Preoperative Laparoscopy in the Management of the Nonpalpable Testis

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Abstract

The purpose of laparoscopy in the management of the nonpalpable testis is to provide information regarding testicular presence and location to facilitate overall surgical management. Laparoscopy was performed at operation in 20 patients between 14 months to 21 years old (average 63 months), who had 22 nonpalpable testes. Of the testes 13 (59 per cent) were in the inguinal region or just proximal to the inguinal ring, 8 (36 per cent) were in a high intra-abdominal position and 1 (5 per cent) were absent. Anatomical localization of nonpalpable testes facilitated accurate planning of operative repair and the laparoscopy rendered exploration unnecessary in patients with intraabdominal vanishing testes syndrome, and laparoscopic orchiectomy is the treatment for the unilateral intraabdominal testes in patients more than 10 years old.

Key word : Preoperative Laparoscopy, Nonpalpable Testis, Management

Scorer reported the incidence of undescended testes at age 1 year to be 8 per 1,000. Nonpalpable testes account for 9 to 54 per cent of all cases of cryptorchidism, but the incidence is generally accepted to be 20 per cent[1,2]. Inability to determine the location of the nonpalpable testis preoperatively is a major factor in operative failure, i.e. unsuccessful orchiopexy or orchiectomy[3].

Several diagnostic modalities have been used to identify the nonpalpable cryptorchid testis. Ultrasound is noninvasive, but is no more efficacious than careful physical examination by an experienced urologist. Some use computerized tomography, MRI, arteriography or venography. Laparoscopic localization of a nonpalpable testis was first reported by Cortesi et al in 1976. Several investigators have reported the accuracy of laparoscopy in localizing the nonpalpable testis or in diagnosing the vanishing testis syndrome without an abdominal operation[3-5]. Once the clinical status of a

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testis is determined, further operative steps can be performed at the same anesthetic session such as laparoscopic orchiectomy or laparoscopic two-step orchiopexy(2).

MATERIAL AND METHOD

Laparoscopy was performed at operation in 20 patients with 2 cases of bilateral nonpalpable testes between 14 months and 21 years old (average age 63 months).

After general anesthesia, the patient had a final examination. If a testis was not palpated in the groin or scrotum, we proceeded to laparoscopy. The patient's bladder was drained by catheter. A small semilunar skin incision was made just below the rim of the umbilicus. After initial trocar was placed, the pneumoperitoneum was established using CO_2. A Storz laparoscope was introduced into the tense abdomen *via* a trocar. The patient was placed in the trendelenburg position.

With a guiding finger placed externally on the patient's anterior superior iliac spine, the internal ring is easily visualised with laparoscope. Anatomic orientation was facilitated by noting intra-abdominal landmarks, such as medial umbilical ligament, vas deferens, external iliac vessels, inferior epigatric and spermatic vessels. If the vas deferens and spermatic vessels were observed to enter the internal inguinal ring, canalicular testes were detected (Fig. 1). If the spermatic vessels and vas deferens were noted to end blindly, the diagnosis was intraabdominal vanishing testis syndrome. If the testis was identified just proximal to the inguinal canal (Fig. 2) or intraabdominal cavity, orchiectomy or orchiopexy was elected. The average time taken for the procedure was 15 minutes.

RESULTS

In 13 testes (59%) out of 22 testes of undecended testes, vas deferens and spermatic vessels entered into deep inguinal ring (6 testes) or just proximal to the inguinal canal (7 testes) and were successfully treated by orchiopexy. Eight testes (36%) were intraabominal testes, 5 were managed with orchiopexy and 3 by orchiectomy. One of these patients (patient 21 year old) was managed with laparoscopic orchiectomy. One testis (5%) had a blind ending vas deferen and spermatic vessel and surgical exploration was not performed in this case. (Fig. 3)

Comment

Preoperative anatomical localization of nonpalpable testes facilitated accurate planning of operative repair. Several diagnostic modalites have been used to identify the nonpalable testes such as spermatic arteriography, venography, abdominal ultrasound, radionuclide scan, CT scan and magnetic resonance imaging (MRI). In reviewing the literature, the efficacy of ultrasound is primary in localizing testes situated in the inguinal canal and more distally but is not better than a careful physical examination(5,6). The disadvantages of computerized tomography are radiation exposure and limited value in children less than 5 years old who lack an adequate amount of retroperitoneal fat for clear

