Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/sy4kjf20

LAPAROSCOPIC ORCHIOPEXY FOR INTRA-ABDOMINAL TESTES: OUR EXPERIENCE

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Introduction

Undescended testis or cryptorchidism is the absence of one or both testes in normal scrotal position and during initial clinical evaluation may refer to palpable or non palpable testes, which are either cryptorchid or absent. Undescended testis is one of the most common congenital anomalies, occurring in 1% to 9% of full- term and 1% to 45% of preterm new born males'. The exact etiology is still unclear. Some Predisposing factors: as low birth weight, short gestational period, low intra-abdominal pressure, chromosomal anomalies, and hormonal factors[2].

Syndromes associated with UDT includes Androgen biosynthesis defects[3], Androgen insensitivity, Leydig cell ageneis, Gonadotropin deficiency disorders, Klinefelter syndromes, Down syndrome,All cases of classical prune belly, Spigelian hernia, cerebral palsy, omphalocele, gastroschisis, PUV. Complications of Undescended testis are reduced fertility, Torsion, Trauma, Testicular tumor[5], Epididymo-orchitis, Inguinal hernia.

In large clinical series, the majority (75% to 80%) of undescended testes are palpable and 60% to 70% are unilateral: Approximately 20% of UT cases are non-palpable and non-palpable testicles (NPT) may be intraabdominal, canalicular, atrophic, or absent. Inguinoscrotal ultrasonography and magnetic resonance imaging (MRI) are not usually helpful and are not recommended in the evaluation and management of a nonpalpable testis[6]. Laparoscopy has gradually become the gold standard for localization (with 99% sensitivity) and eventual treatment of NPT when the testicle is still nonpalpable under general anesthesia[7].

MATERIALS AND METHODS

We retrospectively analysed the data of 24 patients diagnosed with intra- abdominal testis between September 2020 to January 2023. Non-palpable testes were imaged by USG ± MRI[8]. All patients were re-examined under general anaesthesia to confirm that the testes were not palpable. Pneumoperitoneum was created by inserting a 6 mm port supra umblically using open technique followed by two 6 mm ports[9]. We tried to identify the testes, testicular vessels, vas deferens and whether the deep inguinal rings were open or closed. Laparoscopic findings were classified according to location of these structures and used to determine subsequent management[10]. In none of the cases testis was absent.

A "high" position of the testis was defined as being 2 cm above the deep inguinal ring: Orchiopexy for these patients should be a two-stage Fowler- Stephens procedure[11]. A "low" intra-abdominal testis was usually managed by one stage laparoscopic orchiopexy. Orchidectomy was performed for an atrophic testis accompanied by a contra lateral normal testis. All patients were routinely followed up at 3 month and 6 month in our outpatient clinic. A "successful" procedure was defined as a testis palpable in the scrotum and of similar or increased size Factors evaluated included patient age at operation, side of the impalpable testis, clinical and laparoscopic findings, operative intervention and outcomes.

RESULTS

We analysed 24 patients, (4 with bilateral, 15 right, 5 left). Of 28 testes, 25 were treated with primary laparoscopic orchiopexy (PLO) sparing the internal spermatic vessel and vas deferens. Of 2 cases converted to open exploration because of injury to branch of inferior epigastric vessel in one case, injury to unnamed branch of external iliac vessel in another case. Of 1 patient diagnosed with inguinal testis so spermatic vessel and vas deference were mobilised and open inguinal orchiopexy done. one testis located very high in right iliac fossa and the patient did not give consent for orchidectomy or two stage surgery so the procedure was abandoned. Outcome was 92.3% relative to intra- operative laparoscopic findings. Testicular viability of lap, orchiopexed testis 100% at 1 month, at 3 month and at 6 month. 92 % testes were located in lower scrotum and 8% upper scrotum at 1 month. 87.5% testes were located in lower scrotum at 3 and at 6 month. 12.5% testis located in upper scrotum at 3 and at 6 month. Total success rate of our study was 93%.

