

Single Stage Laparoscopic Assisted Orchidopexy in Children

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ABSTRACT

Aim: To determine the outcome in single stage vessel sparing, laparoscopic assisted orchidopexy in children.

Study design: Prospective Cross sectional study.

Place and duration of study: Department of Paediatric Surgery, Nishtar Medical University, Multan. The duration of study was January 2018 to June 2019.

Methods: In this study boys with age between 2-10 years having undescended testes assessed on clinical examination and confirmed on ultrasonography were included. Then these cases underwent single stage laparoscopic orchidopexy and testis was brought to the scrotum and fixed there. Follow up was done up to three months and atrophy, ascent and/or stayed in place, were noted.

Results: In this study there were total 22 cases with 25 undescended testes. The mean age was 5.87±2.32 years and mean weight was 19.25±6.20 kg. There were 13 (59.1%) cases with right sided undescended testis, 6 (27.3%) cases with left sided undescended testis and 3 (13.6%) cases had bilateral undescended testes. Efficacy of single stage orchidopexy was noted in 19 (86.36%) of the cases.

Conclusion: Single stage vessel sparing orchidopexy is an effective treatment option in cases of intra- abdominal undescended testis.

Keywords: Undescended testes, Orchidopexy, Single stage, laparoscopic, Children

INTRODUCTION

Testicular maldescent is not that uncommon in male neonates. Cryptorchidism is the absence of testis in the scrotal sac. Arrested migration in the usual pathway of descent is termed as true undescended testis, but if it migrates away from its normal pathway to lie in an unusual location, it is called ectopic testis. 2-5% of infants can have undescended testis at birth¹. It decreases to 1-2% at the age of three months. However, the incidence in the preterm neonates can reach up to 30%. At one year of age, only 1% of cases have the testis still undescended². Every 2 out of 3 undescended testis are palpable on clinical examination. Usually right side is affected more and bilateral undescended testes are least common, and warrant hormonal analysis as well³.

The undescended testis can be present in the inguinal canal, abdominal cavity or any ectopic site. The impalpable testis can be atrophic, vanishing or intra-abdominal. Upto 20-40% of non-palpable testis can be present intra abdominally⁴. Undescended testis especially intra-abdominal variety has implications for fertility later on. Germ cells counts start to decrease after first six month of life along with leydig cell count. Therefore undescended testes pose a threat for infertility in adult life². There are other complications associated with this condition as well like torsion, inguinal hernia, prone to trauma and serious of all, testicular carcinoma⁵. Prompt diagnosis is the key to better outcomes and it needs radiological support along with thorough clinical examination. High resolution ultrasound, magnetic resonance imaging and arteriography are used in preoperative localization of impalpable testis but their accuracy on an average is not very

High⁶. Laparoscopy is the most widely and acceptable modality being used now a days. It adds the luxury of diagnosis with therapeutic intervention at the same time. There is high degree of diagnostic accuracy. The basis of this was laid by Jordan⁷.

Orchidopexy is the treatment of choice in cases of any variety of undescended testis⁸. Orchidopexy leads to improvement in the fertility rate and makes the palpation of the testis easy for further mass effects to rule out malignancy⁹. Optimal age for orchidopexy is from 6th month of age to 24th month of age¹⁰. There are number of approaches for orchidopexy but for impalpable testis laparoscopic exploration has gained popularity. Laparoscopy not only helps in determining the presence and location of testis but also allows its correction through single or staged procedures¹¹. The work of Fowler and Stephens in 1959 led the development of current preferred procedure for management of intra-abdominal testis¹². Single and two staged Fowler Stephens orchidopexy are the most common procedures. In this study we are sharing our data regarding the single stage vessel sparing orchidopexy for intra-abdominal testis.

PATIENTS AND METHODS

This was across sectional study and was conducted at Nishtar Medical University Hospital, Multan during January 2018 to June 2019. After getting permission from the ethical review board, the study was started and patients with age range from 2 years to 10 years having impalpable undescended testis were included. Thorough physical examination was carried out to locate the testis. Ultrasonography was carried out to exclude the presence in the inguinal canal. Patients with the disorders of sexual development were not included in the study. In cases of bilateral undescended testis only one side was

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included in the study. Thereafter, full clinical examination and clinical tests were carried out to ascertain fitness for surgery.

