

# Unilateral Inguinal Hernia in Girls: Is Routine Contralateral Exploration Justified?

By İ. Ulman, M. Demircan, A. Arıkan, A. Avanođlu, O. Ergün, G. Özok, and A. Erdener  
İzmir, Turkey

● To determine the incidence of contralateral hernia development after unilateral inguinal hernia repair in girls, collected case series from two large hospitals were analyzed retrospectively. Among the 294 girls who had undergone repair of a unilateral inguinal hernia (during a 15-year period), 245 could be traced; the mean follow-up period was 8.4 years. In 25 (10.2%) of the patients, contralateral hernia developed, mostly within one year (4 months to 6.5 years). The incidence of contralateral hernia development with respect to the original side of the inguinal hernia was significantly higher (19%) for the originally left-sided hernias than for the right-sided ones (6%) ( $P < .01$ ). Although the incidence of contralateral hernia development for girls with a left inguinal hernia decreased as age increased, it was still 14.9% for the girls age 3 and up. Contralateral exploration should not be routine for girls who have a right-sided hernia, at any age. For left-sided hernias, it may be performed routinely for girls up to 2 years of age, and selectively for older patients.

Copyright © 1995 by W.B. Saunders Company

INDEX WORDS: Inguinal hernia, contralateral exploration.

EXPLORATION of the contralateral side to find an asymptomatic inguinal hernia or to ligate a patent processus vaginalis during unilateral inguinal hernia repair in children was suggested by Rothenberg and Barnett in 1955.<sup>1</sup> It became popular after consecutive reports of large series in which there was high incidence of positive contralateral exploration.<sup>2-7</sup> The advances in pediatric surgery and anesthesia, introduction of day surgery, reduction of surgical time with increased skill, and ease of surgical technique led many surgeons to extend their indications for bilateral inguinal hernia exploration.<sup>6-8</sup> The statistical figures related to the incidence of contralateral hernia appeared to support this trend in general, although a detailed analysis of factors that might affect this incidence (such as age and sex) was not made consistently by all the investigators. The variability of results regarding the relation between the patency of processus vaginalis and the incidence of developing symptomatic hernia later in life added to the complex-

ity of decision making, particularly in older children.<sup>9</sup> The recent developments in minimally invasive surgery, with the modern philosophy of aiming toward the least possible iatrogenic trauma to the patient, was another factor that raised questions around the necessity of contralateral exploration in children with unilateral inguinal hernia.

Contralateral exploration has been recommended for girls of all ages.<sup>1-8,10</sup> According to a survey in 1981, the majority of American surgeons practice routine contralateral exploration.<sup>11</sup> There have been reports that suggest some limitations in the indications for contralateral exploration, some even totally abandoning it.<sup>9,12-17</sup> To determine the incidence of contralateral hernia development after unilateral inguinal hernia repair, we conducted a retrospective analysis of the collected case series of two large hospitals in İzmir.

## MATERIALS AND METHODS

Two hundred ninety-four girls who had undergone repair of a unilateral inguinal hernia at Ege University Hospital or SSK Tepecik Hospital between January 1977 and December 1991 were evaluated to determine whether a contralateral hernia had developed postoperatively. SSK Tepecik Hospital has the only pediatric surgery clinic for children insured by the national government's social security insurance for labor families in İzmir and the Ege region. Any child needing hernia repair would be treated at this hospital, including those with contralateral hernia. Therefore, a record review of the 195 patients treated at SSK Tepecik Hospital would most likely reveal all patients who had a contralateral hernia after initial unilateral hernia repair at that hospital; the chart data were used as follow-up material (minimum follow-up period, 2 years). A questionnaire was sent to the remaining 99 patients, 50 of whom replied. The parameters reviewed and evaluated were initial side of the inguinal hernia, age at time of first hernia repair, length of follow-up, presence of contralateral inguinal hernia development, and interval between occurrence of the initial and subsequent contralateral hernia. Any complications possibly related to contralateral hernia development also were noted.

The results were analyzed statistically for each parameter. Groups, created according to the side of initial hernia, were compared using the  $\chi^2$  test with respect to the incidence of contralateral hernia and the age at which it developed.

