

# The Role of Laparoscopy in the Localization and Management of Adult Impalpable Testes

Vivek Kumar Vijjan, MS, Vinod Kumar Malik, MS, Prem Narayan Agarwal, MS

## ABSTRACT

**Background:** Very few studies are available that describe the role of laparoscopy in adults with impalpable testes. This study compares laparoscopy with ultrasonography in this subset of patients.

**Methods:** Fourteen adults, having a mean age of 21 years, with 19 undescended testes were evaluated. None of the testes was palpable, preoperative ultrasound localized 7 testes (36.8%), but a change in findings was observed in 3 of these cases (42.8%) on subsequent laparoscopy. On laparoscopy, 18 (94.7%) of the testes were localized as intraabdominal. The remaining patient had a case of true anorchia. Seven patients with unilateral undescended testes underwent laparoscopic orchiectomy, and 2 patients with unilateral undescended testes and all the patients with bilateral undescended testes underwent laparoscopic-assisted orchiopexy. No complication was noted in any of the cases. Hernia, present in 4 patients, was simultaneously repaired laparoscopically.

**Conclusion:** Laparoscopy is a safe and effective modality in the localization and management of adult undescended testes. In adults, orchiectomy with the subsequent reduction in the risk of malignancy is the major issue of concern. Also, the repair of concomitant hernias is desirable. Both of these procedures can be done laparoscopically in the same sitting without the need for inguinal exploration.

**Key Words:** Impalpable testes, Laparoscopy.

## INTRODUCTION

Cryptorchidism affects approximately 1% of male births, and nonpalpable testes represent 20% of all cases of cryptorchidism.<sup>1,2</sup> Most of the patients with undescended testes are identified in childhood and undergo successful treatment, but a proportion of them get neglected and present late. Adulthood presentation, due to ignorance or relative inaccessibility of health care, is not an uncommon occurrence in a country like India.

Laparoscopy has now become the gold standard in the localization and management of impalpable testis in childhood. However, its role in adult impalpable testis remains to be fully evaluated. Since the issues concerned and the aims of management in an adult are different from those in a child, generalizations drawn from studies in infants and children cannot be recommended with similar accuracy.

The present study was undertaken to evaluate the role of laparoscopy in the localization of adult impalpable testes, to compare it with other diagnostic modalities (ultrasonography), and to determine its role in management.

## METHODS

Adults presenting with undescended testes to the surgical outpatients of Lok Nayak Hospital between February 2000 and August 2001 were screened. A clinical examination was performed on them, and those with clinically impalpable testes were included in the study. Fourteen adults with 19 undescended testes were evaluated. The mean age was 21 years (range, 12 to 28). Of these 14 patients, 7 had left undescended testes (50%), 2 had right undescended testes (14.3%), and 4 had bilateral undescended testes (28.7%). One patient had androgen insensitivity syndrome, presenting with ambiguous genitalia.

A preoperative ultrasound examination was performed in all the patients with a view to localize the testes. Thereafter, these patients underwent laparoscopic examination. Laparoscopy was performed with a 30° Karl Storz laparoscope with the patient in a 15° to 20° Trendelenburg position. General anesthesia was used in

Department of Surgery, Lok Nayak Hospital, Delhi, India (all authors).

Address reprint requests to: Vinod Kumar Malik, MS, Professor, Department of Surgery, Room 207A, BL Taneja Block, Maulana Azad Medical College, New Delhi, India 110002. Telephone: 91 11 3232400/3231621 ext. 4448, 3221921-30 ext. 210, Fax: 91 11 23230316, E-mail: vkmalik@w3c.com

© 2004 by JSLS, *Journal of the Society of Laparoendoscopic Surgeons*. Published by the Society of Laparoendoscopic Surgeons, Inc.

**Table 1.**  
Results of Laparoscopic Examination and Subsequent Management

	No. of Cases	Localization			Orchiectomy	Orchiopexy	Hernial Sac
		Clinically	Ultrasonography	Laparoscopically			
Right Undescended Testis (n=2)	2	0	0	2	1	1	1
Left Undescended Testis (n=7)	7	0	0	7	6	1	3
Bilateral Undescended Testis (n=8)	4	0	7*	6	4	4	0
Ambiguous Genitalia (n=2)	1	0	0	2	2	0	0

\*The site of testis on laparoscopy was found to be different from that of ultrasonography in 3 cases.

all patients. A 3-port technique was used, a 10-mm umbilical port for the camera, and a 10-mm port in the right or left iliac fossa, depending on the site of the involved testis, was used as the working port. Another port (5 mm) was inserted in the suprapubic region for grasping the testis during orchiectomy or orchiopexy.

The testicular vessels entering the pelvis and the vas deferens coming out of the pelvis meet in an inverted V-shaped manner. This inverted V was identified on the normal side in order to become familiar with the anatomy of the region. Attention was then focused on the affected side where the findings could be of canalicular testis (identified by normal cord structures entering the internal ring), abdominal testis (testis identified in the abdomen), or blind-ending vessels (no visualization of testis). Hernia present in a subset of the patients was also visualized simultaneously.

**RESULTS**

Laparoscopy was technically successful in all the patients, and 94.7% of the undescended testes were localized. No major complications were observed. The duration of the procedure was 30 to 45 minutes. The results are summarized in **Table 1**.

The testes were localized as intraabdominal in 18 patients (94.7%) and could not be localized in one patient (blind

ending vessels seen). In this patient, subsequent exploration also failed to reveal the testis. The case was therefore considered to be true anorchia. Thus, laparoscopy was successful in all the patients.

