research, Burla, Sambalpur. **Results and discussion:** In this study of 100 children, 96 were males and 4 were females, the ratio was 24:1. Our study was in accordance with all the other studies of inguinal hernia in children, wherein male preponderance was noted. In my study the predominance of involvement of Right side in inguinal hernia in pediatric age group was established with 60 (60%) occurring on Right Side, Left Side 32 (32%) and Bilateral 8 (8%). In 94 cases, 6 cases (6%) were diagnosed by US as CPPV. Out of 6 cases, 4 were on right side, 2 one left and all were boys and all are below 2 years. There were 6 cases of encysted hydrocele of the cord, 4 were on the left side and 2 on the right side. There were 8 cases of undescended testis, 4 cases were on the left side and 4 cases were on the right, allocated in the inguinal pouch. Of the total 100 patients, 2 patient (2%) underwent MitchellBanks Surgery and Ferguson technique

was done for 98 patients (98%). **Conclusion:** In the case of undescended testis, orchidopexy should be done at the time of hernia repair. There is no consensus on when or if contralateral inguinal exploration is necessary. A contralateral exploration was not done in our patients as they were not symptomatic and to avoid prolongation of operative time and complications. Postoperative complications are usually rare following elective operation. Recurrence is usually rare if operated by experienced surgeons. Inguinal herniotomy in children is a safe and effective operation.

Keywords: Inguinoscrotal swellings, Inguinal hernia, Orchidopexy.

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Introduction

Inguinoscrotal swellings are one of the commonest surgical conditions among all age groups throughout the world. Among the Inguinoscrotal swellings, Inguinal hernia and Hydrocele top the list in frequency. They represent the conditions most frequently requiring surgical repair in all the age groups.^[1]

In the voluminous literature on the subject of hernia, the basic principle of treatment of inguinal hernia in infants and children has received insufficient consideration. The reason for much misinformation concerning hernia in the early age group is quite understandable because most of the writing has been on hernia in adults. In textbooks and systems of surgery the problem of hernia in children is often dismissed with a few sentences, or the principles governing treatment in adults are unconcernedly applied to children.^[2]

Inguinoscrotal swellings are one of the commonest conditions in pediatric age group. Inguinal hernias in children are found in 10-20 per 1000 live births.^[3] Hernias and hydroceles are common conditions, and inguinal herniotomy is one of the most frequently performed surgeries. Hernia is derived from the Greek word 'Herons' means 'offshoot' or 'bulge' or 'budding'. In Latin, it means rupture of a portion of a structure. It can be defined as a "protrusion of a viscus or part of a viscus through a normal or an abnormal opening in the wall of its containing cavity".^[4]

With the increase in the number of premature deliveries, the incidence of neonatal inguinal hernia and hydrocele is increasing.^[5] Inguinal

hernia occurs in 1 to 5 percent of all newborns and 9 to 11 percent of those born prematurely.^[4] Most of these swellings are diagnosed by either a parent who notices a bulge when a child is straining or crying, or by a physician during a routine physical examination. The characteristic bulge in the groin which disappears at times and then recurs may not be present at the time of examination, however, and the surgeon may be compelled to rely on the description given by a competent observer.^[6]

It is believed that these hernias rarely go away. Hence almost all hernias should be repaired. As for hydrocele of tunica vaginalis, it may involute on its own spontaneously. But those hydroceles that do not regress with time may be followed up for 1 year, after which surgical repair should be considered. All undescended testis along with symptomatic hernias should be repaired at the time of presentation.^[7]

The diagnosis rests on clinical history as well as examination. If the diagnosis remains inconclusive then one can go for ultrasonography to confirm the diagnosis. The most important aspect of the management of neonatal inguinoscrotal swellings relate to its risk of incarceration, strangulation which include gangrene of bowel, testis and ovaries. A prompt early and appropriate treatment is necessary to avoid various complications.^[8]

Materials and Methods

This is a Prospective and observational study was conducted in Department of General Surgery,

Veer Surendra Sai Institute of Medical Sciences and Research, Burla , Sambalpur.

Study population- All consecutive patients of the age of 14 years and below with inguinoscrotal swellings satisfying the pro forma were selected .

Inclusion Criteria

All the selected patients 14 years and below including both male and female patients who presented with swelling in inguinoscrotal region admitted to Department of General Surgery, Veer Surendra Sai Institute of Medical Sciences and Research, Burla, Sambalpur.

Exclusion Criteria

All Patients above 14 years of age are excluded from the study.

1. Patients who refuse surgery.
2. Patient with systemic disorder not able to undergo surgery.
3. Patient with acute scrotal swelling like torsion of testis, epididymoorchitis, funiculitis, lymphadenitis and also other swellings like varicocoele, lymph varix, cuticular and subcutaneous swellings and malignant extensions from testis.
4. Patients with multiple congenital anomalies.