All patients were operated under general anaesthesia with endotracheal intubation. Intravenous antibiotic was given at induction. Under anaesthesia, inguinoscrotal region was examined once again for presence of testis. Camera port (5mm) was inserted through umbilicus via open technique and inspection was made. If both, vas and vessels were found exiting the internal inguinal ring, the laparoscopy was terminated and inguinal exploration was done. These cases were not included in the study. When testis was found inside the abdomen its length was assessed, if its distance was less than 2 cm from the ring, then two more ports (3mm each) were inserted. These were inserted on either side in the mid-clavicular line at umbilical level. Careful mobilization was performed by using hook cautery and blunt dissection, until the testis was freely mobile without traction on vas and vessels. Length was again assessed by taking it to the contralateral internal inguinal ring. If it was reaching to the opposite side, a sub dartos pouch was created and testis was brought down by using Prentiss maneuver. Care was taken to avoid any twist in the vas and vessels. All patients were followed post-operatively at one week, three weeks and three months. The variables documented were wound infection, location of testis, testicular size in comparison with the normal testis and testicular retraction.

Statistical Analysis

The data was analysed by SPSS 20.0. Frequency and percentages were presented for qualitative and mean ± SD for quantitative data.

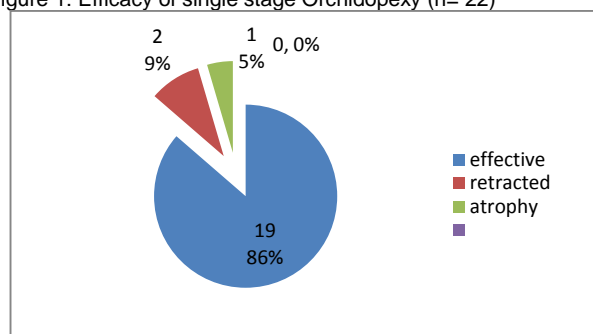
RESULTS

In this study there were total 22 cases with mean age of 5.87±2.32 years and mean weight of 19.25 ±6.20 kg.

Table I. Study demographics (n= 22)

Variables	Mean ± SD	Range
Age(years)	5.87±2.32	2.3-9.9
Weight (kg)	19.25±6.20	11.1-31.3
Time of surgery (minutes)	99.32±15.44	69-133
Laterality of testes	Number	Percentage
Right side	13	59.1%
Left side	6	27.3%
Bilateral	3	13.6%

Figure 1: Efficacy of single stage Orchidopexy (n= 22)



There were 13(59.10%) cases with right side, 6(27.3%) cases with left side and 3(13.6%) cases had bilateral undescended testes. Average time of surgery was 99.32±15.44 minutes (Table I). Efficacy of single stage orchidopexy was noted in 19(86.36%) of the cases as shown in figure 1.

DISCUSSION

Cryptorchidism or undescended testis is one of the most common genitourinary problems found in children⁴. It refers to the testis located in the normal descent pathway of testis from retroperitoneal to the scrotum¹³. The testicular descent occurs in two different stages of fetal life¹. Stage one range from 8-15 weeks and second stage from 25-35 weeks of gestation. Failure during first stage of descent results in intra-abdominal testis. This type of anomaly is relatively uncommon than the problems during the second stage of descent. Failure during second stage can result in testis located in inguinal canal and other ectopic sites. Ectopic testes are those which are undescended but not found in the normal descent pathway¹³. The undescended testis are prone to dysplasia, torsion, trauma, infertility and later on malignancy⁴. Physical examination is important in the diagnosis of undescended testis. However impalpable testis needs further diagnostic modalities. These include ultrasonography, computed tomography, magnetic resonance imaging, arteriography and venography¹⁴. However laparoscopy has superseded all of them in diagnosis of impalpable testis and it has actually become a gold standard for diagnosis of non-palpable testis¹⁴. The treatment of undescended testis is to fix it in the scrotum. It can be achieved with the scrotal approach to microsurgical auto transplantation with inguinal orchidopexy and one or two staged laparoscopic Fowler-Stephens approach in the middle¹⁵. Fowler-Stephens laparoscopic approach is most common procedure being performed for impalpable intra-abdominal¹⁶. It is performed as a single stage or two staged procedure. Stephens suggested that the testis gets its blood supply not only from spermatic vessels but also partly from gubernaculum vessels, vas deferens vessels, inferior epigastric vessel and collateral vessels of the cremasteric fibres¹⁷. It became the basis of F-S operation especially two staged operation. Both techniques have gained popularity with merits and de-merits. But vessel sparing single stage orchidopexy is also a known entity and is acceptable especially if adequate vessel length is available¹⁸.

