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Study of Clinically Nonpalpable Testis

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Abstract

Undescended testis or cryptorchidism is a common genital problem in boys. Non palpable testis represents 25% of all undescended testis. Non palpable testis presents a unique diagnostic and therapeutic problem. Non palpable testis should be treated to enhance future chances of fertility and to place the testis at a site where it can be easily palpated because such a testis has an increased susceptibility to malignant degeneration.

Aims:

- To establish diagnostic efficacy and accuracy in identifying clinically non-palpable testis.
- To establish therapeutic role of Open and laparoscopic management of non-palpable testis.

Methods and Material: Between 2015 and 2019, 25 boys with 28 clinically non-palpable testis, aged 16 months to 65 years, underwent operative intervention in a single surgical unit at our institute.

Out of the 25 patients, 22 had unilateral (11 left-sided, 11 right-sided) and three had bilateral non palpable testis.

The testis was considered non palpable after thorough clinical examination, ultrasonography and examination under anaesthesia failed to detect it.

Keywords: Nonpalpable Testis.

Introduction

Undescended testis or cryptorchidism is a common genital problem in boys. Its incidence in premature newborn is 30% and in full term new born is four percentage.[1-4]

Non palpable testis represents 25% of all undescended testis.[5-7] Non palpable testis may be due to vanishing testis syndrome, intra-abdominal position, examination obscured due to obesity or scar tissue, and rarely due to testicular agenesis.[8]

Radiological imaging and open surgical exploration have proved to be unreliable in detecting it.[9]

Laparoscopy has become an important diagnostic modality for non-palpable testis and has also been applied in the treatment of this disease.[10]

Material and Methods

Between 2015 and 2019, 25 boys with 28 clinically non-palpable testis, aged 16 months to 65 years, underwent operative intervention in a single surgical unit at our institute.

Out of the 25 patients, 22 had unilateral (11 left-sided, 11 right-sided) and three had bilateral non palpable testis.

The testis was considered non palpable after thorough clinical examination, ultrasonography and examination under anaesthesia failed to detect it.

Observation and Results

Findings of 25 non palpable testis is summarised in Table 1.

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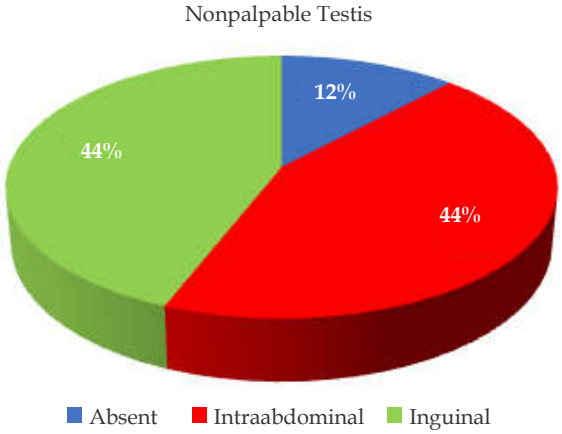
Table 1: Clinical findings of 25 non palpable testis.

	Absents Testis	Intra Abdominal Testis	Inguinal Testis
Unilateral	3(12 %)	10 (40%)	9 (36%)
Bilateral	–	1 (4%)	2 (8%)
Total	3(12 %)	11 (44%)	11 (44%)



Out of 25 testis, in three cases, spermatic cord and spermatic vessels were ended blindly. These testis were considered absent testis and laparoscopic procedure was terminated.(Fig 1 A,B)[23-24]

