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ORIGINAL ARTICLE

Inguinal hernia and occurrence on the other side: a prospective analysis in Iran

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Abstract
Background Indirect inguinal hernia (IH) is the most common type of hernia. Routine contralateral inguinal exploration, without clinical evidence of a hernia is still controversial especially in children. The purpose of our study was to determine incidence of contralateral IH.
Methods This is a prospective study of 301 patients during a one-year period. History of groin mass, positive findings, demonstrable hernia, or communicating hydrocele were our criteria for diagnosis.
Results Our study includes 301 infants and children, 270 (89.7%) males and 31 (10.3%) females with mean age of two years and 40.9% under six months. In the follow-up period, we found 33 new IH in our patients. 23 (12%) of 196 patients less than two years old underwent contralateral herniorrhaphy in the follow-up period ($P = 0.02$). Six patients of 30 premature children underwent contralateral herniorrhaphy ($P = 0.03$).
Conclusion The incidence of contralateral hernia is approximately 10% and in our study it is approximately 1.7%. There is a significant difference between the occurrence of contralateral hernia in preterm compared with term infants ($P = 0.03$). We think that the incidence is still too low to recommend routine contralateral exploration.

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Introduction

Contralateral groin exploration is controversial in children and especially in infants [1].

A study shows that 51% of surgeons explore the contralateral side of the groin in a premature neonate routinely (40% of surgeons explore in children less than two years old, and 13% of surgeons explore in children two to five years old) [1, 2].

When pediatric surgeons were questioned, 65–80% reported that they routinely explored the contralateral groin in boys with clinically apparent unilateral hernias, and 84–90% reported that they routinely explored girls [3]. The side of presentation had little or no effect on the decision for contralateral exploration, and the age below which routine exploration was recommended varied widely [2, 3].

Many studies have been designed to help in the decision making, and a variety of advice exists.

1. Contralateral exploration and repair only when symptomatic [4, 5].
2. Routine contralateral exploration [5, 6].
3. Contralateral laparoscopy [5].

In children and infants, indirect inguinal hernia is the most commonly type of hernia and is due to a patent processus vaginalis. A patent processus vaginalis is more common in preterm neonates and also in the right side. Perhaps, because of delayed descending testis in the right side [6].

Routine contralateral inguinal exploration, without clinical evidence of a hernia, may be advisable in children with incarceration and possibly in premature infants [4]. The low

incidence of contralateral hernias in all other patients, regardless of gender or age, does not justify routine contralateral exploration [4].

The objective of our study was to determine incidence of contralateral inguinal hernia and its occurrence on the other side, and its relation to age, sex, and side of hernia.

Methods and materials

A total of 301 infant and children under 12 years old with inguinal hernia were included in a prospective study from January 2006 to January 2007. Our criteria for diagnosis included a history of groin mass and positive findings, demonstrable hernia or communicating hydrocele, incarcerated hernia on physical examination, and appropriated history with physical examination reported by another physician. Those who had a non-communicating hydrocele, bilateral IH, severe ascites, and collagen disease were excluded from the study.

Bilateral inguinal hernia was excluded. We informed parents about the probability of contralateral occurrence of inguinal hernia during the next year.

Before discharge from hospital, we requested parents to refer to this centre if they feel any bulging (even intermittent) in the groin of the child. We contacted parents who did not refer in one year and asked about any mass. Patients underwent follow up for the development of contralateral hernia or relapsed repaired hernia for one year.

Chi-square analysis for 2×2 tables was used to compare the incidence of metachronous contralateral hernia in children with and without a given attribute (age, gender, premature) with P less than 0.05 considered significant.

Results

We studied 301 infants and children between one and 148 months (mean age two years) at the time of initial herniorrhaphy; 89.7% were males and 10.3% females; 213 (70.8%) had hernia on the right side and 88 (29.2%) on the left. We had 30 premature patients (birth < 40 weeks of gestational age).

We saw incarceration in 77 (25.6%) patients, 68 in males and nine in females; children less than six months were the most seen group (Table 1).

In the follow-up period we encountered 33 new IH in our cases. These 33 new IH were composed of five ipsilateral recurrences and 28 contralateral new IH. All of five ipsilateral recurrences were in the right side, and all were males. A total of 23 (12%) of 196 patients less than two years old underwent contralateral herniorrhaphy in the follow-up period ($P = 0.02$) and five cases of contralateral herniorrhaphy were more than two years. Six cases of 30 premature children underwent contralateral herniorrhaphy ($P = 0.03$).

Table 1 Characteristics of children who underwent initial one-sided herniorrhaphy

	No.	Percent	Incarcerated
Male	270	89.7	68
Female	31	10.3	9
History of prematurity	30	10.0	
Age ≤6 months	123	40.9	
Age ≤2 years	196	65.0	
Right	213	70.7	55
Left	88	29.3	22

Various anomalies were seen along with IH: hydrocele in 50 cases, UDT in 24 cases, stricture of meatus in 10 patients, umbilical hernia in four cases, and oligohydramnios in three cases. Incidence of anomaly was more in males.

Overall, the small intestine was the most common organ in the hernia sac but in females the ovary was the most common organ in the hernia sac.

Discussion

Contralateral inguinal exploration is still controversial and most paediatric surgeons do not agree with contralateral exploration [7, 8].

Although larger series or longer duration of follow up of paediatric inguinal hernia have been reported [7–9], routine exploration of an asymptomatic contralateral inguinal canal has been advocated. It seems reasonable to explore the contralateral side in some cases, for example patients with specific risk factor, for example premature neonates, infants less than 18 months old far from a hospital, a child who has lost a gonad because of strangulation, ventriculo peritoneal shunt, and peritoneal dialysis [7, 8].

A surgeon must be prepared for unexpected hernial sac contents, for example lateral bladder protruding into the inguinal canal (bladder ear).

This phenomena is sometimes seen on cystography and if the surgeon fails to recognize it the results can be catastrophic ranging from occult bladder injury to subtotal cystectomy requiring urinary diversion. Other unusual hernial sac contents are gonads of the appropriate sex, fallopian tube, and lipoma varicocele.

Conclusion

In conclusion, we believe the incidence is still too low to recommend routine contralateral exploration in an asymptomatic

well baby. If there is a specific risk factor, for example prematurity, ventriculoperitoneal shunt, peritoneal dialysis, or history of lost of gonad due to strangulation, contralateral canal exploration might be reasonable.

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