ABSTRACT

Background: Undescended testis should be identified at birth. Inappropriate treatment of complications can be serious, so its evaluation and specialized approach are a priority. Classification in relation to gonadal height provides a general idea of prognosis. Best age for management is still controversial. The conventional approach continues to be open orchidopexy. However, laparoscopy has been gaining ground.

Objective: To evaluate a group of patients presenting with this anomaly who were treated laparoscopically.

Materials and methods: A total of 27 patients with palpable or nonpalpable undescended testes who underwent laparoscopic orchidopexy between January 2002 and September 2003 were evaluated.

Results: Thirty testicular units were brought into the scrotum by means of laparoscopic approach: 13 right testes, 6 left, 3 bilateral, 19 palpable testes and 11 nonpalpable testes. Mean age of the patients was 21.5 months. There was only one case of testicular atrophy. Orchidopexy was achieved in 100% of patients and all but two patients were released 24 hours after surgery.

Conclusions: Laparoscopic orchidopexy for undescended testis management has grown in popularity and is

RESUMEN

Antecedentes: El testículo no descendido (TND) debe identificarse desde el nacimiento. Las complicaciones sin el tratamiento apropiado pueden ser graves, de tal modo que su valoración y abordaje especializado son prioritarios. La clasificación en cuanto a la altura gonadal suministra una aproximación general de su pronóstico. La edad para su manejo es aún controvertida. El abordaje convencional es todavía la orquidopexia abierta, aunque en la actualidad los procedimientos laparoscópicos han ganado terreno.

Objetivo: Evaluar a un grupo de pacientes con esta anomalía tratados de forma laparoscópica.

Material y métodos: Se evaluó a 27 pacientes con testículos no descendidos, palpables o no palpables, sometidos a orquidopexia laparoscópica en el periodo comprendido entre enero de 2002 y septiembre de 2003.

Resultados: Un total de 30 unidades testiculares se hizo descender por abordaje laparoscópico: 13 derechos, seis izquierdos, tres bilaterales, 19 palpables y 11 no palpables. La edad promedio fue de 21.5 meses y un solo sujeto mostró atrofia testicular. En el 100% de los casos se logró la orquidopexia y los pacientes egresaron a las 24 horas tras la intervención.
INTRODUCTION

Cryptorchidism, or undescended testis, is diagnosed at birth or in the first pediatric visits and is the most frequent urogenital malformation in the male. Locating the testis during physical examination is not always simple and requires an experienced pediatrician. If it cannot be palpated the pediatric urologist should be consulted.

This abnormality presents in 3-5% of newborns and in 0-8% of infants after 10 months of age. The majority of undescended testes descend within the first 3 months of age.1

Fifty percent of undescended testis cases involve the right testis, 25% the left and in up to 25% of cases there is bilateral affection.2 When the abnormality is bilateral and associated with hypospadias, it should be considered an emergency and evaluated immediately due to its relation to intersexuality.

The most frequent complications associated with undescended testis are atrophy and testicular torsion, symptomatic and asymptomatic inguinal hernia and the possibility of degeneration into testicular neoplasm.3-5

Undescended testis is classified as palpable and nonpalpable. The palpable group includes testes that are ectopic, retractile, high scrotal, confined to the inguinal canal and located in the deep inguinal ring. The nonpalpable group includes intra-abdominal testis and the condition of anorchidism. Peeping testis can be palpable or nonpalpable and has the peculiarity of migrating back and forth at the internal inguinal ring.

Although controversial, in general terms the recommended age to initiate treatment is after 6 months of age and before 2 years. One year of age is the preferred indicated age.6

Open orchidopexy is the conventional surgical approach in treating palpable undescended testis but it is not exempt from complications7. Among the most serious are testicular atrophy from vascular injury, ischemia from edema and recurrence that presents in 8% of cases.8

Nonpalpable undescended testis management basically includes four surgical techniques: a) open orchidopexy in stages,9 b) Fowler-Stephens orchidopexy in which spermatic vessels are sectioned and the deferential artery is preserved in 1 or 2 stages by open or laparoscopic approach,10 c) testicular auto-transplant with spermatic vessel section and microsurgical anastomosis to the epigastric vessels11 and d) laparoscopic orchidopexy.12

Of the abovementioned techniques, laparoscopic orchidopexy is gaining in popularity, and has an 88-100% cure rate.13 Its advantages are greater dissection of spermatic vessels and vas deferens and the creation of a medial neohiatus that consequently shortens the distance between the abdominal cavity and the scrotum during testicular descent. This technique was originally described for intra-abdominal undescended testis management but it has also been employed in high palpable undescended testis with good results.14

MATERIALS AND METHODS

Twenty-seven patients with a total of 30 undescended testes were treated between January 2002 and September 2003. They had been evaluated by their pediatricians and patient data was confirmed by the authors. Affected side, age at the time of procedure, number of palpable and nonpalpable testes and localization in the inguinal canal that was anatomically divided into thirds were all determined. Laparoscopic orchidopexy was performed on all patients after obtaining informed consent. Time in surgery, number of palpable and nonpalpable testes brought into the scrotum, technical difficulties, hospital stay and postoperative management were evaluated.