## RESULTS

Two hundred forty-five of the 294 patients could be traced. The follow-up period, including the questionnaire results, ranged from 2 to 16 years (mean,  $8.4 \pm 5.5$  years). The initial hernia was on the right side in 166 (67.8%) patients and on the left in 79

From the Department of Pediatric Surgery, Faculty of Medicine, Ege University, and the Department of Pediatric Surgery, SSK Tepecik Hospital, İzmir, Turkey.

Address reprint requests to A. Erdener, MD, Department of Pediatric Surgery, Ege University, Faculty of Medicine, 35100, İzmir, Turkey.

Copyright © 1995 by W.B. Saunders Company  
0022-3468/95/3012-0013\$03.00/0

(32.2%). A total of 25 (10.2%) patients were noted to have a contralateral inguinal hernia in the follow-up period. The mean time for initial repair until development of the contralateral hernia was 1 year (range, 4 months to 6.5 years). In only 10 of the 166 (6%) girls whose initial hernia was on the right side did a contralateral hernia develop. The incidence was 15 of 79 (19%) among patients with a left-sided initial hernia. The incidence of contralateral hernia development differed significantly with respect to the original side of the hernia ( $P < .01$ ). This finding was consistent for all age groups (Table 1). The length of follow-up and the time until occurrence of the contralateral hernia were comparable between the right-sided and left-sided groups ( $P > .05$ ).

Complications related to contralateral hernia development (including incarceration and strangulation) were not detected.

#### DISCUSSION

In large series of childhood inguinal hernia, girls rarely comprise more than one third of the total.<sup>2,4,13,14,17,18</sup> However, there is less controversy regarding bilateral inguinal exploration for girls than for boys. The absence of any vulnerable reproductive structure in the groin region in girls is the single evident reason for this presumption,<sup>10</sup> which in an era of minimally invasive surgery may be pronounced as temerity. Like in boys, much of the tendency to explore the contralateral side in girls depends on the high incidence of patent processus vaginalis.<sup>6</sup> However, few reports have documented the incidence of clinically apparent contralateral hernia development in girls during follow-up.<sup>6,9,14-16</sup> The overall incidence of contralateral hernia development in our series (10.2%) is comparable to the previously reported incidences.

The size of our series enabled us to analyze the effects of side and age on the development of contralateral hernia in girls. The incidence of contralateral hernia among girls who had a right-sided initial

hernia was 6%. This was significantly lower than the incidence for patients who had a left-sided hernia (19%). These results were more conclusive than our overall contralateral hernia incidence value of 10.2%, which might be subject to argument.

The relationship between early age and increased risk of subsequent development of a contralateral hernia has been emphasized.<sup>17</sup> Fifty percent of our patients were under 3 years of age at the time of initial presentation. The overall incidences of contralateral hernia development in the first and second year of life were increased (as expected) although they did not exceed 15%. However, when side of the initial hernia was considered among the different age groups, the range of the incidence figures expanded (to include upper and lower extremes), leading to contradictory suggestions. For girls whose initial hernia was right-sided, there was no significant difference in incidence of contralateral hernia development among the various age groups. Even the highest incidence (8.6%), found for girls in the second year of life, was not encouraging enough to suggest routine left exploration for all girls with a right-sided hernia. On the other hand, although the incidence of contralateral hernia development for girls with an initial left inguinal hernia decreased with age, it was still 14.9% for girls age 3 and up. Approximately one in every four girls who had a left inguinal hernia in the first 2 years of life is likely to develop a right inguinal hernia in the next few years, rendering routine exploration of the right side a reasonable practice. With a composite group of boys and girls, Surana and Puri reported similar results, although they have not attempted to make separate conclusions, particularly for the group of patients who initially had a left-sided hernia, 17% of whom had a contralateral hernia subsequently.<sup>17</sup>

Because we could not detect any strangulation or incarceration in the contralateral hernia, it was difficult to put that forward as a risk to advocate routine bilateral exploration. This result does not support those of Rowe and Clatworthy, who found a higher incidence of incarceration in girls than in boys.<sup>19</sup> However, there is no case of incarcerated contralateral inguinal hernia in the literature; this was noted and discussed by Rowe.<sup>6</sup>

Like most of the previous studies focusing on contralateral hernia development, ours did not have a separate group to which results could be compared. Nevertheless, the conclusions and decisions have been affected not only by the incidence figures, but also by the risks of surgery and anesthesia, psychic and physical trauma, and cost. There have been influential changes in these concerns, particularly in