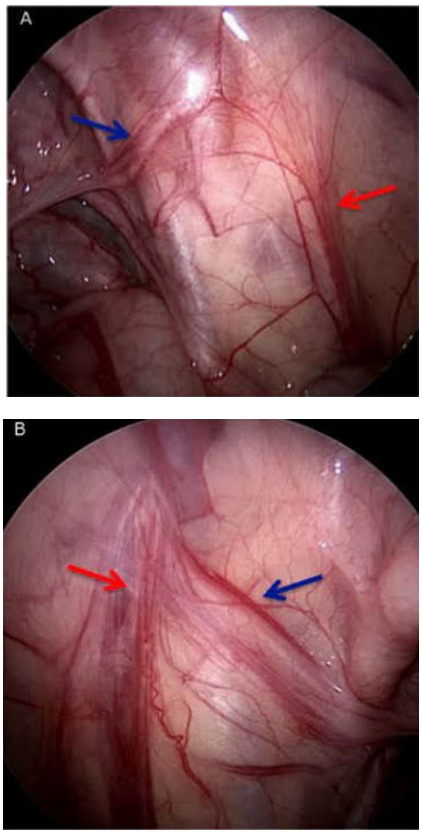


Fig. 1: Showing spermatic cord (blue arrow) and spermatic vessels (red arrow) are ending before entering into deep inguinal ring. Thus the testis were considered absent.[44-56]

11 (44%)testis were Intra-abdominal. out of which six (24%)testis were small and atrophic. hence removed Laparoscopically. The remaining five (20%) underwent Laparoscopic Orchidopexy. (Fig. 2)

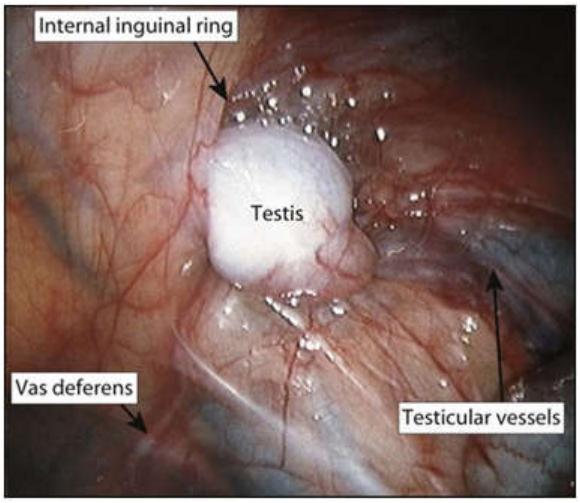


Fig. 2: Laparoscopic finding in a boy with non-palpable testis. Testis is joined by spermatic vessels and spermatic cord, which is situated proximal to deep inguinal ring, indicating Intra-abdominal Testis.[67-80]

In 11 (44%) testis spermatic vessels and cord were found in Inguinal Canal. These testis were considered inguinal testis. Traditional inguinal exploration was carried out by small groin incision. three (12%) were removed and Orchidopexy was performed in remaining eight (32%). All the Orchidopexy procedures were concluded successfully, without any undue tension over the cord structures. (Table 1)

