

## Original Research Article

# Study of prevalence of hernia, hydrocele and other surgical problems among school children

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## ABSTRACT

**Background:** Study of various surgical health problems among school children is of paramount importance. Most of school children belong to low socio economic background. Because of poverty, lack of awareness, and negligence the surgical health problems are neglected. School is the best place to cover maximum number of children and to identify the surgical health problems and offer them the free treatment and surgery. The objective of this study was to study the prevalence and pattern of various surgical health problems among school children.

**Methods:** A community based cross sectional study was carried out among 274591 school children of Latur district from July 2008 to March 2009. A team of doctors, pharmacist, and staff nurse and health worker screened all the 274591 school children. Those children suspected of having any surgical health problem were listed out. Then a team of qualified surgeons examined the suspected children of having any surgical health problem. Based on the surgeon's decision or diagnosis, the children were offered the appropriate treatment in the form of medicines or surgery. The appropriate treatment was given free of cost to all.

**Results:** A total of 116 children were found to be suffering from various surgical health problems. Among these positive cases, maximum were found to have hernia i.e. 46 cases followed by undescended testis in 20 cases, phimosis in 17 cases, hydrocele in 14 cases and 19 cases presented with other surgical conditions. A significantly higher number of males were found to have the surgical health problem i.e. 97 out of total 116. 66.4% of the cases were operated, 12.9% of the cases were given the treatment. In 5.2% of the cases no intervention was required. But 14.7% of the cases declined the offered treatment of choice. One case left against the medical advice.

**Conclusions:** A significant number of children were found to have surgical health problems like hernia, hydrocele, phimosis, undescended testis and others.

**Keywords:** Health problem, Prevalence, Pattern, School children

## INTRODUCTION

Study of various surgical health problems among school children is of paramount importance. Most of school children belong to low socio economic background. Because of poverty, lack of awareness, and negligence the surgical health problems are neglected. School is the

best place to cover maximum number of children and to identify the surgical health problems and offer them the free treatment and surgery.

Inguinal hernia, hydrocele and other inguino-scrotal abnormalities are the most common congenital disorders in children. Abnormalities of external genitalia in male

elementary students have a prevalence rate between 6.6 to 18.7%. The most common disorders of external genitalia include inguinal hernia, varicocele, undescended testis (UDT), hydrocele, hypospadias, epispadias, and micropenis. Prevalence of inguinal hernia is about 1-5% in general population. Approximately 3% to 5% of term infants may be born with an inguinal hernia. Preterm infants have a higher incidence (9% to 11%). Approximately 80% to 90% of inguinal hernias appear in boys. Male to female ratio of inguinal hernia varies from 4:1 in infants to 12-25:1 in adults. If strangulated, inguinal hernia may lead to loss of testis and life threatening situations. Hydrocele is a limited collection of fluid in tunica vaginalis of testis or along spermatic cord which lead to swelling and blood supply obstruction of testis resulting in destruction of testicular tissue. Hydrocele and inguinal hernia in children occur from the incomplete or abnormal closure of processus vaginalis and are the most common surgery requiring conditions.<sup>1</sup>

“Phimosis” is inability to withdraw the narrowed penile foreskin or prepuce behind the glans penis. It is a not so uncommon complaint for which a child is brought to office of paediatrician. Parents are often overtly anxious and over-concerned about this nonretractability in their infant or toddler. Most of these cases end up in surgical interventions in form of circumcision. Analyses of medical records carried out in England and Western Australia revealed that medically indicated circumcisions were seven times more than the expected incidence of phimosis in children less than 15 years of age.<sup>2</sup>

Undescended testis is present in about 1-4.5% of newborns with a higher incidence in preterms (30-45%). In infants born with undescended testes, the testes may descend into the scrotum in 75% of full-term neonates and in 90% of premature newborn boys in infancy, and the incidence decreases to 0.8-1.2% at 1 year of age. Undescended testis with ambiguous genitalia always needs immediate systematic work-up. Undescended testes should be differentiated from retractile, ectopic, and vanishing testes. The differential characteristics of undescended and ectopic testes are summarized in. Patients with undescended testes should be treated because of increased risk of infertility, testicular cancer, torsion and/or accompanying inguinal hernia (>90%), as well as because of cosmetic concerns.<sup>3</sup>

In view of the above scenario, present was carried out among school children of the whole district to study and manage cases of surgical health problems.

## METHODS

A community based cross sectional study was carried out among 274591 school children of Latur district from July 2008 to March 2009. The object of the study was to screen all the school children in the district for surgical health problems and treat them free of cost.

After taking permission from institution ethics committee, permission from the school authorities was sought.

A team of doctors, pharmacist, and staff nurse and health worker screened all the 274591 school children. Those children suspected of having any surgical health problem were listed out.

Then a team of qualified surgeons examined the suspected children of having any surgical health problem. Based on the surgeon’s decision or diagnosis, the children were offered the appropriate treatment in the form of medicines or surgery. The appropriate treatment was given free of cost to all.

