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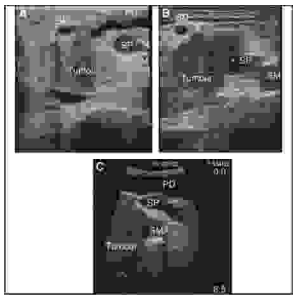
ULTRASOUND, CT-SCAN, AND LAPAROSCOPY;

DIAGNOSTIC OBSERVATIONS ON NON-PALPABLE TESTIS



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ABSTRACT... mzubaira@hotmail.com. **Objective:** To evaluate the comparative diagnostic efficacy of Ultrasound, CT-Scan, and Laparoscopy in the diagnosis of non-palpable undescended testes in pediatric patients. **Design:** Comparative study. **Setting:** Surgical and pediatric surgical department of B V Hospital (QAMC) Bahawalpur and Allied Hospital Faisalabad. **Period:** From April 2006 to April 2007. **Materials & Method:** A total forty boys with non palpable testis were subjected to Ultrasound, CT-Scan and diagnostic laparoscopy in a period of one year. The patients above 12 years and with cardiovascular anomalies were excluded from the study. Laparoscopy was performed under general anesthesia and findings were compared with Ultrasound and CT-Scan. Sensitivity and specificity of each were calculated. **Results:** Diagnostic accuracy of Ultrasound was 25%, CT-Scan was 64% and Laparoscopy was 100%. Sensitivity was found to be 20%, 63% and 100% and specificity was 10%. 50% and 100% for Ultrasound, CT-Scan and Laparoscopy, respectively. **Conclusion:** Diagnostic laparoscopy is far more superior as compared to Ultrasound and CT-Scan in the diagnosis of non palpable testis.

Key words: Non-palpable testis, CT-Scan, Ultrasound, Laparoscopy

INTRODUCTION

Incidence of cryptorchidism is about 0.8 % to 1.8 % at the age of one year[1] and of these 20-27 % cases, testis are non-palpable[2,3]. A non-palpable testis is defined as a testis not palpated on physical examination, even with the examination under the anesthesia[9]. The non palpable testis may either be absent, intra abdominal, or present in the inguinal canal. There is an increased risk of infertility, epididymal malformation and malignant transformation in undescended testis[5]. Various diagnostic tools like Ultrasound, CT-Scan, MRI, testicular arteriography, venography, radionucleoid scan, provocative hormonal test has been used with varying levels of success in the diagnosis of non palpable

testis[6,7]. The promising results of diagnostic laparoscopy in the diagnosis of non palpable testis documented in studies from all over the world, led us to design the present study to compare its efficacy with ultrasound and CT-Scan in two teaching hospitals of Pakistan.

MATERIAL & METHODS

A total number of forty patients with non palpable testis were subjected to ultrasound, CT-Scan and diagnostic laparoscopy in a period of one year (April 2006-April 2007) at the departments of pediatric surgery at Bahawal-Victoria Hospital QMC, Bahawalpur and Allied Hospital, PMC Faisalabad. Histories of the patient were recorded on the predesigned proforma and thorough physical examination of each patient was done under general anesthesia of each patient for final diagnosis of non palpable undescended testis. Ultrasound abdomen, CT-scan abdomen, and diagnostic laparoscopy were performed in all cases. CT-Scan abdomen was preformed under sedation in non-cooperative boys. Diagnostic laparoscopy was performed under general anesthesia and prior consent was taken from the parents.

Study Design: Comparative study
Inclusion criteria: All patients with non-palpable testis
Exclusion criteria: Patients above 12 year of age. Patients with cardiovascular anomalies and not fit for laparoscopic surgery.

Diagnostic laparoscopy was done in trendelenberg position and 5mm trocar was introduced through supraumblical incision by Harson technique. The peritoneal cavity was inflated with CO_2 to maximum of 10 mm Hg and then laparoscope was introduced. Various abdominal landmarks were identified. Following aspects were included in the diagnostic criteria:

* Normal vessels along with vas deference entering the internal ring.
* Blind ending vas deference as well as blinding spermatic vessels diagnostic of vanishing testes.
* Absent testis (no vasdeference or vessels identified)
* Intra-abdominal testis

The findings of laparoscopy were compared with Ultrasound and CT-Scan and sensitivity and specificity were calculated. Statistical analysis was done on SPSS ver10.

RESULTS

A total number of 40 patients were studied over a period of 1 year (April 2005-April 2006). Median age recorded was 4 years (9 month -12 years). Right testis was non palpable in 18(45 %) cases, Left in 14(35 %) and 8(20%) for both testis. Ultrasound detected 18 testis (42%) out of 40 patients. All of these were present in the inguinal canal. Eight of these were localized incorrectly as confirmed by operative findings therefore, the diagnostic agreement of Ultrasonography was only in 10 cases (25%) with Laparoscopy. On CT-Scan of abdomen 26 out of 40(65%) testis were localized, out of these, 14 testis were present intra-abdominally and remaining 11 were in the inguinal canal. One testis was incorrectly localized so accuracy of CT-Scan was found in 25(64%) cases. Laparoscopy localized all the 40 patients correctly which were later confirmed by operative findings.

