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Comparison of imaging and laparoscopy in diagnosis of non-palpable undescended testes.

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Abstract

Objective: To assess the accuracy of ultrasound and MRI in comparison with laparoscopy in the detection of non-palpable undescended testes.
Patients and Methods: 42 patients with non-palpable undescended testis were submitted to US, MRI and laparoscopy from October 2014 to October 2020 in the urology department of Al-Sader Medical City, Najaf.
Laparoscopic findings were compared with US and MRI results.
Results: Sensitivity was 60%, 70% and 100% and specificity was 30%, 50% and 100% for US, MRI and laparoscopy, respectively.
Conclusion: Laparoscopy is more superior to US and MRI in the detection of non-palpable undescended testis.

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Keywords: Undescended testis, US, MRI, Laparoscopy.

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Introduction

Cryptorchidism is common congenital anomalies affecting male genitalia, it occurred in 1% to 4% of full-term and 1% to 45% of premature infant, the incidence decreases to about 1% at 1 year of age [1,2].

About 80% of cases are palpable and 70% in one side; more common in right [3].

Non-palpable testes which cannot be identify by clinical examination is either intra-abdominal, absent (vanishing), atrophic, or missed on physical examination [4].

The etiology of cryptorchidism is multifactorial. About 25% of cases had a positive family [5].

A normal hypothalamic-pituitary-gonadal axis is an important for descent of the testes [6].

Disease accompany with reduce intra-abdominal pressure like prune belly syndrome, omphalocele, and gastroschisis increased risk of undescended testes [7,8].

The accuracy of imaging testing for detection of undescended testis is about 40% [9]. The first diagnostic laparoscopy for impalpable testes in 1976 [10].

Aim of the study

To assess accuracy of ultrasound and MRI in comparison with laparoscopy in detection of non-palpable undescended testes.

Patients and Methods

Our study enrolled 42 patients with 49 non-palpable undescended testes from October 2014 to October 2020 in the Urology-Department of Al-Sader Medical City, Najaf. The age of those patients ranges from 1 year to 12 years (mean 4.2 years). They underwent detailed clinical examination, ultrasound and MRI. All those patients with non-palpable undescended testes underwent laparoscopy.

Laparoscopic technique

Preoperative investigations and informed consents were taken from patients and their relative. The patient was placed in supine position under the effect of general anaesthesia with endotracheal tube, with urethral Foley's catheter inserted to empty the bladder, and CO_2 insufflation was done to create a pneumoperitoneum by Vereesneedle at flow rate of 8-10 L/min, and pressure of 8-10 mmHg. Camera port was inserted through a small umbilical incision.

The following features were noted:Internal ring, vessels and vas status; presence of testis; its size and position.

Two other ports were put for processes like laparoscopic orchiopexy or orchiectomy.

Results

Fouty two patients with 49 non-palpable undescended testes. 20 cases in right side, 15 cases in left one and 7 cases were bilateral. U/S and MRI results were compared with laparoscopic findings (Tables 1 and 2). In five non-palpable

testes (10.2%), Vas and testicular vessels passing the internal ring, after an inguinal exploration, orchiopexy was carry out in three testes and orchiectomy in two testes, because it was extremely atrophied.

Blind-ending testicular vessels were found in 8 testes (16.4%) and these cases were considered as vanishing testes.

Thirty-six testes (73.4%) were found intra-abdominally; where orchiopexy done in 31 testes and orchiectomy in 5 testes because they were atrophied.

Sensitivity was 60%, 70% and 100% and specificity was 30%, 50% and 100% for Ultrasound, MRI and Laparoscopy respectively (Table 3).

Side	No. of patients	%
Right	20	47.6
Left	15	35.7
Bilateral	7	16.7

Table 1. Side of non-palpable testes by physical examination.

Site	No. of Testes	%
Intra-abdominal testes	36	73.4
Vas and vessels entering the internal ring.	5	10.2
Intra-abdominal blindly ending vessels. (vanish testis)	8	16.4

Table 2: Laparascopic finding of non-palpable undescended tests.

Discussion

Cryptorchidism is common congenital anomalies. About 20% of cases are clinically non-palpable [3].

The goal of operation for non-palpable undescended testis is to detect testis and guide it to the scrotum when possible, to preserve its function and early detection in case of malignancy [11,12].