The data was recorded in the pre-designed, pre-tested questionnaire. The data was analyzed using proportions.

## RESULTS

**Table 1: Distribution of study subjects as per the class and sex.**

Class	Male	Female	Total
1 <sup>st</sup>	16000	14573	30573
2 <sup>nd</sup>	15813	14504	30317
3 <sup>rd</sup>	15121	14564	29685
4 <sup>th</sup>	14340	14099	28439
5 <sup>th</sup>	14976	13523	28499
6 <sup>th</sup>	14660	13851	28511
7 <sup>th</sup>	13881	13187	27068
8 <sup>th</sup>	12931	12331	25262
9 <sup>th</sup>	12352	11051	23403
10 <sup>th</sup>	12397	10437	22834
<b>Total</b>	<b>142471</b>	<b>132120</b>	<b>274591</b>

Table 1 shows the distribution of the study subjects as per the class and sex. A total of 274591 children were present in all the schools at the time of survey. Males were more than females. Males outnumbered females in all classes. This may be due to the fact that even today the society neglects the girl child education.

\*Other cases include Anal prolapse, appendicitis, cervical lymphadenopathy, cleft lip, cystic hygroma, eye brow cyst, fibroma tip of tongue, fissure, ganglion, hemangioma, hirschprung’s disease, hypospadias, lump in right breast, omphalitis, portal hypertension, post auricular hemangioma, per rectum bleeding.

A total of 116 children were found to be suffering from various surgical health problems out the total children studied in the district. Among these positive cases, maximum were found to have hernia i.e. 46 cases followed by undescended testis in 20 cases, phimosis in 17 cases, hydrocele in 14 cases and 19 cases presented with other surgical conditions as given in footnote of the table. Only 09 females were found to have some or the

other health problem. A significantly higher number of males were found to have the surgical health problem i.e. 97 out of total 116. As seen from the above table, different varieties of hernia were found. Femoral hernia

in one case, fluid hernia in 19, inguinal hernia in 20, umbilical hernia and epigastric hernia in one case each. A total of 13 cases of hydrocele and one case of congenital hydrocele were found.

**Table 2: Distribution of cases as per diagnosis and age and sex.**

Diagnosis	Age (years)				Total
	≤ 10		> 10		
	Male	Female	Male	Female	
Hernia	35	00	10	01	46
Undescended testis	19	00	01	00	20
Phimosis	11	00	06	00	17
Hydrocele	08	01	05	00	14
Other cases*	08	04	04	03	19
<b>Total</b>	<b>81</b>	<b>05</b>	<b>26</b>	<b>04</b>	<b>116</b>

**Table 3: Distribution of hernia and hydrocele cases.**

Type	Sub type	Number
<b>Hernia (N = 46)</b>	Femoral hernia	01
	Fluid hernia	19
	Bilateral inguinal hernia	09
	Inguinal hernia left side	06
	Inguinal hernia right side	05
	Umbilical hernia	01
	Epigastric hernia	01
	Hernia	04
<b>Hydrocele (N = 14)</b>	Congenital hydrocele	01
	Bilateral hydrocele	08
	Right side hydrocele	04
	Left side hydrocele	01

**Table 4: Distribution of cases as per the intervention.**

Intervention applied	Number	Percentage
Operated	77	66.4
Given treatment	15	12.9
No intervention required	06	05.2
Not willing for suggested intervention	17	14.7
Left against medical advice	01	00.8
<b>Total</b>	<b>116</b>	<b>100</b>

As per the objective of the study all the 116 diagnosed cases were offered treatment. 66.4% of the cases were operated, 12.9% of the cases were given the treatment. In 5.2% of the cases no intervention was required. But 14.7% of the cases declined the offered treatment of choice. One case left against the medical advice.

**DISCUSSION**

A total of 116 children were found to be suffering from various surgical health problems. Among these positive cases, maximum were found to have hernia i.e. 46 cases followed by undescended testis in 20 cases, phimosis in 17 cases, hydrocele in 14 cases and 19 cases presented with other surgical conditions. A significantly higher number of males were found to have the surgical health problem i.e. 97 out of total 116. 66.4% of the cases were operated, 12.9% of the cases were given the treatment. In 5.2% of the cases no intervention was required. But 14.7% of the cases declined the offered treatment of choice. One case left against the medical advice.

Uba AF et al found that umbilical hernia was present in 102 (1.3%) out of 7968 children, giving a prevalence of 12.8 per 1,000.<sup>4</sup> Fifty-three (52%) were boys and 49 (48%) were girls; their ages ranged from 6 to 9 years (mean 6.5 years). Umbilical hernia was 1.4 times as common in the girls as in the boys, with a prevalence of 15.3 per 1,000 and 11.1 per 1,000, respectively. The overall prevalence in this study is comparatively lower than those previously reported.