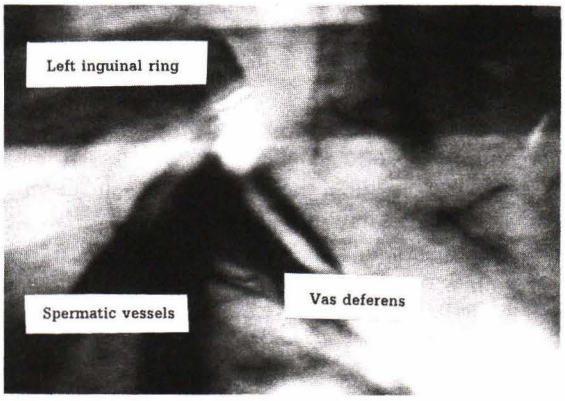

Fig. 1. Vas deferens and spermatic vessels enter the internal inguinal ring "Canalicular testis".

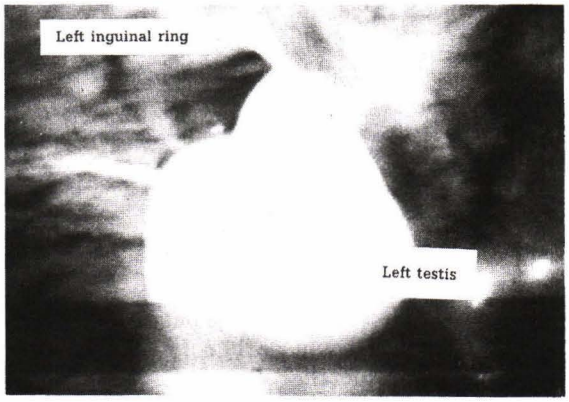

Fig. 2. The testis is just proximal to inguinal canal.

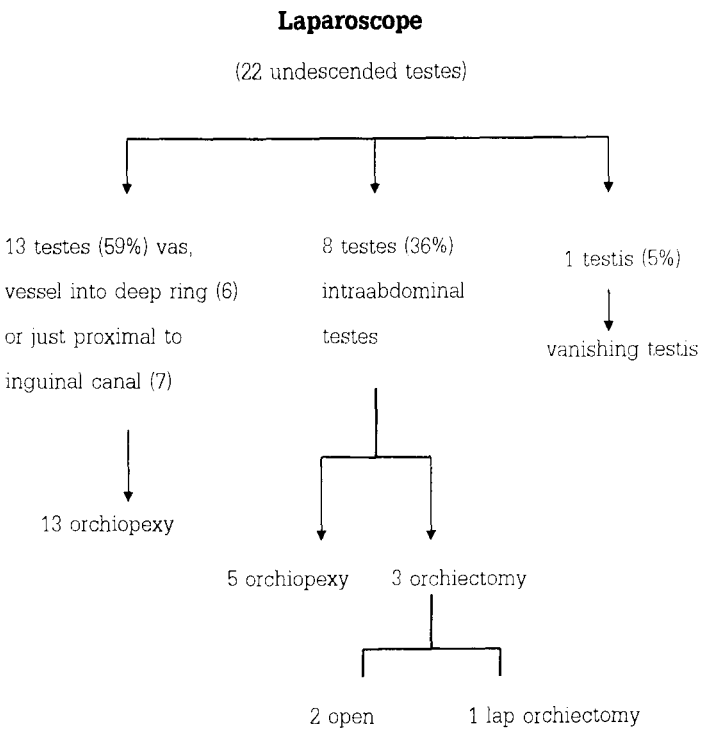

Fig. 3. Results of laparoscopic findings and management.

structural delineation. Arterigraphy and venography are valuable techniques, but they are invasive modalities and need anesthesia[5,6]. Recently MRI has proven helpful in localizing abdominal testes, but it is an expensive procedure, poorly tolerated by younger children because of the prolonged scanning time, and often detection of intra - abdominal testes is difficult[7].

