

RISK OF CONTRALATERAL HYDROCELE OR HERNIA AFTER UNILATERAL HYDROCELE REPAIR IN CHILDREN

LAURA LYM, JONATHAN H. ROSS, FREDERICK ALEXANDER AND ROBERT KAY

From the Departments of Urology and Pediatric Surgery, Cleveland Clinic Foundation, Cleveland, Ohio

ABSTRACT

Purpose: Recent laparoscopic studies indicate a high incidence of a contralateral open internal ring in children undergoing unilateral hydrocele or hernia repair, raising the question of whether routine contralateral exploration should be done. Data on the long-term risk of clinical contralateral hernia or hydrocele after unilateral hydrocele repair are limited. To address this question we performed long-term followup in patients who underwent unilateral hydrocele repair.

Materials and Methods: We followed patients who previously underwent unilateral hydrocele repair performed by one of us before 1997. Patients were interviewed by telephone and encouraged to return to one of us or their pediatrician for evaluation.

Results: Of the 101 patients who fulfilled study inclusion criteria 85 who were 5 to 107 months old (median age 37) at the original surgery were successfully contacted, including 45 examined by one of us or a pediatrician and 40 followed by telephone interview only. Contralateral hydrocele or hernia developed in 6 of the 89 patients (7%) 6 to 15 months (median 12) postoperatively. The remaining 79 patients have been recurrence-free for 6 to 153 months (mean 44, median 37). Of the patients 5 of 32 are (15%) and 1 of 53 (2%) who underwent left and right hydrocele repair, respectively, had contralateral recurrence.

Conclusions: The risk of a clinically evident contralateral hydrocele or hernia after unilateral hydrocele repair is approximately 7%. We do not recommend routine contralateral exploration in children undergoing unilateral hydrocele repair.

KEY WORDS: testis; hydrocele; hernia, inguinal

It is well established that there is a significant risk of contralateral hernia after unilateral hernia repair in children, although the exact magnitude of this risk varies in the literature. Few studies have defined the risk of contralateral hernia or hydrocele after unilateral hydrocele repair in a child. The availability of laparoscopy for evaluating the contralateral ring intraoperatively has raised interest in performing contralateral exploration in some patients. However, the finding of an open ring on laparoscopy does not necessarily mean that hydrocele or hernia is inevitable. To determine the risk of clinical hydrocele or hernia after unilateral hydrocele repair in children we performed long-term followup in patients who previously underwent unilateral hydrocele repair.

MATERIALS AND METHODS

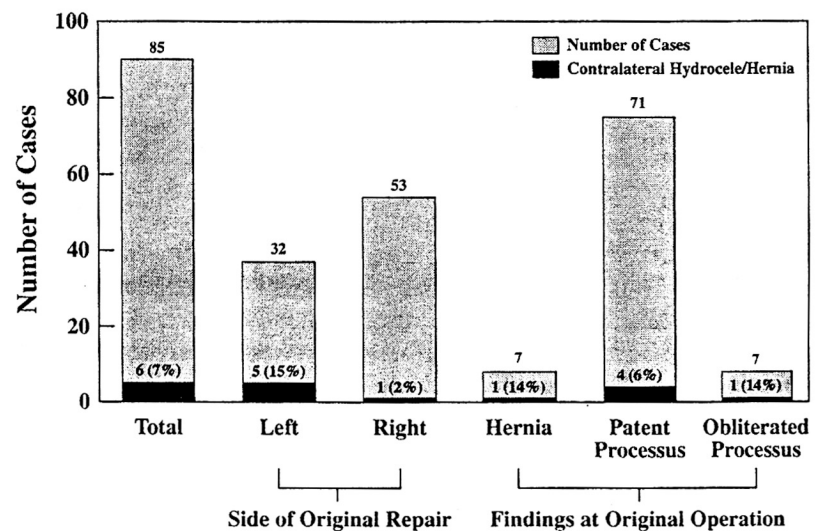
We performed followup in all patients who underwent unilateral hydrocele repair performed by one of us before 1997. Patients were excluded from study if they were older than 11 years at the original repair, had bilateral hydrocele, clinical evidence of a hernia (inguinal bulge noted by physician or parent) or an associated undescended testis, or had previously undergone inguinal surgery on either side. We have not routinely performed contralateral exploration in patients with unilateral hydrocele. Therefore, bilateral repair has only been done in those with clinical evidence of bilateral hydrocele.

