ORIGINAL RESEARCH

Epidemiology and Management of Inguino-Scrotal swellings in Children: A Prospective Study

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ABSTRACT

Background: Inguino- scrotal swellings are the commonest surgical problems encountered in the paediatric age group. They are mostly diagnosed on clinical examination and sometimes by ultrasonography. They are usually treated by surgery with rarely any complications**.**

Aim: The aim of the study was to evaluate the epidemiology, clinical presentation, management and complications of inguino-scrotal swellings in the paediatric age group.

Methods: 130 patients under 14 years of age were included in this prospective study irrespective of gender. Patients were evaluated by clinical presentation, birth history, immunization, family history, blood and radiological investigations and the data was noted. Incidence of associated anomalies, treatment given and any complications were recorded**.**

Results: Out of 130 patients, 116 were males and 14 were females with the ratio of 8.2:1. Right side was involved in 87 patients (67%) and left side in 35 patients (27%). 68 patients (52%) had inguinal hernia, 29 (22.3%) had hydrocele, 24 (19%) with undescended testis, 3 had testicular torsion and one each with ovarian mass, ovarian cyst, varicocele, inguinal abscess, retractile testis and epididymo-orchitis. 91 patients underwent herniotomy, 32 orchidopexy, 2 orchidectomy, 1 varicocelectomy, 1 incision drainage , 2 excision of mass, and 1 patient managed conservatively. No major post operative complications were seen except superficial wound infection in 3 patients.

Conclusion: Inguinal hernias more commonly occur on the right side due to a delay in the descent of the right testis. Congenital hydrocele can be observed till the age of one year for spontaneous involution while hernias should be treated as soon as possible. Herniotomy is a safe and effective procedure.

Keywords: Inguino –scrotal swellings, Inguinal hernia, Hydrocele, Undescended testis, Herniotomy, strangulation, incarceration.

INTRODUCTION

Inguino-scrotal swellings in infancy and childhood are the most common clinicopathological conditions encountered around the globe.[1] The incidence of paediatric inguinal hernia has been reported to be 0.8-4.4%.[2]Among the inguinoscrotal swellings inguinal hernia and hydrocele tops the list. The incidence of inguinal hernia in premature infants varies between 5-30%. Paediatric inguinal hernias are more common on the right side due to delayed descent of the right testis. These swellings are first noticed by parents while changing a diaper, bathing or when the child is crying or straining. These swellings constitute the most frequent conditions treated by pediatric surgeons around the world.[3] The best treatment for inguinal hernia is herniotomy to avoid the complications like obstruction, incarceration and strangulation. In case of congenital hydrocele we wait for 1 year for spontaneous involution of tunica vaginalis. These swellings are not limited to inguinal hernia and hydrocele but may involve undescended test, hidradenitis suppurativa, testicular torsion, sebaceous cyst and rarely testicular tumours.

MATERIAL AND METHODS

This study was conducted over a period of one year in the Postgraduate Department of Surgery at our tertiary care centre from November 2019 to October 2020.

Proper ethical clearance and permission was taken from the ethical committee of the institution. 130 patients who presented to us with inguino-scrotal swellings who fit the inclusion criteria were included in this study. The aim was to study the epidemiology of Inguino- scrotal swellings in children, correlation of maternal factors with inguino-scrotal swellings, presentation and the management options for various types of inguino-scrotal swellings.

EXCLUSION CRITERIA

1. Cases above 14 years of age.
2. Cases not willing to give consent for the study.

All patients were admitted and evaluated by detailed history including birth history, family history, immunization and clinical presentation. Diagnosis was made by clinical examination and radiological investigations (USG). All operations were done under general anaesthesia, preoperative antibiotic injection of ceftriaxone 20mg/kg/body weight was given. All patients were operated by supra inguinal transverse crease incision except in older children where oblique incision was given. The cord structures, testicular vessels and pampiniform plexus was separated from the hernial sac taking utmost care of vas deferens and high ligation of the sac was done at deep inguinal ring. The distal sac was either excised or laid open. In case of undescended testis after herniotomy, the testis was brought down and fixed in the scrotum by making a sub dartos pouch. Any post-operative complication encountered was noted and treated accordingly. The patients were discharged the next day.

