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## OCCURRENCE OF CONTRALATERAL INGUINAL HERNIA IN CHILDREN FOLLOWING UNILATERAL INGUINAL HERNIOTOMY

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### ABSTRACT

**Objective:** To review the occurrence of contralateral inguinal hernia in infants and children who presented with unilateral inguinal hernia and underwent herniotomy in order to establish whether simultaneous contralateral exploration is a necessity in our environment.

**Design:** A retrospective study.

**Setting:** Muhimbili National Hospital Paediatric surgical ward.

**Subjects:** Seven hundred and thirty two children.

**Results:** Twenty five infants and children developed an inguinal hernia on the contralateral side 2-76 months after herniotomy. Follow-up period was one to thirteen years. Six hundred and seventy one were boys and sixty one girls (M:F=11:1). Right side presentation was seen in two-thirds of the children. Subsequent contralateral hernia occurrence was more common in girls(4.9%) and slightly higher in children above 12 months of age(3.5%) but these comparisons were not significant(p values were 0.45 and 0.89 and R.R. values were 0.97 and 0.67 respectively). Subsequent development of contralateral hernia in children with left-sided hernia was high(6.7%) and this was statistically significant(p= 0.002, R.R. = 3.38).

**Conclusion:** The risk of occurrence of contra-lateral inguinal hernia following unilateral inguinal herniotomy is not significantly excessive when compared by age or sex implying that routine exploration on the contralateral side in infants and children clinically presenting with unilateral inguinal hernia is not justified and we recommend herniotomy only when there is adequate clinical evidence of an inguinal hernia. Despite the significant risk of developing a contralateral hernia in children with left-sided hernia, the authors do not recommend routine right-sided exploration as the frequency is not high.

### INTRODUCTION

Inguinal herniotomy is one of the most common operation in our paediatric surgical practice just as it is in the developed countries(1). Some centres in the western world routinely explore the contralateral side in children presenting with unilateral inguinal hernia on the basis of high incidence of patent processus vaginalis(PPV) developing a hernia subsequently(2,3). Hitherto, the need to explore the asymptomatic contralateral groin remains controversial as it increases the anaesthetic time, risk of injury to the vas deferens and to the blood supply of the testis and may cause iatrogenic cryptorchidism(1). To our knowledge this dilemma has not been addressed in a developing African country and this study attempts retrospectively to determine the occurrence of contralateral inguinal hernia in children who underwent unilateral herniotomy and therefore suggest whether there is a necessity of simultaneous contralateral exploration in children clinically presenting with unilateral inguinal hernia.

### MATERIALS AND METHODS

The charts of all children up to the age of ten years who initially presented clinically with unilateral inguinal hernia and underwent herniotomy in the paediatric surgery unit at Muhimbili National Hospital between January 1990 and December 2002, were reviewed. Follow up period was one to fourteen years. Our institution is the largest government facility in the country which provides free treatment to children including those with surgical problems requiring the attention of a paediatric surgeon. Due to unreliable communication facilities and contact addresses in a poor socio-economic developing country, it is very difficult to formally contact parents and make an appropriate follow-up, however, due to the very poor economic status of the families of most of the operated children, it is assumed that they returned to our facility for follow-up including if a contralateral hernia developed as they could not afford to go to a private facility.

Demographic factors evaluated included sex, age, side of initial inguinal hernia presentation and if a contra-lateral one developed later, interval between initial presentation and development of a contra-lateral one. Thirt three (4.3%)

children clinically presented with bilateral inguinal hernia and were therefore excluded from this review. Statistical analysis using Chi-Square was used to compare the occurrence of contralateral inguinal hernia on either side and in less than and above one year old children, tailed Fisher's Exact test was used to determine significance according to sex. The significant level was if  $p < 0.05$ . The Relative Risk (R.R.) and 95% Confidence Interval (C.I.) was also calculated.

### RESULTS

During a thirteen year period (January 1990-December 2002), 732 children were operated for a unilateral inguinal hernia and of these, 25 presented on the contralateral side

2-76 months after herniotomy (Table 1). Follow-up period was one to thirteen years. Table 2 shows the sex distribution, 671 were boys and 61 girls (M:F=I 1:1). Right side presentation was seen in two-thirds of the children (Table 3). Subsequent contra lateral hernia occurrence was more common in girls (4.9%) and slightly higher in children above 12 months of age (3.5%) but these differences were not significant ( $p$  values were 0.45 and 0.89 and R.R. values of 0.97 and 0.67 respectively). Subsequent development of contra lateral hernia in children with left-sided hernia was high (6.7%) and attained a statistically significant ( $p = 0.002$  and R.R. value 3.38) level.