Parents were contacted by telephone and encouraged to return the child to us or their pediatrician for evaluation. If they were not willing to return for followup, they were interviewed by telephone to determine whether the child had any signs or symptoms of or had undergone any treatment for contralateral hydrocele or hernia. The charts were reviewed

to determine the presence of exclusion criteria, side of the original hydrocele and the intraoperative findings. Statistical analysis was performed using the Kaplan-Meier survival curve and the log rank test.

RESULTS

Of the 101 patients who fulfilled our strict study inclusion criteria 85 who were 5 to 107 months old (median age 37, mean 42) at the original operation were successfully contacted for followup, including 45 examined by one of us or a pediatrician and 40 followed by telephone interview only (see figure). Contralateral hydrocele or hernia developed in 6



Incidence of contralateral hydrocele or hernia after unilateral hydrocele repair in all patients and in subgroups based on original hydrocele side and intraoperative findings.

patients (7%) 6 to 15 months (median 12) postoperatively. These patients had been 5 to 60 months old (median age 16) at the original repair. The remaining 79 patients have been recurrence-free for 6 to 153 months (mean 44, median 37). Of the patients 5 of 32 (15%) and 1 of 53 (2%) who underwent left and right hydrocele repair, respectively, had contralateral recurrence ($p = 0.016$).

Exploration revealed a narrow processus vaginalis in 73 of the 85 patients (86%), including 4 (5.5%) in whom contralateral hydrocele or hernia developed. At exploration 6 patients (7%) had an obliterated processus and 6 (7%) had a large opening anatomically consistent with hernia. In 1 patient in each group contralateral hydrocele or hernia developed. The number of patients with an obliterated processus or a hernia was too small to draw any statistical conclusions regarding the risk of contralateral recurrence based on intraoperative findings. Similarly while children with a problem contralaterally were younger than the group overall, there was a large overlap and no statistically significant difference was discovered.

DISCUSSION

Historically the risk of contralateral hernia after unilateral pediatric hernia repair has been 5 to 20%.¹⁻⁵ The risk after unilateral hydrocele repair may be expected to be even lower, although to our knowledge only Kemmotsu et al addressed that question specifically.³ They recently reported a series of 1,052 hernia repairs to determine the risk of a contralateral problem, and the overall incidence was 11.6%. While their definition of hydrocele was not clear, they reported a 7.6% risk of a contralateral problem in their 105 patients with hydrocele. Holcomb et al described a series of 518 patients undergoing hydrocele or hernia repair.² They performed laparoscopy through the patent processus vaginalis and detected an open contralateral ring in 40% of cases. This finding has stimulated interest in assessing the contralateral side more aggressively in patients undergoing unilateral hydrocele repair.

However, an open ring does not necessarily predict future hernia or hydrocele. In 1962 Snyder reported an autopsy study in which the rate of patent processus vaginalis without clinical hernia was 20%.⁶ Therefore, an open ring is fairly common in the general population and it does not necessarily predict a clinical problem. Our 7% risk of a contralateral clinical problem supports this finding.

The incidence of a contralateral problem may be somewhat underestimated since the last followup in many patients was by telephone, although physical examination had been normal in all at the postoperative short-term followup visits. Furthermore, although followup in our study was nearly 4 years, one may argue that additional patients would have contralateral recurrence with time and ultimately a high rate may exist. However, despite nearly 4 years of followup the contralateral problem developed less than 1½ years postoperatively. Kemmotsu et al also stated that 80% of recurrences were evident within 2 years, although they did not report the average followup.³ At more than 5 years of followup Surana and Puri observed that all contralateral recurrences developed within 18 months of the initial repair.⁴ Given and Rubin noted 65% of recurrences in their series within 2 years.⁵ McGregor et al described a similar phenomenon in 1980 in their review of 160 hernia repairs.¹ At more than 20 years of followup they detected a 20% contralateral recurrence rate

with two-thirds of the problems developing in year 1 postoperatively. After 2 years of followup the annual incidence of contralateral hernia was no different than that in the general population. Therefore, it seems reasonable to assume that the long-term risk in our patients will not be much greater than 7%.