RESULTS

AGE DISTRIBUTION

The age distribution with diagnosis is shown in figure -1. The maximum incidence of inguinal hernia was found in the age group 2-4 years (22) followed by 4-6 years (12). The maximum incidence of hydrocoele was noted in the age group 6-8 years (6). Overall, the maximum incidence of inguino-scrotal swellings was found in the age group 2-4 years which was 25.3% (33) followed by 4-6 years and 6-8 years, each accounting for 15.4% (20).

Table:1 Age distribution of paediatric inguino-scrotal swellings

Age in years	No. of Patients	Percentage
Upto 1	12	9.2%
1-2	16	12.3%
2-4	33	25.3%
4-6	20	15.4%
6-8	20	15.4%
8-10	13	10%
10-12	6	4.6%
12-14	10	7.8%
Total	130	100%

SEX DISTRIBUTION

In our study, 89.2% (116) of the cases were males and 10.8% (14) of the cases were females. The male-to-female ratio in our study was 8.2:1. Table-2.

Table: 2 Sex distribution in paediatric inguino-scrotal swellings

Sex	No. of cases	Percentage
Males	116	89.2%
Females	14	10.8%

SIDE DISTRIBUTION

In our study, 67% (87) of the cases occurred on the right side and 27% (35) of the cases occurred on the left side while 6% (8) of the cases were bilateral. The right: left ratio in our study was 2.48:1. Table -3.

Table-3 Side distribution in paediatric inguino-scrotal swellings

Side	No. of cases	Percentage
Right	87	67%
Left	35	27%
Bilateral	8	6%

DIAGNOSIS

In our study, 52% (68) were admitted with a diagnosis of Inguinal Hernia followed by Hydrocoele 22.3% (29) and Undescended Testis 19% (24). There were two

cases of Testicular torsion, one being the torsion of an undescended testis. Our study had one case of encysted hydrocoele of the cord. Other causes include Ovarian Mass, Ovarian Cyst, Varicocele, Inguinal Abscess, Retractile Testis, and Epididymo-orchitis presenting with a single case each. Birth order distribution. In our study, the maximum number of cases were of 1st birth order which was seen in 47% (61) of the cases followed by birth order 2nd, 3rd, 4th, and 5th which were 37.7% (49), 10.8% (14), 2.3% (3) and 1.5% (2) respectively. Birth history. In our study, 74.6% (97) of the cases of inguino-scrotal swellings were term and 25.4% (33) were preterm. Birth weight.42.3% (55) of the cases in our study had a history of low birth weight while 57.7% (75) of the cases were normal/ high birth weight. Maternal co-morbidities. In our study, 42.3% (55) of the cases had a history of maternal antenatal anaemia, 13% (17) had a history of maternal diabetes, 10% (13) had a history of hypertension while 15.4% (20) of the cases had a history of maternal antepartum haemorrhage. 33.9% (44) of the cases had no history of any maternal comorbidities.Associated anomalies**.** In our study, hypospadias was the most commonly associated anomaly seen in 6.9% (9) of the cases. ASD was seen in 3% (4) of the cases, while the cleft palate was seen in 1.6% (2) and phimosis was seen in 0.8% (1) of the cases. Overall, associated anomalies were seen in 12.3% (16) of the cases. First person to notice. The inguino-scrotal swellings in our study were first noticed by parents in 125 (96%) cases while in 5 (4%) cases, the swellings were first noticed by the doctors during a routine examination. Surgery performed. Herniotomy was the most common surgery performed (70%) which was done in a total of 91 cases. Orchidopexy was the second most common surgery performed (24.6%) which was done in 32 cases. Orchidectomy was performed in 2 cases, excision of mass in 2 cases, varicocelectomy and incision and drainage in 1 case each, and one patient was managed conservatively. Figure-1.

