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ORIGINAL RESEARCH

Undescended Testis a Common Problem in Children Difficult to Assess Stage Surgery in Non Palpable Testes

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ABSTRACT

Background: Undescended testis (UDT) is very common problem in children age group 6 months to 2 years. UDT best mode of treatment remains controversial. However, after study published by different groups of researchers to set out guidelines on management of patients with UDT. (1) Hormonal treatment is not recommended, considering both the immediate results (only 15–20%) of retained testes descend and the possible long-term adverse effects on spermatogenesis. (2) Surgery is the treatment of choice; orchiopexy is successful in about 95% of UDT, with a low rate of complications (about 1%). (3) Orchiopexy should be performed between 6 months to 12 months.or at first contact if diagnosed later. (4)Laparoscopic Orchiopexy can be done in two stage if testis is non palpableand present intraabdominal. **Methods:** Undescended testis is very common problem in children . We common across very frequently palpable undescended testes . In this study we are presenting cases of non palpable undescended testis (UDT). UDT Non Palpable Testis we do ultrasound of the abdomen and inguinal region . Very often in sonography we are able to trace the exact location if the testis . USG is very useful tool of investigation in our study .we don't recommend MRI in children for non palpable testis. We do routine investigation and preop profile for anaesthesia fitness. **Result:** None of the testis atrophied after two-stage Fowler — Stephens laparoscopic orchiopexy, while 30 cases of single-stage orchiopexies one testes atrophied. **Conclusion:** Laparoscopy is the best way to diagnose impalpable undescended testes. M.R.I and other imaging investigations not needed. Single-stage laparoscopic orchiopexy for low level undescended testis has very good results. For high-level undescended testis and when one-stage mobilisation is difficult, two-stage Fowler — Stephensorchiopexy has excellent results. Minimum 6 months gap between first and second stage of laparoscopic Fowler — Stephens procedure. Even when open orchiopexy is being done for intra-canalicular testes in a child, it is advisable to be ready with laparoscopy if necessary, at the same time, in case open surgery fails to mobilise the testicular vessels adequately.

Key words: Testis, Cryptorchidism, Fowler –Stephen Laparoscopic surgical procedures, Atrophy.

INTRODUCTION

Laparoscopy has proved to be the best available procedure for diagnosis and management of impalpable undescended testes.[1,2,3,4,5,6], All the patients treated by us are having non palpable testes and underwent laparoscopic orchiopexy . This study is based on the analysis of cases treated over 5 years. All the patients were treated by experienced Pediatricsurgeon.

Undescended testis, or cryptorchidism, is a common congenital condition in which one or both testicles fail to descend into the scrotum. This condition affects approximately 1-3% of full-term male infants and up to 30% of premature male infants. The testicles typically descend into the scrotum during the last months of fetal development. However, when this process is incomplete, the testis remains within the abdomen or inguinal canal, making it undescended.

Early detection and treatment of undescended testes are crucial to prevent complications such as infertility, testicular cancer, inguinal hernia, and psychological effects related to body image. The condition can be diagnosed through physical examination, but in cases of non-palpable testes, where the testis cannot be felt during a physical exam, further diagnostic procedures such as ultrasound or laparoscopy are necessary.

Assessing the appropriate stage for surgical intervention in non-palpable testes presents a

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significant challenge. Surgical exploration is often required to locate the testis and determine its position, which then guides the appropriate treatment. The timing and approach to surgery are essential factors in ensuring successful outcomes, preserving testicular function, and minimizing the risk of future complications.

MATERIALS AND METHODS

From 2014 to 2024, 50 consecutive patients with 60 impalpable testes were treated by laparoscopic surgery. Age of the patients ranged from 1 year to15 years . All patients were assessed by clinical examination, blood profile and pre-operative ultrasonography (USG).

We don't recommend MRI in children for non palpable testis. We do routine investigation and preop profile for anaesthesia fitness. Our study is retrospective and prospective study. we have ten year data of undescended testes in our institute and we have come across 50 patients of non palpable UDT . Most of the children (35) are between age group of 1 year to 7 year . 15 patients are older than 7 years . 8 patients have bilateral undescended testis and one side testis is palpable . 2 patients have both the testis in abdomen. 40 patients have unilateral Non palpable UDT . All the patients were underwent surgery after fitness from anaesthesia team . Surgery planned according to the age of the patients. All the patient undergone Laparoscopic surgery . One stage laparoscopic orchiopexy was performed in 30 cases while two stage Fowler stephens was performed in 20 cases.

All the patients are operated under general anaesthesia in supine position .The first port camera port is placed supraumblically. Two 5-mm ports are used on either side at the level of umbilicus along the mid clavicular line.Initially, diagnostic laparoscopy is performed to locate the testis, note its size, distance from the internal ring and iliac vessels, presence of hernia, if any, and the length of loop of vas deferens.

If the testis is absent in the peritoneal cavity, presence of vas deferens and testicular vessels are confirmed. Observation is made to know whether the vas deferens and testicular vessels are present but if they end blindly and whether vas deferens and vessels are entering the inguinal canal. Presence of hernia sac on affected as well as unaffected side are looked for. Further procedure is decided according to the finding of diagnostic laparoscopy. If the undescended testis is closer to the internal ring or is of peeping type, one-stage orchiopexy is carried out. If the testis is situated closer to the iliac vessels than the internal ring, two-stage Fowler -Stephensorchiopexy is planned.