Ko MC et al reported that none of the newborn male infants had a completely retractable prepuce (i.e. type 3).<sup>5</sup> The prevalence rate of type 3 prepuce increased with age from 71.7% (95% confidence interval [CI], 66.5-75.5%) for boys aged 7 years to 72.4% (95% CI, 67.3-77.0%) for boys aged 10 years and 84.1% (95% CI, 79.6-88.0%) for

boys aged 13 years. In contrast, the prevalence rate of type 1 prepuce decreased with age from 83.1% (95% CI, 71.0-91.6%) for newborn infants to 0.3% (95% CI, 0.0001-1.8%) for boys aged 13 years. On the other hand, the prevalence of circumcision slightly increased with age from 7.2% (95% CI, 5.3-10.8%) for boys aged 7 years to 8.7% (95% CI, 6.5-13.3%) for boys aged 13 years.

Gooran S et al observed that abnormalities were detected in 167 children (5.38%).<sup>1</sup> The most frequent anomaly was indirect inguinal hernia, seen in 81 children (2.6%). The other abnormalities were undescended testis in 39 boys (1.2%), hypospadiasis in 11 boys (0.3%), epispadiasis in one boy (0.03%), varicoceles in 3 boys (0.09%) and micropenis in 7 boys (0.2%).

Yinka OO et al found that two hundred and eighty six (37.3%) children had umbilical hernia.<sup>6</sup> Fifteen (2.0%) children had paraumbilical hernia. Nine children (1.2%) had right indirect inguinal hernia; three children (0.4%) had left indirect inguinal hernia and two (0.3%) had bilateral indirect inguinal hernia. Two boys (0.5%) had left undescended testis; there were no cases of right undescended testis or bilateral undescended testis. Only one boy (0.2%) had left retractile testis; there were no cases of right retractile testis or bilateral retractile testis. Two boys (0.5%) had right hydrocele while 4 (1.0%) had left hydrocele. All male children had been circumcised and majority of them 102 (24.3%) were circumcised at the primary health centers.

Poenaru D reported that Hernias occur in 1% to 4% of all infants; the incidence may reach 30% in premature infants (depending on the child's gestational age at birth).<sup>7</sup> One third of all children with hernias present before six months of age.

Haratipour H et al observed that prevalence of abnormalities in the children under study were as follows: Inguinal hernia (5.1%), cryptorchidism (2.1%), Hydrocele (1.5%), hypospadias (0.4%), Varicocele (0.1%), micropenis (0.4%).<sup>8</sup>

Yagane RA et al found that Abnormalities were detected in 213 children (6.64%).<sup>9</sup> The most frequent anomaly was indirect inguinal hernia, seen in 78 children (2.4%). The other abnormalities were retractile testes in 39 boys (1.22%), undescended testes in 36 boys (1.12%), hydrocele in 28 boys (0.87%) and hypospadiasis in 25 boys (0.78%). Also, three children had micropenises, two had epispadiasis and another two boys had varicoceles. Ambiguous genitalia and apenia were not seen in the present series. Most of the parents were not aware of their children's anomalies (60.1%).

Lingaji TS et al reported that nguinal hernia was found in 29 (2.9%) children and hydrocele was detected in 12 (1.2%) children.<sup>10</sup> They concluded that since these abnormalities are most common disorder in children,

education of the public and medical staff about these abnormalities and screening system are needed to improve the outcome.

Hack WWM et al found that Testis position was determined in 2042 boys aged 6, 1038 aged 9 and 353 aged 13.<sup>11</sup> Of these, 47, 53 and 8 boys, respectively, were referred to the hospital and seen for further evaluation. The diagnosis of acquired UDT was made in 25 boys aged 6, 23 aged 9 and four aged 13. In 33 boys, a congenital UDT was diagnosed; 32 (97%) had already been diagnosed and treated at an early age.

Berkowitz GS et al observed that Of 6935 neonates assessed at birth, 255 (3.7%) were found to be cryptorchid at birth.<sup>12</sup> The rates were significantly elevated for low birth weight, preterm, small-for-gestational age, and twin neonates. The overall rate had declined to 1.0% by the 3-month assessment and 1.1% at the 1-year assessment. Although the rates at the 1-year assessment tended to be higher for low birth weight and preterm infants, no significant group differences were observed.

## CONCLUSION

A total of 116 children were found to be suffering from various surgical health problems. Among these positive cases, maximum were found to have hernia i.e. 46 cases followed by undescended testis in 20 cases, phimosis in 17 cases, hydrocele in 14 cases and 19 cases presented with other surgical conditions. A significantly higher number of males were found to have the surgical health problem i.e. 97 out of total 116. 66.4% of the cases were operated, 12.9% of the cases were given the treatment. In 5.2% of the cases no intervention was required. But 14.7% of the cases declined the offered treatment of choice. One case left against the medical advice.

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