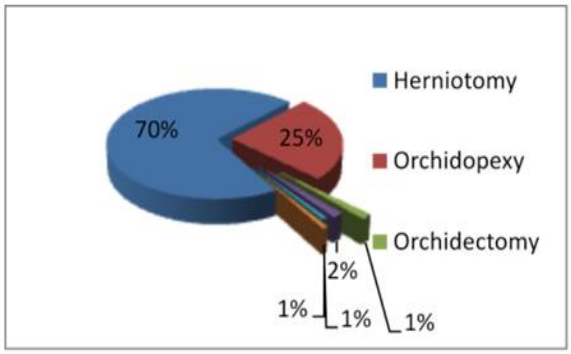

Figure-1.Surgery performed.

Postoperative complications. No major postoperative complications were encountered. Minor complications included superficial wound infection in 3 cases.

Duration of hospital stay.

As most of the surgeries were day-care surgeries in our study, post-operative stay of 1 day was seen in 57% (74) cases and 2 days of stay postoperatively was seen in 27.7% (36) cases. The average duration of stay postoperatively in our study was 1.7 days.

DISCUSSION

Inguino-scrotal swellings are a common finding in the pediatric population. They are the most common indications for surgeries performed by pediatric surgeons all across the globe.[4] Unlike a lot of surgical anomalies in the modern era that rely heavily on radiological and other investigations for an accurate diagnosis, the diagnosis of inguino- scrotal swellings in the pediatric age group can be accurately arrived at by careful history taking and a thorough clinical examination in most of the cases.[5] As a result of improved neonatal intensive care, more and more premature babies are being delivered, and consequently the incidence of neonatal inguinal hernia and hydrocoele is increasing in the modern world.[6] The most common age group presenting with inguino-scrotal swellings was 2-4 years followed by 4-6 years. Males were approximately 8 times more affected by these conditions than females. Right-sided swellings were around 2.5 times more common than left-sided swellings and bilateral swellings were observed in a small number of the cases. The most common cause of an inguino-scrotal swelling was an inguinal hernia followed by congenital hydrocoele. These findings are consistent with the findings of Okunribido et al [7], Adesunkanmi et al [8], Jadhav et al[9], Larsen et al[10]. More term babies presented with these swellings as compared to pre-term babies but that can be attributed to a disproportionately high number of term babies being born. The data on any association of birth order is inconclusive. Low birth weight, due to its association with preterm labor was also associated with these cases. Maternal comor bidities play an indirect role in contributing to these swelling by precipitating preterm labor and low birth weight babies. These swellings were associated with other congenital anomalies like hypospadias, atrial septal defect, and cleft palate. Family members were usually the first person to notice swelling in the majority of the cases while a small number of cases were also detected by doctors. Herniotomy was the most common surgery performed followed by Orchidopexy. No major postoperative complications were seen associated with the surgeries. Most of the surgeries performed were daycare surgeries and the patients were discharged within 24 hours. The findings of our study are also corroborated by other studies done on the same subject in recent times like those of Reddy G N et al[11], Verma R et al[12], Koranga H et al[13], and

Keshava MM et al14.

CONCLUSION

Inguino-scrotal swellings in children remain one of the most common congenital anomalies observed by pediatric surgeons. The threat of loss of testis, ovary, or a portion of the bowel due to incarceration or strangulation remains the most serious complication of these conditions. Prompt diagnosis and early treatment of these conditions continue to be the mainstay if these complications are to be avoided. A hydrocoele should be observed for 1 year for spontaneous involution. An inguinal hernia will not resolve spontaneously and should be treated as soon as possible after the diagnosis because of the risk of incarceration, obstruction, or strangulation. Herniotomy is the most commonly performed surgery in these cases, which is safe and effective without any major complications.

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