Despite the low yield it may be argued that contralateral exploration requires little time and is easily accomplished. Therefore, one may conclude that even with a low risk of a future contralateral problem it is reasonable to perform an exploration. However, inguinal exploration causes significant risk. Current conservative estimates of the risks after an inguinal operation are 27% for decreased testicular size, 1 to 2% for testicular atrophy and 0.05% for an entrapped testis.⁷ Vasal injury and the development of sperm agglutinating antibodies are also recognized consequences, although the incidence is difficult to quantify. These risks are probably underestimated in the literature since many testicular and vasal injuries are not apparent until decades after an inguinal operation.

CONCLUSIONS

Given the theoretical risks of contralateral exploration and the relatively low risk of a clinical contralateral problem routine contralateral exploration is probably not warranted in patients with unilateral hydrocele. Furthermore, we did not identify subgroups at sufficient increased risk to warrant contralateral exploration. Others have noted that some risk factors influence the risk of contralateral hernia after unilateral hernia repair, such as patient age and side of the original hernia. Since most hydroceles are not repaired until age 1 year, age is not as important a factor as in cases of hernia. The side of the original hydrocele had some influence, as a patient in whom the hydrocele was originally on the left side had a 15% risk of a contralateral problem. This finding is similar to that after hernia repair in which a contralateral problem is twice as common after repair on the left side.⁴ However, even in cases of left hydrocele we do not consider the risk of contralateral recurrence to be high enough to warrant routine contralateral exploration.

Ed Mascha, Statistical Department, Cleveland Clinic Foundation, performed the statistical analysis.

REFERENCES

1. McGregor, D. B., Halverson, K. and McVay, C. B.: The unilateral pediatric inguinal hernia: should the contralateral side be explored? *J. Ped. Surg.*, **15**: 303, 1980.
2. Holcomb, G. W., III, Morgan, W. M., III and Borck, J. W., III: Laparoscopic evaluation for contralateral patent processus vaginalis: part II. *J. Ped. Surg.*, **31**: 1170, 1996.
3. Kemmotsu, H., Oshima, Y., Joe, K. and Mouri, T.: The features of contralateral manifestations after the repair of unilateral inguinal hernia. *J. Ped. Surg.*, **33**: 1099, 1998.
4. Surana, R. and Puri, P.: Is contralateral exploration necessary in infants with unilateral inguinal hernia? *J. Ped. Surg.*, **28**: 1026, 1993.
5. Given, J. P. and Rubin, S. Z.: Occurrence of contralateral inguinal hernia following unilateral repair in a pediatric hospital. *J. Ped. Surg.*, **24**: 963, 1989.
6. Snyder, W.: *Pediatric Surgery*. Chicago: Year Book, vol. 1, p. 573, 1962.
7. Skoog, S. J. and Conlin, M. J.: Pediatric hernia and hydroceles. The urologist's perspective. *Urol. Clin. N. Amer.*, **22**: 119, 1995.

DISCUSSION

Dr. Jeffrey Stock. It seems that you could come to a different conclusion. Median patient age was 42 months. Three patients had contralateral hydrocele, of whom 2 were younger than 14 months. Can you not also conclude from these data that your patients younger than 2 years should undergo contralateral exploration?

Dr. Jonathan H. Ross. Six contralateral occurrences were evident at ages 5, 13, 14, 15, 40 and 60 months. Given these numbers you cannot make a statistical statement about effective age. I think that for hernia the important times are premature birth and age less than 1 year. Since these are hydrocele cases, hardly any are fixed before age 1 year anyway. Maybe age between 1 and 2 years is different than older than 2 years. I think that we need more numbers to show that.