Technique: General anesthesia was administered to the patient in the dorsal decubitus position. Asepsia and antisepsia were carried out and the surgeon and assistant were positioned at the head of the patient with the monitor at the patient’s feet. Peritoneal insufflation pressure was...
from 8-10 mmHg and CO₂ flow was from 1-1.5 liters per minute. A 5 mm trocar was placed at the umbilical location with the Hassan technique for a 0° lens of the same diameter. Two lateral 3 mm trocars were then placed at the anterior axillary line plane. The deep inguinal ring was reached through the perineum with an inverted V-shaped incision which permitted lateral issection of the vas deferens and spermatic vessels. The testis was pulled cephalically from its inferior attachment by sectioning the gubernaculum and the spermatic cord and vas deferens were freed at the most cephalic point possible so that there was sufficient space between them allowing the testis to be brought down without tension (Image 1). Finally a fourth 10 mm trocar was introduced into the ipsilateral scrotal sac and the testis was recovered inside the epigastric vessels, through which it was brought into the scrotum and pexed to the scrotal dartos with the standard technique (Image 2).

RESULTS
Twenty-seven patients with 30 undescended testes were treated between January 2002 and September 2003. Patients had initially been evaluated by their pediatricians and diagnosis was clinically confirmed by the surgeon or pediatric urologist. Three patients presented with bilateral undescended testis. Upon scrotal inguinal examination, 19 testes were palpable and 11 were nonpalpable. Of the palpable group, 9 (47.3%) were located in the upper third of the inguinal canal, 4 (21.1%) in the middle third and 6 (31.6%) in the lower third. There were 13 right undescended testes and 6 left. Age at the time of surgery varied from 8 months to 9 years with a mean 21.7 months. All patients underwent laparoscopic orchidopexy with the technique described. Mean time in surgery for both groups was 50 minutes.

In the palpable group all testes were able to be brought into the scrotum laparoscopically except for 1 ectopic testis located above the aponeurosis of the obliquus externus abdominis that required conversion to open orchidopexy. In this group 5 testes (26.3%) were peeping testes and 13 (68.4%) were located in the inguinal canal. Indirect inguinal hernia was identified in 15 cases (78%).

In the nonpalpable group, 8 testes (72.7%) were peeping testes and 3 (27.2%) were located in the inguinal canal. No intra-abdominal testis was found. Three patients presented with epigastric vessel bleeding during scrotal trocar insertion that required the placement of clips on the vessels. One of those patients suffered atrophy due to accidental injury of the spermatic vessels. The other two patients had successful attachment to the scrotal dartos. Six cases were associated with indirect inguinal hernia (40%).

When indirect hernia was found the defect was not closed, but rather the membranes of the processus vaginalis were resected and no recurrence presented in any of the cases.

Mean follow-up time has been 21.5 months for all patients and 29 of the testes operated on maintain good volume and correct scrotal position.

Twenty-five patients were released 24 hours after surgery and 2 patients with a history of bronchial hyperactivity who developed respiratory symptoms were released 48 hours after surgery.

Conventional postoperative analgesics such as acetaminophen in suppositories or drops were administered.
DISCUSSION

High palpable or nonpalpable undescended testis management has always been a great challenge for the surgeon or pediatric urologist. Only ten years ago, patients undergoing standard open techniques ended up requiring orchiectomy because the testis could not be lowered into the scrotum or they had to undergo several procedures to attain final descent.

Cryptorchidism surgical management has undergone important changes over the last 8 years that have significantly improved results and simplified the approach with minimally invasive surgery.

More and more, laparoscopic orchidopexy is being carried out worldwide and is now considered to be the approach of choice in nonpalpable undescended testis treatment and in select cases in high palpable undescended testis.

CONCLUSIONS

Peeping testes were easily lowered through laparoscopy. According to results of the present study, in palpable undescended testis there was a 25% possibility of peeping testis and in nonpalpable testicle this possibility was 72% and therefore laparoscopic approach for both groups is recommended.

In the present study, a lower frequency (40%) of patent peritoneal-vaginal duct associated with nonpalpable undescended testis was found during laparoscopic orchidopexy in relation to other published series. In addition, the hernial defect associated with undescended testis did not need to be closed, as described by Ferro, and indirect hernia was able to be treated simply by resecting the peritoneal vaginal duct membranes.

Laparoscopy is an excellent technique not only for diagnosis but also for treatment of high palpable and nonpalpable undescended testis. It is not limited to nonpalpable and intra-abdominal undescended testis. The technique is easily reproducible for the surgeon or pediatric urologist with experience in laparoscopy. No contraindications have been described and the technique can be used even in underweight patients. The technique does not require more equipment than that used in conventional minimally invasive surgery.

Laparoscopy for the diagnosis and resolution of medical problems in children is also becoming more widely used with clear advantages over conventional surgery. Therefore it is indispensable that all surgeons and pediatric urologists receive training in this field.

BIBLIOGRAPHY