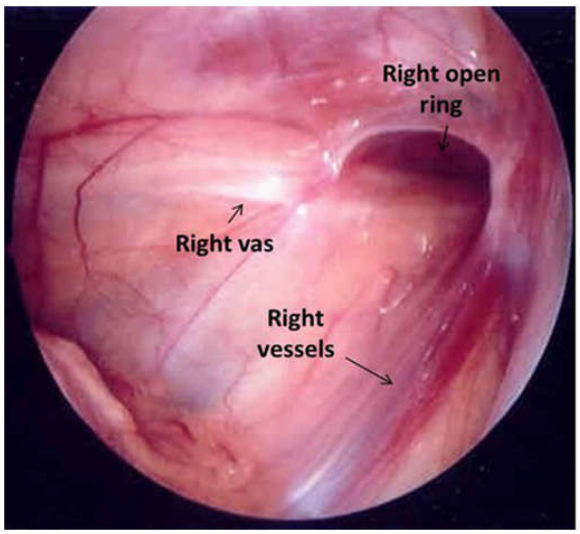
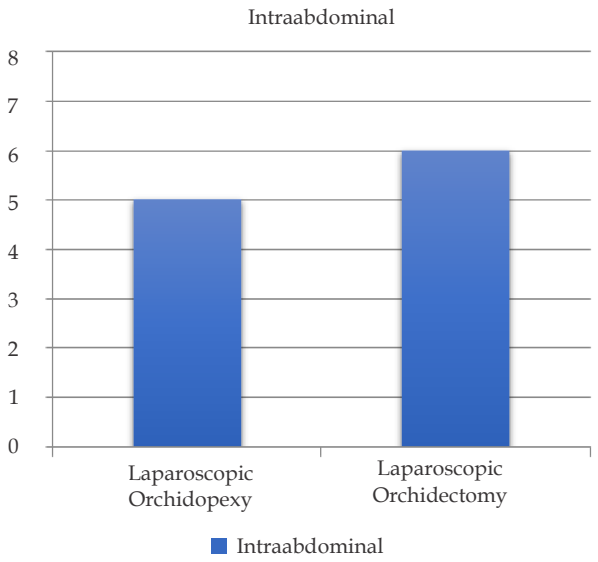
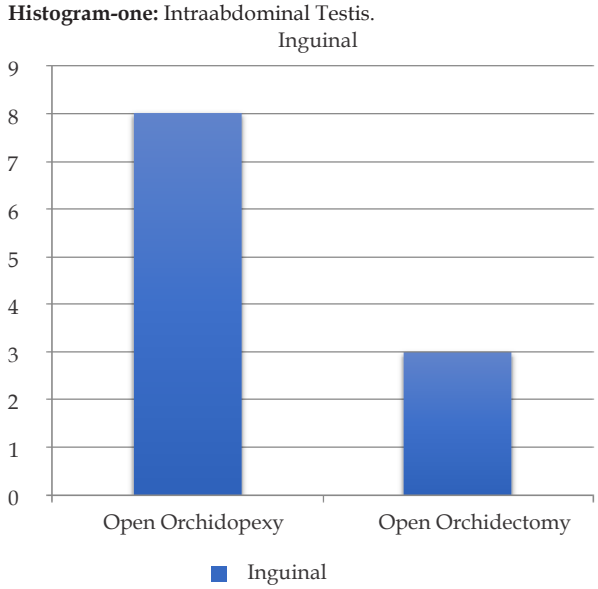


Fig. 3: Laparoscopic finding in a boy with non-palpable testis showing spermatic vessels and spermatic cord entering deep inguinal ring, indicating Inguinal testis.[81-82]



Histogram-one: Intraabdominal Testis.



Histogram -two: Inguinal Testis.

Table 2: Operative Procedure.

Procedure	Unilateral	Bilateral	Absent
Laparoscopic Orchidopexy	4 (16%)	1 (4%)	–
Laparoscopic Orchidectomy	6 (24%)	–	–
Open Orchidopexy	6 (24%)	2 (8%)	–
Open Orchidectomy	3 (12%)		–
Termination of Procedure	–	–	3 (12%)

The average operative time for laparoscopic orchidopexy was 60 minutes and for laparoscopic Orchidectomy was 40 minutes. For open orchidectomy, operative time was 45 minutes and for open orchidopexy it was 55 minutes.

The average hospital stay of the patients was 2.5 days.

There was no mortality and no any major complication occurred.[55-56]

Discussion

Non palpable testis presents a unique diagnostic and therapeutic problem. Its presence or absence must be verified and appropriate management should be done to either make it palpable or to remove it.

The reasons for correcting non palpable testis are

- To enhance the possibility of future fertility.
- To place the testis at a site where it can be easily palpated because such a testis has an increased susceptibility to malignant degeneration.
- To prevent or alleviate certain psychological tendencies.
- To permanently correct the defect that is obvious to both the parents and the patient. (44,50,64,66)

A variety of tests are employed in clinical practice to search for non-palpable testis. These include herniography, ultrasonography, CT scan, Magnetic Resonance Imaging (MRI), testicular angiography or venography.[100]The more popular modes that are used today are ultrasonography, CT scan and MRI.

Ultrasound may not be reliable, if the non-palpable testis is located underneath the aponeurosis of the external oblique muscle or inside the abdomen.