**Table 1. Contralateral Hernia Occurrence (Related to Age and Side) in Girls Who Had Unilateral Inguinal Hernia Repair**

Age (yr)	Right			Left			Total		
	IH No.	CH		IH No.	CH		IH No.	CH	
		No.	%		No.	%		No.	%
0-1	13	1	7.7	8	2	25.0	21	3	14.3
1	35	3	8.6	25	6	24.0	60	9	15.0
2	29	1	3.4	12	2	16.6	41	3	7.5
3+	89	5	5.6	34	5	14.9	123	10	8.0
Total	166	10	6.0	79	15	19.0	245	25	10.2

Abbreviations: IH, initial hernia; CH, contralateral hernia.

the last three decades. Therefore, in light of the current improved methods of pediatric inguinal hernia repair as well as our present results, we came to the conclusion that contralateral exploration should

not be performed routinely in girls who have a right-sided inguinal hernia, at any age. For the left-sided hernia, it can be used selectively in girls over 2 years of age, and routinely in younger girls.

#### REFERENCES

1. Rothenberg RE, Barnett T: Bilateral herniotomy in infants and children. *Surgery* 37:947-950, 1955
2. Clausen EG, Jake RJ, Binkley FM: Contralateral inguinal exploration of unilateral hernia in infants and children. *Surgery* 44:735-740, 1956
3. Gilbert M, Clatworthy HW: Bilateral operations for inguinal hernia and hydrocele in infancy and childhood. *Am J Surg* 97:255-259, 1959
4. Kiesewetter WB, Parenzan L: When should hernia in the infant be treated bilaterally. *JAMA* 171:287-290, 1959
5. Rowe MI, Copelson LW, Clatworthy HW: The patent processus vaginalis and the inguinal hernia. *J Pediatr Surg* 4:102-107, 1969
6. Rowe MI, Lloyd DA: Inguinal hernia, in Welch KJ, Randolph JG, Ravitch MM, et al (eds): *Pediatric Surgery*, vol 2. Chicago, IL, Year Book Medical, 1986, pp 779-793
7. Weber TR, Tracy Jr TF: Groin hernias and hydroceles, in Ashcraft KW, Holder TM (eds): *Pediatric Surgery*. Philadelphia, PA, Saunders, 1993, pp 562-570
8. Sparkman RS: Bilateral exploration in inguinal hernia in juvenile patients. *Surgery* 51:393-406, 1962
9. Surana R, Puri P: Fate of patent processus vaginalis: A case against routine contralateral exploration for unilateral inguinal hernia in children. *Pediatr Surg Int* 8:412-414, 1993
10. Wright JE: Inguinal hernia in girls: Desirability and dangers of bilateral exploration. *Aust Paediatr J* 18:55-57, 1982
11. Rowe MI, Marchildon MB: Inguinal hernia and hydrocele in infants and children. *Surg Clin North Am* 61:1137-1145, 1981
12. Potts WJ: Inguinal hernia in infants. *Pediatrics* 1:772-776, 1948
13. Tam PKH: Inguinal hernia, in Lister J, Irving IM (eds): *Neonatal Surgery*. London, England, Butterworth, 1990, pp 367-375
14. Given JP, Rubin SZ: Occurrence of contralateral inguinal hernia following unilateral repair in a pediatric hospital. *J Pediatr Surg* 24:963-965, 1989
15. Muraji T, Noda T, Higashimoto Y, et al: Contralateral incidence after repair of unilateral inguinal hernia in infants and children. *Pediatr Surg Int* 8:455-457, 1993
16. Bock JE, Sobyte JV: Frequency of contralateral inguinal hernia in children. *Acta Chir Scand* 136:707-709, 1970
17. Surana R, Puri P: Is contralateral exploration necessary in infants with unilateral inguinal hernia? *J Pediatr Surg* 28:1026-1027, 1993
18. McGregor DB, Halverson K, McVay CB: The unilateral pediatric inguinal hernia: Should the contralateral side be explored? *J Pediatr Surg* 15:313-317, 1980
19. Rowe MI, Clatworthy HW: Incarcerated and strangulated hernias in children. *Arch Surg* 101:136-138, 1970