Many imaging tests have been used to diagnose non palpable testes like U/S, magnetic resonance imaging and venography but none of these imaging can detect the actual position of the testis accurately [13].

Technique	Sensitivity	Specificity
US	60%	30%
MRI	70%	50%
Laparoscopy	100%	100%

Table 3. Sensitivity, specificity and accuracy of US, MRI and laparoscopy.

Diagnostic laparoscopy for the non-palpable testis first introduced by Cortesi et al. [10] and Scott et al. first one used it in paediatrics [14].

Laparoscopy has diagnostic and therapeutic benefit like laparoscopic orchidopexy or orchidectomy [15].

Kanwal et al. found that the sensitivity was 20%, 63% and 100% and specificity was 10%, 50% and 100% for ultrasound, CT-Scan and laparoscopy, respectively [16]. While Shah et al. demonstrated that the sensitivity was 60% and 55% of ultrasound and MRI, respectively [17].

In our study, the sensitivity of ultrasound was 60% and MRI was 70% while for laparoscopy was 100%. We found that laparoscopy is highly accurate in identify of non-palpable undescended testes. Orchiectomy and orchiopexy were done laparoscopically for intra-abdominal testes.

Conclusion

Laparoscopy is more accurate than image in the detection of non-palpable undescended testis. Laparoscopic Orchiectomy or orchiopexy can be performed.

References

1. Tsan JYU, Kenneth SHU, Kung FT, et al. Use of laparoscopy in intersexpatient. J Urol 1995; 154(3): 1193-1196.
2. Sijstermans K, Hack WW, Meijer RW, et al. The frequency of undescended testis from birth to adulthood: a review. Int J Androl 2008; 31(1): 1-11.
3. Schneck FX, Bellinger MF, Walsh RAB, et al. Abnormalities of the testes and scrotum and their surgical management. (9th edn). 2007; 3761-3787.
4. Gatti JM, Ostlie DJ. The use of laparoscopy in the management of nonpalpable undescended testes. Curr Opin Pediatr 2007; 19(3):349-353.
5. Elert A, Jahn K, Heidenreich A, et al. The familial undescended testis. Klin Pediatr 2003; 215(1): 40-45.
6. Toppari J, Kaleva M. Maldescendus testis. Horm Res 1999; 51(6):261-269.
7. Levard G, Laberge JM. The fate of undescended testes in patients with gastroschisis. Eur J Pediatr Surg 1997; 7(3): 163-165.
8. Koivusalo A, Taskinen S, Rintala RJ. Cryptorchidism in boys with congenital abdominal wall defects. Pediatr Surg Int 1998; 13(2-3):143-145.
9. Hrebinko RL, Bellinger MF. The limited role of imaging techniques in managing children with undescended testes. J Urol 1993; 150:458-460.
10. Cortesi N, Ferrari P, Zambarda E, et al. Diagnosis of bilateral abdominal cryptorchidism by laparoscopy. Endoscopy 1976; 8(1):33-34.
11. Rosito NC, Koff WJ, Silva da Oliveira TL, et al. Volumetric and histological findings in intra-abdominal testes before and after division of spermatic vessels. J Urol 2004; 171(6 Pt 1): 2430-2433.

12. Kucheria R, Sahai A, Sami TA, et al. Laparoscopic management of cryptorchidism in adults. Eur Urol 2005; 48:453-457.
13. Siemer S, Humke U, Uder M, et al. Diagnosis of nonpalpable testes in childhood: Comparison of magnetic resonance imaging and laparoscopy in a prospective study. Eur J Pediatr Surg 2000; 10(2): 114-8.
14. Scott JE. Laparoscopy as an aid in diagnosis and management of the impalpable testis. J Pediatr Surg 1982; 17(1): 14-16.
15. Rodriguez A, UndaFreire A, Ruiz Orpez A, et al. Diagnostic and therapeutic laparoscopy for nonpalpable testis. Surg Endosc 2003; 17(11):1756-1758.
16. Kanwal S, Mehmood S, Zubair M, et al. Ultrasound, CT-Scan, and laparoscopy; diagnostic observations on non-palpable testis professional. Med J Mar 2008; 15(1): 171-174.
17. Shah A. Impalpable testes–is imaging really helpful? Indian Pediatrics 2006; 43(8):720-723.

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