Preoperative ultrasound could localize only 7 of the 19 testes (36.8%). Of these 7 testes, a change in finding was observed in 3 cases (42.8%) in which an intracanalicular testis turned out to be intraabdominal, situated at the deep ring, on laparoscopic examination. The comparison of ultrasound and laparoscopy is shown in **Table 2**.

Seven patients with unilateral undescended testes underwent laparoscopic orchidectomy, and laparoscopic-assisted orchiopexy was carried out in the remaining 2 patients. Patients with bilateral undescended testis underwent laparoscopic orchidectomy on one side and laparoscopic-assisted orchiopexy on the other. The testis that was bigger in size was mobilized laparoscopically and delivered by an inguinal incision.

The patient with ambiguous genitalia was phenotypically female (but karyotype 46XY). Preoperative ultrasound failed to localize the gonad. On laparoscopy, bilateral atrophic testes were identified at the deep ring, and bilateral orchidectomy was performed.

A hernial sac was visualized in 3 patients with left, undescended testes and in one patient with right undescend-

**Table 2.**  
Comparison of Laparoscopy With Ultrasonography

Site	Ultrasonography	Laparoscopy
Intracanalicular	3	0
Intraabdominal	4	18
Not localized	12	1

ed testis. The hernia was managed in the same sitting by using laparoscopic transabdominal preperitoneal (TAPP) repair.

**DISCUSSION**

The evaluation and treatment of nonpalpable testes can be difficult as evidenced by the multiple modalities for evaluation and proposed treatment options. Several diagnostic modalities have been used for the localization of nonpalpable cryptorchid testes. Ultrasound, computerized tomography, arteriography, and magnetic resonance imaging have been used with variable success.<sup>3,4,5</sup> Two deficiencies are common to all these investigations<sup>6</sup>: (1) they are most successful in boys older than 5 years; (2) none is completely reliable in locating a testicle or proving its absence.

Laparoscopy is gradually gaining acceptance in the diagnostic workup and management of undescended testes. Three potential laparoscopic findings with an impalpable testes exist<sup>7</sup>: (1) absence of testes above the internal ring diagnosed by blind-ending vas and spermatic vessels (anorchia); (2) normal or a somewhat atretic spermatic cord with structures going into the internal inguinal ring (intracanalicular); (3) the presence of intraabdominal testes. Of these 3 possibilities, the 2 in which laparoscopy is advantageous are in diagnosing blind-ending cord structures above the internal ring and in diagnosing intraabdominal testes. In the first instance, further exploration is unnecessary. In the second instance, laparoscopic surgery could be carried out in the same sitting.

Although laparoscopic findings in an adult are the same, the further course of management is somewhat different. Whereas in a child the main aim is to bring down the undescended gonad into the scrotum, orchiopexy has hardly a role to play in adults. Two aims of management in an adult are to remove the high-lying gonad, which is

functionally useless but may subsequently act as a site of malignancy, and to repair the hernial defect frequently associated with it. For these reasons, the role of laparoscopy is even more pronounced in adults. The undescended gonad can easily be removed laparoscopically obviating the need for a long inguinal incision. Moreover, if orchiopexy needs to be done, especially in cases of bilateral undescended testes, the high-lying testis can be mobilized laparoscopically and thereafter delivered by a small inguinal incision into the scrotum.

A hernial sac is reported to be present in 20% to 90% of the cases of undescended testes.<sup>8,9</sup> In our series, 4 of 12 patients had a coexistent hernia. In all the cases, the repair was achieved laparoscopically.

In our pilot series, laparoscopy was successful in localizing the testis or proving its absence in all the patients. All these testes were managed laparoscopically, without any complications. Similar rates of 90% to 95% have been reported in other series as well,<sup>10,11</sup> but the patients were children and teenagers. This study goes a step further in establishing the role of laparoscopy, not only in diagnosis but also in management of undescended testes, especially in adults.

**References:**

1. John Redcliffe Hospital Cryptorchidism Study Group. Cryptorchidism: a prospective study of 7500 consecutive male births. 1984-8. *Arch Dis Child.* 1992;67:892-899.
2. Moul JDW, Belman AB. Review of surgical treatment of undescended testes with emphasis on anatomical position. *J Urol.* 1988;140:125-128
3. Madrazo BL, Klugo RC, Parks JA, Diloreto R. Ultrasonographic demonstration of undescended testes. *Radiology.* 1979;133:181-183.
4. Khademi M, Seebode JJ, Falla A. Selective spermatic arteriography for localization of an impalpable undescended testis.

*Radiology*. 1980;136:627-634.

5. Fritzsche PJ, Hricak H, Kogan BA, Winkler ML, Tanagho EA. Undescended testes: value of MR imaging. *Radiology*. 1987;164:169-173.

6. Hinman F. Survey: localization and operation for nonpalpable testes. *Urology*. 1987;30:193-198.

7. Diamond DA, Caldamone AA. The value of laparoscopy for 106 impalpable testes relative to clinical presentation. *J Urol*. 1992;148:632-634.

8. Davenport M. ABC of general pediatric surgery. Inguinal hernia, hydrocele and the undescended testis. *Br Med J*. 1996;312(7030):564-567.

9. Elder JS. Epididymal anomalies associated with hydrocele/hernia and cryptorchidism: Implications regarding testicular descent. *J Urol*. 1992;148:624-626.

10. Tennenbaum SY, Lerner SE, McAleer IM, Packer MG, Sxherz HC, Kaplan GW. Preoperative laparoscopic localization of the nonpalpable testes: a critical analysis of a 10-year experience. *J Urol*. 1994;151:732-734.

11. Moore RG, Peters CA, Bauer SB, Mandell J, Retik AB. Laparoscopic evaluation of the nonpalpable testis: a prospective assessment of accuracy. *J Urol*. 1994;151:728-731.