CT scan may be useful in documenting the location of the non-palpable testis but the test is expensive, emits radiation and sometimes is difficult to perform in a young child.

MRI may be helpful in locating the non-palpable testis, but like CT scan it may be difficult to perform in a young child and is very expensive and is not widely available.

Each of these modalities carry low false positive rate. That is if a testis is defined on their study, usually it can be confirmed surgically. However if a testis is not identified, one cannot safely presume its absence since each of these modalities has a relatively high false negative rate.

Therefore, regarding radiological evaluation of non-palpable testis, ultrasonography, CT scan and MRI cannot definitely diagnose the absence of testis.

The traditional approach to non-palpable testis is to begin with an exploration of the inguinal canal followed by retroperitoneal or peritoneal exploration, if no testis or cord structures found in the inguinal canal. This approach often involves unnecessary and sometimes very extensive surgery.

The advent of laparoscopy has allowed a minimally invasive approach for locating non palpable testis.

Laparoscopy is a sensitive and specific diagnostic modality for non-palpable testis and the accuracy of laparoscopy in locating a testis or proving its absence exceeds 95%.[111] Chang et al have reported an overall success rate of 96 % with laparoscopic orchidopexy for non palpable testis.

Laparoscopic findings define the subsequent operative steps, which may take advantage of laparoscopic access. The non-palpable testis visualized at laparoscopy is managed depending on its size, location and the age of the patient.

In a series conducted by Onal et al have found that the incidence of contralateral patent Processus Vaginalis is considerable in patients with unilateral non palpable testis and this can be easily recognised during laparoscopy, which is an additional benefit of laparoscopy.

When blind ending cord structures are visualized, no further investigation is required; the likely cause of absent testis is a prenatal or perinatal vascular accident.[115]

Intra-abdominal testis can be managed by laparoscopic orchidopexy or orchidectomy.

The decision regarding salvage or removal of a testis is a difficult one. A small hypoplastic testis, a testis with significant ductal system abnormality or unilateral abdominal cryptorchidism in a post pubertal patient is a poor candidate for salvage.

Low intra-abdominal testis can be mobilized with laparoscopic dissection of the spermatic vessels and vas deferens and delivered to a scrotal position without dividing the spermatic vessels, as a single-stage procedure.

High intra-abdominal testis can be managed either by laparoscopic one or two-stage Fowler Stephen orchidopexy, laparoscopy-assisted testicular microsurgical auto-transplantation or by orchidectomy in unilateral disease. The choice of procedure depends on individual preference and availability of expertise.

If cord structures traverse the internal inguinal ring, there may be blind ending cord structures in the canal, a hypoplastic or dysplastic testis in the canal or an ectopic testis that was not palpable preoperatively.

It is probable that some of these inguinal gonads that were non palpable preoperatively may have indeed been intra-abdominal, however with insufflation and increased intra-abdominal pressure, they may have been forced through an open internal inguinal ring into the inguinal canal.

There is some controversy today as to whether the inguinal canal should be explored in a patient with non-palpable testis in whom the cord structures entering the internal inguinal ring are encountered at laparoscopy.

We believe that this situation warrants inguinal exploration as a dysplastic testis, an ectopic testis or a testis displaced from the abdominal cavity due to the increased intra-abdominal pressure caused by insufflation may be occasionally discovered. The exploration can be expeditiously performed through a small inguinal incision.

Conclusion

Laparoscopy is an excellent, low-risk, high-yield diagnostic and therapeutic tool in the management of non-palpable testis. It is not only effective but accurate for determining the location and viability of the testis as its magnification and illumination gives a more clear picture of anatomy and allows for better visualisation of vessels.

As diagnostic and therapeutic procedure can be performed in one sitting with less morbidity, excellent results, short stay in hospital and better cosmetic outcome, this minimal access technique makes open exploration of the abdomen for difficult to find testis unnecessary.

We recommend its routine use in the diagnosis and treatment of this disorder, provided the surgeon is experienced and comfortable with the technique.

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