Laparoscopic Pediatric Orchiectomy

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ABSTRACT

Cryptorchidism is the most frequent anomaly in sexual development in male children. The ideal diagnostic method to investigate patients with nonpalpable testes has not been found to date, but many methods have been described. Between 1983 and 1991, 45 patients 2 to 35 years old underwent laparoscopy as a diagnostic method in investigation of nonpalpable testes, and our first laparoscopic pediatric orchiectomy was performed. Of 45 patients studied, 37 (82%) underwent exploration, and a complete correlation between laparoscopic and operative findings was observed. There were four complications such as subperitoneal or omental emphysema in three patients; however, these conditions did not preclude the complete examination. In one patient, bleeding aroused suspicion of visceral or vascular injury, but laparotomy revealed that the blood came from the abdominal wall. Laparoscopic orchiectomy was indicated in a 5-year-old child evaluated for ambiguous external genitalia. Based on our experience, we may conclude that in 37% of nonpalpable testes, a confirmatory operation is not necessary, and laparoscopic orchiectomy is a minimally invasive technique that should be used in cases in which orchiectomy is indicated.

INTRODUCTION

CRYPTORCHIDISM IS THE MOST FREQUENT anomaly in sexual development, affecting approximately 0.8% of male children. The nonpalpable testes represent approximately 20% of all cases of cryptorchidism. If present, they are situated between the inferior renal pole and the external inguinal ring. If absent, there can be evidence of fetal presence (spermatic vessels, spermatic vessels plus vas deferens, or vas deferens only), or no vascular or ductal structure.

Nonpalpable testes have a higher risk of malignant transformation, infertility, epididymal malformation, and unsuccessful treatment compared with the palpable testes. The ideal diagnostic method to investigate patients with nonpalpable testes has not been found to date, but many methods have been described, including hormonal evaluation, pneumoperitoneography, herniography, ultrasonography, venography and arteriography, CT, magnetic resonance imaging (MRI), exploration, and laparoscopy.

We present our experience with laparoscopy as a diagnostic method in the investigation of patients with a nonpalpable testis and our first laparoscopic orchiectomy in a pediatric patient.

PATIENTS AND METHODS

Between 1983 and 1991, 45 patients 2 to 35 years old underwent laparoscopy following a methodology described elsewhere. The 55 testes were unilateral in 35 patients and bilateral in 10. The criterion established for laparoscopy was testicular absence detected by physical examination with the patient awake and confirmed with the patient under anesthesia.

Of a total of 45 patients, all but two were masculine in phenotype, without hypospadia. There were two cases suggestive of hermaphroditism. Of the 45 patients, 18 had been previously investigated by other physicians, 8 had prior inguinoscopy, 17 had undergone ultrasound examination, 3 had...
undergone CT scanning, 2 had had MRI, and 1 had had a human chorionic gonadotropin test.

Laparoscopy was considered technically successful when a pneumoperitoneum was achieved, the telescopic system was introduced into the cavity, and systematic inspection was completed. Technical failure occurred when any of these steps was not achieved. With the patient under the same anesthetic immediately after the laparoscopic examination, orchietomy, orchiopexy, or exploration was done. Laparoscopic orchietomy was performed in one patient.

RESULTS

Laparoscopy was technically successful in 43 of 45 patients (96%). In two patients, inspection was incomplete because of intestinal adhesions. Of 45 patients studied, 37 (82%) underwent exploration during the same anesthesia. In these patients, there was complete correlation between the laparoscopic and operative findings with respect to testicular presence or absence. We performed 27 orchietomies, 20 orchiopexies, and 8 patients showed anorchia and did not undergo an operation. We found 63% of the tests searched for, all but one sited in the abdomen between the iliac vessels and the internal inguinal ring. A total of 37% of the tests were absent, mostly cases of vanishing testis syndrome according to the concept formulated by Abeyaratne et al. 16

There were four complications. Among the 43 examinations, emphysema occurred in three patients, two subperitoneal and one in the greater omentum. These conditions did not preclude the complete examination. In one patient, bleeding aroused suspicion of a visceral or vascular injury during the puncture of the abdomen, but laparotomy revealed that blood came from the abdominal wall.

Laparoscopic orchietomy was indicated in a 5-year-old child evaluated for ambiguous external genitalia. His initial sex assignment was male. 17 On physical examination, he was found to have perineal hypospadias, a 4-cm long phallic with severe chordee, labioscrotal fusion, and nonpalpable gonads. A buccal smear examination revealed absence of Barr bodies. The plasma electrolytes, urea, creatinine, testosterone, progesterone, estrogen, luteinizing hormone, and follicle-stimulating hormone concentrations were normal. An intravenous urogram was normal. Ultrasound examination of the lower abdominal cavity found a structure compatible with a small uterus.

Laparoscopic examination was performed with the patient under general anesthesia. A pneumoperitoneum was created, and an 11-mm laparoscope (Karl Storz, Germany) was inserted through a minimal umbilical incision. After observation of the abdomen, two 5-mm incisions were made in the right and left inguinal areas, and trocars were inserted into the abdomen. A structure compatible with a uterus with a fallopian tube and a rudimentary ovary on the right side was found. On the left side, there was a cystic formation beside a round structure similar to a rudimentary testis. No epididymis was observed.

The left gonad was grasped with prehensile forceps while two endoloops were placed in the pedicle. The pedicle was incised with endoscopic scissors, and the gonad was removed through one of the trocars. Histologic study revealed a prepuberal testis 0.9 x 0.5 x 0.2 cm with gonadoblastoma nests.

DISCUSSION

Laparoscopic examination has been used for pediatric patients since 1971. Many investigators have presented their experiences with laparoscopy and extended its application to infants only 3 months old. 1

Laparoscopy for nonpalpable testes was first reported by Cortesi et al in 1976, who found two abdominal testes in an 18-year-old boy. Since then, several authors have reported their experiences with laparoscopy in nonpalpable testes. 9-16

The importance of early investigation in nonpalpable testes is well established. 17 If present, the testis should, as a general rule, be brought into the scrotum. If it is absent, a silicone prosthesis can be used for cosmetic and psychological purposes. 18 In anorchic patients, in addition to the early diagnosis of a future sterility problem, one can plan the appropriate hormonal replacement, to avoid the delay in the appearance of primary and secondary sexual characteristics.

Based on our experience we may conclude that in 37% of the nonpalpable testes, a confirmatory operation is not necessary. Laparoscopy has been used mainly as a diagnostic tool to investigate intersex anomalies and nonpalpable testes. Recently, it was incorporated into the urologic therapeutic armamentarium in varicocelectomy, nephrectomy, pelvic lymphadenectomy, to clip spermatic vessels as the first step of a two-stage orchiopexy or microsurgical orchiopexy, in the management of a post-transplant lymphocele or ureteral fistula, 19-23 as discussed elsewhere in this issue. Therefore, the method developed by Kelling in 1901 in Germany has become one of the most important procedures in minimally invasive techniques.

REFERENCES

LAPAROSCOPIC PEDIATRIC ORCHIECTOMY


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