Laparoscopy immediately prior to exploration has been successful in 88 to 100 per cent[5,7] in identify or localizing nonpalpable testes. The laparoscopic findings in nonpalpable testes can be classified into

1) abdominal testes : the testes are laparoscopically visible intra-abdominally proximal to the deep inguinal ring

2) Canalicular testes : the vas deferens and the spermatic vessels are seen to converge at and enter into the deep ring

3) Anorchia : the spermatic vessels and the vas deferens terminate blindly[1,4,6-10].

In the literature there has never been a report of a testis located geographically away from the termination of the gonadal vessels. So laparoscopic observation of the vas and gonadal vessels ending blindly proximal to the deep inguinal ring is convincing enough evidence of anorchia so that no further surgical exploration is necessary in such patients[7].

Laparoscopy was not performed if there was a reliable history of a gonad previously being palpable and patients with prune belly syndrome since bilateral nonpalpable gonads in these patients are invariably intra-abdominal and usually they are associated with a long looped vas deferens[6,11].

Thomas et al presented 2 cases of laparoscopic removal of a unilateral intraabdominal testis in patients more than 10 years old because of the malignant potential of an intra-abdominal testis. Open orchiectomy requires narcotic administration for pain control but laparoscopic orchiectomy has minimal postoperative discomfort and early return to full activity[12].

Bloom presented two-step orchiopexy with pelviscopic clip ligation of the spermatic vessels

with the intent of augmenting vasal collateral blood flow. After intervals in excess of 6 months, vas-based orchiopexy following division of the occluded spermatic vessels was done(2).

Note : CO_2 Insufflation in pediatric laparoscopy should progress at a rate of $\leq$ 1L/min. The insufflation pressure should always be kept below 15 mmHg. Higher pressure, especially in infants, can lead to difficulties with ventilation, impaired venous return, and hypercarbia.

SUMMARY

Laparoscopy is the best diagnostic modality to identify the nonpalpable testis. Anatomical localization of nonpalpable testes facilitated accurate planning of operative repair and the laparoscopy rendered exploration unnecessary in patients with intraabdominal vanishing testes syndrome. Laparoscopic orchiectomy is the treatment for the unilateral intraabdominal testes in patients more than 10 years old.

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การส่องกล้องในช่องท้องก่อนการผ่าตัดในการรักษาผู้ป่วยที่ลูกอัณฑะคลำไม่ได้

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จุดประสงค์ในการใช้กล้องส่องในช่องท้องในการรักษาผู้ป่วยที่คลำลูกอัณฑะไม่ได้ คือการให้ข้อมูลเกี่ยวกับการมีหรือไม่มีลูกอัณฑะด้านนั้น รวมถึงการบอกตำแหน่งของลูกอัณฑะเพื่อช่วยวางแผนในการรักษา

การส่องกล้องในช่องท้อง ทำในผู้ป่วย 20 ราย อายุอยู่ระหว่าง 14 เดือน ถึง 21 ปี เฉลี่ย 63 เดือน ซึ่งมีลูกอัณฑะที่คลำไม่ได้ จำนวน 22 ลูก

ผู้ป่วย 13 ราย คิดเป็นร้อยละ 59 ลูกอัณฑะอยู่บริเวณ inguinal canal หรืออยู่เหนือต่อ inguinal ring เล็กน้อย มีผู้ป่วย 8 ราย คิดเป็นร้อยละ 36 ลูกอัณฑะอยู่ในบริเวณช่องท้อง และ 1 ราย คิดเป็นร้อยละ 5 ไม่พบลูกอัณฑะ

จากการที่รู้ตำแหน่งลูกอัณฑะที่คลำไม่ได้ จะช่วยในการวางแผนการผ่าตัดได้ถูกต้อง รวมถึงการส่องกล้องช่วยลดการผ่าตัดที่ไม่จำเป็นในผู้ป่วยที่เป็น intraabdominal vanishing testes syndrome และการส่องกล้องร่วมกับการเอาลูกอัณฑะออกโดยการส่องกล้อง ก็เป็นการรักษาผู้ป่วยที่มีลูกอัณฑะที่คลำไม่ได้ข้างเดียวและอยู่ในช่องท้อง ในผู้ป่วยที่อายุมากกว่า 10 ปี

คำสำคัญ : การส่องกล้องก่อนผ่าตัด, ลูกอัณฑะที่คลำไม่ได้, การรักษา

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