RESULT

The final observation and findings related to USG findings and surgery done is as follows:

Accuracy of USG in nonpalpable testes is 25 (50%) patients . Diagnostic laparoscopy was successful in localisation in each of the 50 patients. Single-stage orchiopexy was successful in 30 cases, while two-stage Fowler–Stephens orchiopexy was performed in 20 cases. Among the patients with bilateral undescended testes,8 cases one side laparoscopic single stage orchiopexy done and another side open orchiopexy as testes on other side was palpable . 2 cases required single-stage laparoscopic orchiopexy on one side and two-stage Fowler - Stephensorchiopexy on the other side. Single-stage orchiopexy for one testis and first-stage clipping for staged Fowler — Stephens procedure for the other testis were done simultaneously in these patients.

In one patients at initial stage, it was thought that single-stage laparoscopy would be possible. But after complete dissection of the testicular vessels for one-stage orchiopexy, there was undue tension on the vessels and the testis would not reach the bottom of the scrotum. Hence, the procedure was converted to two-stage Fowler — Stephens orchiopexy and the vessels were clipped at high level .Second stage after 6 months clipping done . Second stage of staged Fowler — Stephens orchiopexy was done between 6 months and 2 years after the first stage .Patients were followed-up for minimum 3 months upto5 years. Follow-up was done by physical examination and USG on OPD basis.

All patients were discharged on the 3nd post-operative day. One of the patients had wound infection.

None of the testis atrophied after two-stage Fowler–Stephens orchiopexy. In patients with single stage orchiopexy also non had atrophied testes. As we had strict protocols to bring the testes down.

Complications are port infection in two patients and three patients had infection at scrotal suture line area. Seems more of stiche reaction and stich abscess .all of them manage conservatively.

Table 1 - Socio-Demographic Profile of Sample Population

S.No.	Statistics	Number
1	Number of patients	50
2	Number of testes	60
3	Unilateral	50
4	Bilateral	10
5	Right	35
6	Left	15
7	Atrophied	None

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S.No.	Procedures	Number of cases
1	Single stage laparoscopic Orchiopexy	30
2	Two stage Orchiopexy	20
3	Open orchiopexyalong with other side laparoscopic orchiopexy	8

S.No.	Complications	Numbers
1	Port Site	2
2	Suture Line Scrotum	3

DISCUSSION

Laparoscopy is the surest way to locate the site of impalpable testis. d Various study conducted and proved that the Laparoscopy is the gold standard for non palpable testes and specially the atrophic one.[1,2,3,4,5,6,7] Laparoscopy is most specific and sensitive diagnostic procedure for impalpable undescended testis. None of the imaging modalities gives such result. So, in case of impalpable undescended testis, there is no need to use any special imaging modality. We have used USG for its ease of access and economy.Laparoscopy in a child is very useful in locating the intra-abdominal testis because of the minimally invasive approach and magnification. Mobilisation of the testicular vessels by dissecting the peritoneum off the testicular vessels is also easy, even in children who have small abdominal cavity, and laparoscopy avoids the need for long incision besides being more successful than open surgery.[7]

Amongst high intra-abdominal testes, at the second stage of Fowler -Stephensorchiopexy all the 20 testes were brought down to the bottom of scrotum. None of the testes atrophied from 6 months to 5 years. Fowler - Stephensorchiopexy failed in only one testis, which had a short vas deferens. Though additional procedure is required for second stage. The results of one-stage Fowler - Stephens orchiopexy are not as good as two-stage Fowler - Stephens orchiopexy.[1] Shadpur et al., treated cases after initial open surgery had failed to locate the gonad. They succeeded in laparoscopic orchiopexy, while, at open surgery, even visualisation of the testis was not possible.[8]

At the first stage of Fowler -Stephensorchiopexy, we used titanium clips to occlude vessels. At the second stage with laparoscopy, the previously applied clip can be easily isolated. The vessels are divided below the previously applied clip. This is more convenient than ligature or use of bipolar cautery to burn the vessels.[1,9] We avoided any form of thermal energy during laparoscopic orchiopexy.

Lindgren et al., clipped only one side vessels for the first-stage Fowler — Stephens procedure. They did not clip the other side lest it needed auto transplantation.[10] We had very good result with two-stage Fowler - Stephens procedure . So even in bilateral undescended testes, if the needed , two-stage Fowler - Stephens procedure can be performed simultaneously on both the sides. In series where Fowler - Stephens procedure was done in single stage, the results were poor.[1] With two-stage Fowler — Stephens laparoscopic orchiopexy, results have been consistently better.[5,7,11,12,13]

Elder showed that staged Fowler — Stephens procedure by open surgery had better results than one-stage Fowler–Stephens orchiopexy.[13] When both the stages are performed by laparoscopy,

Surgery is easier and even second-stage laparoscopy is better than relaparotomy. Closing internal ring doesn't lead to hernia ,Handa et al., showed that closure of the internal ring is not necessary.[14] None of the referred series had a case of short loop vas, preventing adequate descent of the testis.[15,16]

CONCLUSION

Laparoscopy is the best way to diagnose impalpable undescended testes. No other imaging investigation is required. Laparoscopic orchiopexy is a logical extension of the diagnostic procedure. Single-stage laparoscopic orchiopexy for low-level undescended testis has very good results. For high level undescended testis and when one-stage mobilisation is difficult, two-stage Fowler — Stephensorchiopexy has excellent results. Minimum 6 months should separate first and second stage of laparoscopic Fowler — Stephens procedure. Even when open orchiopexy is being done for intra-canalicular testes in a child, it is advisable to be ready with laparoscopy if necessary, at the same time, in case open surgery fails to mobilise the testicular vessels adequately. Laparoscopic orchiopexy is the modality of treatment in non palpable testes especially in older children where length of vessels fall short of length.

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