Table-I. Sites of testis found on diagnostic laparoscopy

Site	No of pts (n=40)
Intra abdominal	20
Intra canalicular	12
Internal ring	07
Atrophic	01

Table-II. Sensitivity and specificity of ultrasound, CT Scan and diagnostic laparoscopy

Technique	Sensitivity	Specificity
Ultrasound	20%	10%
CT Scan	63%	50%
Diagnostic laparoscopy	100%	100%

DISCUSSION

Cryptorchidism is a common finding in pediatric population. The incidence varies from 21% in preterm to 4 % in the term boys[8]. Most of the undescended testes are palpable. Various diagnostic techniques are being used to locate the non palpable testis. Little work has been done regarding the comparative diagnostic efficacy of these techniques in Pakistan in the diagnosis of non palpable undescended testis.

An overall analysis of our results showed that Ultrasound, which is considered to be least invasive and inexpensive tool, was useful to locate testis in only 10 cases accurately. None of the intra-abdominal testis was identified by ultrasound. The overall efficacy of ultrasound was 16.6%. Elder and Hrebinko in their study were able to locate 12.5 % cases with ultrasound[7,9]. Mardrango et. al. were able to locate the testis in the inguinal canal but were unsuccessful in finding the intra-abdominal testis with the help of Ultrasound[10].

In present study, CT-Scan yielded better results than ultrasound. Non palpable testis were found in 64 % case. Herbinko et al. in his study reported 15% false negative results with CT-Scan[7]. CT-Scan has the drawback of radiation exposure as well as it lacks optimum sensitivity and specificity required for accurate diagnosis of testicular atrophy and agenesis[11].

Laparoscopy was introduced by Corteri[12] as diagnostic modality in cases of cryptorchidism. Laparoscopy gained wide acceptance among pediatric surgeons after first published series by Scott[13] on the diagnostic role of laparoscopy in undescended testis. Before the advent of laparoscopy, laparotomy or extra-peritoneal exploration had to be performed if testis could not be found on groin exploration. Laparoscopy provides exact information about the presence, position and size of non palpable testis and relative length of Vas deference and gonadal vessels can also assessed. Laparoscopy also has advantage of being able to carry out therapeutic procedure with minimal invasion[14].

CONCLUSION

Diagnostic laparoscopy is far more superior as compared to Ultrasound and CT-Scan in the diagnosis of non palpable testis. Laparoscopy is safe, accurate and less invasive. It also has the advantage to carry definite operative procedure in the same setting.

REFERENCES

1. Schneck FX, Bellinger MF. **Abnormalities of the testis and scrotum and the surgical management.** In Walsh PC, Retik AB, Vanghan ED, Wein AJ Eds. Compbells Urology, 8th edition Philadelphia, WB Sanders Co. 2002; 2353-2394.

2. Espotio C, Damiano R, Gonzlaez Sabin MA, Savanelli A, Centonze A, Settini A, Sacco R. **Laparoscopy-assisted orchidopexy: an ideal treatment for children with intra-abdominal testis.** J Endourol. 2002; 16:659-62

3. Godbole PP, Najmaldon AS. **Laparoscopic orchidopexy in children.** J Endourol. 2001; 15:251-253

4. Poenaru D. **Laparoscopic management of the non palpable abdominal testis.** Urology. 1993; 42:574-8

5. Castilho LN. **Laparoscopy for the non palpable testis: How to interpret the endoscopic findings.** J Urol. 1990; 144:1215-8

6. Perovic S and Janic N. **Laparoscopy in diagnosis of the impalpable testis.** Br J Urol. 1994; 73:310-313

7. Herbinko R. Belling MR. **The limited role of imaging techniques in imaging children with undescended testis.** J Urol. 1993; 150:458-60

8. Godbole PP, Najmaldin AS. **Laparoscopic orhidopexy in children.** J Endourol. 2001;15:251-256.

9. Elder Js. **Ultrasonography is unnecessary in evaluating boys with a non palpable testis.** Pdeiati Surg. 2002; 110:748-51.

10. Mardrago, BL, Khigo RC, Parks JA, Diloreto R. **Ultrasonographic demonstration of undescended testis.** Radiol. 1979; 133: 181-183

11. Frush DP, Sheldon CA. **Diagnostic imaging for pediatric scrotal disorders.** Radio Graphics 1998; 18:967-985

12. Cortesi N, Ferrari P, Zambarda E, Manwnti A, Baldini A, Morano F. **Diagnosis of bilateral abdominal crytorchidism by laparoscopy.** Endoscopy. 1976; 8:33

13. Scot JES. **Laparoscopy as an aid in the diagnosis and**

management of the impalpable testis. J Urol. 1982; 17:14-16.

14. Lima M, Bertozzi M, Ruggeri G. Domini M, Libri M, Pelasig Landuzzi V, Messina P, **The non palpable testis: an expression of 132 consective video laparoscopic exploration in 6 yrs.** Pediatr. Med Chir, 2002; 24: 37-40

THE BEST WAY TO CHEER YOURSELF UP IS TO TRY TO CHEER SOMEBODY ELSE UP

Mark Twain