FINDINGS	Associated anomalies	No. of testis	Procedure
Type 1: Testis (<2cm proximal from internal inguinal ring)	Scrotal hypospadias in one case	27	Laparoscopic orchiopexy
Type 2: Very high in Rt iliac fossa (solitary testis)	Absent prostate & Rt seminal vesicle. Rt atrophic kidney	01	Diagnostic laparoscopy

Table 2. Patient characteristics

No. of Patients	24
No. of intra-abdominal tests	28
Mean age	3.2 yr.
Mean follow up	3.3 month

Table No. 3

Laterality of testis	No. of testis
Right	15
Left	05
Bilateral	08

Table No. 4 Outcome relative to intra-operative laparoscopic findings

Findings	Success no.	Success%	Complication
Type 1	24/26	92.30	1. Injury to unnamed branch of external iliac vessel in one case. 2. Inferior epigastric injury in one case.

Table No. 5 Testicular vaibility of laparoscopic orchiopexed testis

Follow Up	Type-1	Type-2
At 1 month	(24/24)100%	Procedure was deferred
At 3 month	(24/24)100%	
At 6 month	(24/24)100%	

Table No. 6 Location of orchiopexed testis on follow up:

Type 1 testis:

Follow up	Lower Scrotum	Upper Scrotum
At 1 month	22	02
At 3 month	21	03
AT 6 month	21	03

TABLE NO. 7 Total successrate or orchiopexy in our study and previous studies.

Study	Number of testes	Success rate
Krisch[12] et al.1998	33	97%
Dhanani[13] et al. 2004	28	100%
Tariq o. Abbas[14] 2012	100	63.3%
Our Study 2022	28	93%

DISCUSSION

Management of boys with palpable testes has been standardized, there are no formal guidelines for the management of boys with non palpable testes[15]. Laparoscopy is currently the most reliable diagnostic modality in the management of non-palpable testes. It clearly shows the anatomy and provid visual information upon which a definitive decision can be based[16].

Three main laparoscopic findings are possible: Intraabdominal testis, observed in 40% of patients. Intra-abdominal blind-ending cord structures, observed in 15%. Cord structures entering the internal inguinal ring, observed in 45%. Although the right side is more frequently in undescended testes (45%) in comparison to left side (35%), we have found in our study that 71% of the patients with unilateral non palpable, 52% in the right side testes, while 19% were in the left side.

If no testis can be visualized or the vas or vessels end blindly before the ring. thorough laparoscopic examination should be performed, especially since gubernacular blood vessels can be mistaken for blind-ending spermatic vessels[17]. If the blindending vessels are not accompanied by anassociated vas deferens, an ectopic testis should be suspected[18].

Despite 15 years of international research on the topic, there are no guideline on the management of boys with non-palpable testes[15]. If an intra-abdominal testis is normotrophic, the optimal method of performing an orchidopexy must be chosen[19]. For example, if the testis is located at the internal ring without looping of the vas, laparoscopic orchiopexy without division of the spermatic vessels may be performed but the testis may not reach the bottom of the scrotum[20]. Routine open inguinal orchiopexies has yielded good results as shown by testiculars size and position, in patients with palpable testes, in which the vas and vessels enter in the internal ring. In patients with type 1 however, where the testes are low or at the internal ring but the vas does not loop distally, we routinely test the length of the spermatic cord to determine the potential for successful setting of the testes in their hemiscrotal home. This test consists of pulling the testis towards the contralateral internal ring; if it reaches the comfortably, there is a high possibility of easy fixation. Total success rate of orchiopexy in our study 93%.

CONCLUSION:

Laparoscopy is very useful for the diagnosis and treatment of impalpable testes. Mobility of the testis towards the contra-lateral internal inguinal ring is best predictor for the type of orchiopexy, we suggest periodic follow-up evaluating the viability the size and vascularity of pexed testes by local examination and USG. Laparoscopic exploration must be done in all of NPT cases for confirmation of diagnosis and eventual treatment.

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