After taking detailed history, all the registered patients were examined systematically which included examination of inguinal and groin region, scrotum and its contents. Respiratory system, cardiovascular system and per abdomen

were also examined to know other associated congenital conditions like undescended testis and other connective tissue disorder.

Simple investigations like hemoglobin %, bleeding time, clotting time, routine urine examination were carried out for fitness for operation. Children with unilateral inguinal hernia underwent US examination for CPPV. After proper evaluation of preoperative condition, the patients are then taken up for surgery after informed / written consent. Injection Ceftriaxone 20mg/Kg/bodyweight was given before each operation.

Operative procedure

Surgery was decided by age. If the children <1 year of age, Mitchell banks operation is selected where in herniotomy done without opening the external oblique aponeurosis. If the children >1 year of age, Fergusson technique is selected where in herniotomy done after opening the external oblique aponeurosis, under suitable anesthesia as decided by anesthesiologist.

The findings are recorded and the patients are monitored post operatively for complications. The patients were usually discharged from the hospital on the 1st or 2nd postoperative day.

Postoperative follow up of the cases were done after one week, 4 weeks and 12 weeks from the date of operation.

Results

Table 1: Age Distribution

Age in Years	No of Cases	Percentage
0-2yrs	20	20 %
2-4yrs	28	28%
4-6yrs	8	8%
6-8yrs	14	14%
8-10yrs	10	10%
10-12yrs	20	20%

The age of the patients who were admitted ranged from 8 months to 12 years. They were divided into 6 groups, each with a gap of 2 years. The maximum number of cases was in the age group of 2-4 year (28 %)

and the minimum number was in the age group 4-6years (8%). Our study findings are in accordance with those of Suvera MS et al where maximum number of cases was in age group of 2 to 6years (47%).^[55]

Table 2: Prematurity

Prematurity	No of patients	Percentage
Born before 28weeks of gestation	4	4%

Out of these 50 cases, 2 cases (4%) had premature delivery (both were male). Our study doesnot correlate with studies conducted by Robert Bairdet al where association of prematurity was 36.6%.

Table 3: Sex Distribution

SEX	No of Cases	Percentage
Female	4	4 %
Male	96	96 %

In this study of 100 children, 96 were males and 4 were females, the ratio was24:1. Our study was in accordance with all the other studies of inguinal hernia in children, wherein male preponderance was noted.

Table 4: Side Distribution

SIDE	NO OF CASES	PERCENTAGE
Right	60	60%
Left	32	32%
Bilateral	8	8%

In my study the predominance of involvement of Right side in inguinal hernia in pediatric age group was established with 60 (60%) occurring on Right Side, Left Side 32 (32%) and Bilateral 8 (8%). Similar findings were observed by Carneiro PMR.⁵⁶

Table 5: First Person to Notice the Swelling

PERSON TO NOTICE	No OF CASES	PERCENTAGE
Mother	68	68
Father	14	14
Grandmother	14	14
Doctor	4	4

In the present series of 100 cases, 68 (68%) swellings were first noticed by their mothers,14 (14%) by grandmother, 14 (14%)by father and 4 (4%) by doctor.

Table 6: Symptoms

Symptoms	Number of Patients	Percentage
Swelling	92	92
Swelling+ Pain	6	6
Swelling+ Pain +Vomiting	2	2

Most common presentation of hernia is swelling. In the present study, without exception all patients presented with swelling in the groin/scrotum region. Swelling only was present in 92% of patients as compared to swelling associated with pain in 6%, and swelling and pain with vomiting in 2%.

Table 7: Direct/Indirect Component

SI No	PARTICULAR	NO OF PATIENTS	PERCENTAGE
1	DIRECT	0	0
2	INDIRECT	100	100%

In the present study, no patient had direct component and all patients had indirect component.

Table 8: Associated Congenital Conditions

SINo	Associated Congenital Conditions	No of cases	Percentage
1	Congenital Hydrocele	40	40%
2	Encysted hydrocele of Cord	6	6%
2	Undescended testis	8	8%
3	Hypospadias	0	0

In our study 94 patients (92 boys and 2 girls) with unilateral inguinal hernia underwent US examination using a 7.5 MHz linear transducer. In 94 cases, 6 cases (6%) were diagnosed by US as CPPV. Out of 6 cases, 4 were on right side, 2 one left and all were boys and all are below 2 years. No case developed C/L inguinal hernia on follow up. In this series, there were 40 cases of hydroceles of which 24 were on the left side and 16 on the right side. There were 6 cases of encysted hydrocele of the cord, 4 were on the left side and 2 on the right side. There were 8 cases of undescended testis, 4 cases were on the left side and 4 cases were on the right, allocated in the inguinal pouch. They underwent orchidopexy at the time of hernia repair and the testis was placed in the subdartos pouch.