The mean age at presentation in our study was 5.85 years. It is rather higher as ideal age for treatment of undescended testis is from 6 months to 2 years of age¹⁵. Ferdous et al found mean age of 2.8+2.3 years in their study⁴. Similarly Ekpemo et al found median age of six years in their study². Although we were in initial stage of laparoscopy and selected patients with rather higher age group but in developing countries there is a problem of delayed presentation as Abd Elsalam had mean age 3.46+3.1 years in their study and Rahman et al found mean age 4.62±2.83 years^{10,12}. It can either be due to lack of awareness, resources or availability of treatment options. This problem needs health education and examination of child by a paediatric surgeon or at least a specialist

paediatrician at birth. The undescended testis is more common on right side as was found in our study. Badbarin et al reported 65% of patients with right sided undescended testis⁽¹⁹⁾. We had 59% of patients with right sided problem. The patients were diagnosed of having impalpable testis with the help of physical examination. Generally diagnostic modalities like ultrasonography, CT scan and MRI are used for diagnosis of impalpable testis⁽²⁰⁾. However laparoscopy is now considered of having high sensitivity in diagnosis of intra-abdominal testis. It is also modality of choice in treatment of intra-abdominal testis⁽¹⁰⁾. It can be used for single stage vessel sparing orchidopexy, first or second stage of Fowler-Stephen orchidopexy or biopsy in cases of vanishing testis⁽²¹⁾. We performed single stage vessel sparing orchidopexy in 22 cases. Mean time of surgery was 99.32±15.44 minutes. Mahdi et al found mean time 57.11 minutes in a study using single port laparoscopic orchidopexy⁽¹⁸⁾. Arsalan et al also had mean time 55.3 minute⁽¹⁶⁾. Our longer time may be due to learning curve as these were in our early days of laparoscopy. This observation is same as was encountered by Ishaq et al in their study, they reported mean operative time of 88 minutes in their initial 100 cases⁽²¹⁾. We hope that with more experience the operative times will start decreasing.

Out of 22 cases, 19(86%) were doing well after 3 months of surgery in terms of testicular viability. 2 (9%) testis retracted from the fixation site but looked normal in size as compared to other testis. However 1(5%) was atrophied during the course of follow up. Same observation was made by Roy et al, where 4% of cases were atrophied and 4% of cases reported ascent of testis⁽⁹⁾. Badbarin reported 7% of testicular atrophy in cases operated through scrotal incision⁽¹⁹⁾. This was also favoured by the study done by Elderwy A et al, where they found higher success rate and lesser complication rates in open versus laparoscopic orchidopexy for undescended testes⁽³⁾. Recent studies also support that the success rate and complication rates are lesser with single stage orchidopexy⁽⁹⁾. In another study, similar failure and complication rates in the form of testicular atrophy and malposition were found by Bakar et al in a meta-analysis of laparoscopic orchidopexy⁽²²⁾.

CONCLUSION

Single stage laparoscopic vessel sparing orchidopexy is an effective treatment option in intra-abdominal undescended testis.

Limitations: The sample size in the study was small and age was relatively on higher side. Although single stage laparoscopic assisted vessel sparing orchidopexy is very effective in children, we need to do a study with higher number of patients with age less than 2 years.

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