**Table 1**

*Characteristics of hernia by age groups*

Age (months)	Herniotomy No. (%)	Contralateral Hernia		p-value
		Yes (%)	No. (%)	
<12	327(44.7)	11/327(3.4)	316/327(96.6)	0.89
>12	405(55.3)	14/405(3.5)	391/405(96.5)	
Total	732 (100.0)	25/732(3.4)	707/732(96.6)	

Relative Risk (R.R.) = 0.97, 95% Confidence Interval (C.I.) = (0.45, 2.11)

**Table 2**

*Characteristic of hernia by sex*

Sex	Herniotomy No. (%)	Contralateral Hernia		p-value
		Yes (%)	No. (%)	
Boys	671(91.7)	22/671(3.3)	649/671(91.7)	0.45
Girls	61(8.3)	3/61(4.9)	58/61(95.1)	
Total	732(100.0)	25/732(3.4)	707/732(96.6)	

Relative Risk (R.R.) = 0.67, 95% Confidence Interval (CI) = (0.21, 2.16)

**Table 3**

*Characteristics of hernia by side of herniotomy*

Side	Herniotomy No. (%)	Contralateral Hernia		p-value
		Yes (%)	No. (%)	
Right	507 (69.3%)	10/507(2.0)	497/507(98.0)	0.002
Left	225 (30.7%)	15/225(6.7)	210/225(93.3)	
Total	732 (100.0%)	25/732(3.4)	707/732(96.6)	

Relative Risk (R.R.) = 3.38, 95% Confidence Interval (C.I.) = (1.54, 7.41)

## DISCUSSION

As reported in western countries(4,5), nearly one half of our children with inguinal hernia present below the age of one year which is an improvement compared to an earlier study by one of the authors(6). Improved knowledge of the condition by parents and better access to referring health facilities could be contributory. In the literature, though early age of presentation has been associated with increased risk of subsequent development of inguinal hernia on the contralateral side(1,7), this has not been revealed in this study( $p=0.89$ ,  $R.R.=0.97$ ) as was also reported from a similar study in an Iranian children hospital(8). Similarly, the length of time before the appearance of the contra-lateral hernia does not seem to be influenced by the age at initial presentation(5). However, Surana and Puri(1), in their study involving only infants less than six months of age at initial operation reported 10% developing contra-lateral hernia, all within 18 months of original herniotomy. Patent processus vaginalis(PPV) which is present in over 35% of children(9,10,11) is the potential cause for inguinal hernia development and therefore reason for routine contra-lateral exploration in some centres. However, PPV is not a true hernia and the majority(60%) spontaneously close by two years of age, the remaining will either develop a contra-lateral hernia or remain asymptomatic for life(8,12). This review revealed a low occurrence (3.4%) of developing a contralateral hernia similar to other studies(1,5,8) thereby not justifying routine exploration.

The risk of developing a contralateral hernia was also not influenced by the sex of the child ( $p=0.45$ ;  $R.R.=0.67$ ) which also concurred with other studies(1,5,8). There was, however, significant difference regarding the side of inguinal hernia presentation ( $p=0.002$ ), the risk of developing a contra-lateral hernia is much higher in left-sided inguinal hernia as also seen in other series(1,8,13). Despite this increased risk, the authors do not recommend routine right-sided exploration as the frequency of contralateral inguinal hernia is not very high(6.7%). Given and Rubin(5), did not find an increased risk when comparing with initial side of the hernia. Many paediatric surgeons routinely explore the contra-lateral side after unilateral inguinal herniotomy in infants under one year of age because of the high risk of incarceration in infancy(1), this was not evaluated in this review but would be appropriate to do so in a prospective follow-up study.

In conclusion, occurrence of contralateral inguinal hernia following unilateral inguinal herniotomy is not

significant and therefore implies that routine simultaneous exploration on the contralateral side in infants and children clinically presenting with unilateral inguinal hernia is not justified. The authors recommend that in our resource scarce environment herniotomy should only be done when there is adequate clinical evidence of an inguinal hernia.

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