Table 9: Operative Technique for Herniotomy

Operative Technique	No of Patients	Percentage
MitchellBanks Surgery	2	2
Fergusson technique	98	98

Of the total 100 patients, 2 patient (2%) underwent MitchellBanks Surgery and Ferguson technique was done for 98 patients (98%).

Table 10: Postoperative Complications

Post Op Complication	Incidence	Percentage
Wound Infection	4	4
Seroma	2	2
Stitch Granuloma	0	0

In this series of 100 children, there were 8 cases of incarceration. But none had strangulation and gonadal infarction. In the post-operative period of 100 children, there were 4 cases of wound infection, 2 case of seroma and no case of stitch granuloma.

Discussion

In the present study of 100 cases, the youngest patient was 8 months of age and oldest was 12

years old. The maximum number of patients was in the age between 2 to 4 years, comprising 28 cases. The least number of patients were observed

in the age group of 4 to 6 years. 50% of the cases were in between the age of 2 to 8 years. The findings are in accordance with those of Suvera MS.^[9] et al who studied 58 children below the age of 12 years and found that less than 2 years compromise 21% of the cases, 2 to 6 years which compromise 47% and 7 to 12 years which compromise 32%.^[10]

In a study conducted by Grosfeld.^[11] he noted that the incidence of inguinal hernias is approximately 3% to 5% in term infants and 13% in infants born at less than 33 weeks of gestational age. In a study conducted by Marinković S et al.^[12] it was observed that out of the 144 infants who underwent inguinal herniotomy and found that there were a large number of premature infants (31%) in his series. Of the Two hundred sixty-eight children studied by Robert Baird et al.^[13] were term and 98 (36.6%) were premature. Prematurity was associated with 44-55% incidence of Inguinal hernia.^[14] 30% incidence was noted by Rescorla & Frederick J et al.^[15]

Sliding inguinal hernias are uncommon in children. It is more common in girls than in boys. In the series of Grosfeld et al.^[16] ovary and fallopian tube were found in the sac in as many as 15% of hernias in girls. The structures encountered in sliding hernias are caecum, appendix, bladder, sigmoid colon and rarely uterus. In the present study, we have not found any case of Sliding inguinal hernias.

During the course of this study, 8 (8%) cases of undescended testis were detected, 4 of them were on the right side and 4 of them were on the left side, all 8 were situated in the superficial inguinal pouch. These patients had orchiopexy at the time of hernia repair and testis was placed in the subdartos pouch. A study on 461 orchidopexies by Meijer R W.^[17] et al showed that in 281 of these cases (86.0%), the testis was located in the superficial inguinal pouch (SIP). In our study also the same finding was noted.

In a study conducted by Adesunkanmi A R et al, Undescended testes constituted the commonest

associated operative finding in about 5% of the patients of the 208 patients who had presented with 237 inguinal or inguinoscrotal hernias.^[18]

In a study conducted by Ein SH et al on 6361 infants and children with inguinal hernia, hydroceles were found in 19%.^[19] A similar incidence was noted by Hugh B Lynn.^[20] when he studied 240 inguinal hernia in children and found 17 % were associated with hydrocele.

Willis J. Potts in a study of inguinal hernia in 600 children found hydrocele to be associated in 9% of the cases.^[21] Venugopal S while treating 271 cases of inguinoscrotal hernias and hydrocele at the University Hospital of West Indies found that 12.5% of the cases were hydroceles.^[22]

Ninety-nine children with inguinal hernia undergoing elective surgery over a 2-year period at the University College Hospital, Ibadan, were studied. Ipsilateral hydroceles were noted in 8% of the operated children.^[23] Karabulut in a study of inguinal hernia in a 3 year study of inguinal hernia in 4012 infants and children found that hydroceles were present in 6.2% associated hernias. Most of the hydroceles were right-sided 72%, 20% left-sided, and 8% bilateral.^[24]

Conclusions

Congenital conditions like undescended testis and hypospadias can be associated with it. In the case of undescended testis, orchidopexy should be done at the time of hernia repair. There is no consensus on when or if contralateral inguinal exploration is necessary. A contralateral exploration was not done in our patients as they were not symptomatic and to avoid prolongation of operative time and complications. A PPV does not clinically mean hernia. There are other articles supporting the same. An inguinal hernia will not resolve spontaneously and should be repaired as soon as possible after the diagnosis. Postoperative complications are usually rare following elective operation. Recurrence is usually rare if operated by experienced surgeons. Clarity in decision making and following

meticulous operative techniques can avoid the complications in a procedure that can be gratifying equally for both the surgeon and the child. Inguinal herniotomy in children is a safe and effective operation.

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