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Original Research Paper

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LAPAROSCOPY IN NONPALPABLE UNDESCENDED TESTIS

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ABSTRACT

Aim: Laparoscopy is the mainstay in the treatment of nonpalpable undescended testis. The aim of this study is to analyze the role of laparoscopy in nonpalpable undescended testis.

Materials and Methods: This is retrospective study of children who underwent laparoscopy for nonpalpable undescended testis from 2014 to 2017. 34 patients with 36 nonpalpable testis were operated and the demographic data, clinical examination, laparoscopic findings, operative time, procedure, hospital stay and complications were collected and analyzed.

Results: 34 children with nonpalpable testis underwent laparoscopy with the mean age was 2.6yrs. Nineteen patients had left-sided nonpalpable testis, 13 had right-sided nonpalpable testis, and two bilateral nonpalpable testis. Of the 36 clinically nonpalpable testis, on laparoscopy 23 were intra-abdominal (2 high-lying and 21 low-lying), 9 canalicular, 3 nubbin testis and 1 vanishing testis. 23 patients underwent laparoscopic orchiopexy (21 single-staged orchiopexy and 2 two-staged Fowler–Stephens procedure), 12 underwent inguinal exploration following laparoscopy. Mean operating time was 65 min. Only minor complications were noted.

Conclusions: Laparoscopy in nonpalpable undescended testis is safe and effective. Laparoscopy is both diagnostic and therapeutic and helps to plan the procedure as per the laparoscopic findings. It also prevents unnecessary intervention in case of vanishing testis. Minimal use of electrocautery, good mobilisation of the intra-abdominal testis with preservation of vascularity is associated with successful surgery.

KEYWORDS : Laparoscopy, Nonpalpable testis, Orchidopexy

Introduction:

Undescended testis is one of the most frequently seen congenital anomaly in boys, affecting 1%–3% of full-term and up to 30% of preterm neonates. Nearly 10%–20% of undescended testis are nonpalpable[1]. Laparoscopy in nonpalpable testis is considered as the gold standard procedure and is the modality of choice for diagnosis as well as therapeutic planning[1,2,3,4]. In this article, the data of patients who underwent laparoscopy from 2014 to 2017 for nonpalpable testis was retrospectively analyzed.

Materials and Methods:

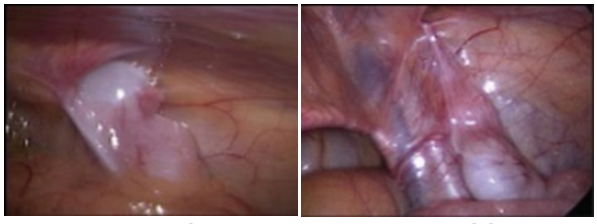
The records of the patients undergoing laparoscopy for nonpalpable testis from 2014 to 2017 were retrospectively collected and reviewed. The medical record of these patients was reviewed for demography, clinical assessment, laparoscopic findings, subsequent therapeutic operative procedure, operating time, hospital stay and complications.

Patients with clinically nonpalpable undescended testis were included in the study and the patients with palpable undescended testis were excluded from the study.

The laparoscopic technique practiced was as per standard literature with a 5mm umbilical port for camera and two working lateral ports if laparoscopic orchidopexy was required. Location, size of the testis and its distance from the deep ring, and the iliac vessels, vas and vessels entering deep ring, size of the vascular bundle were noted and accordingly operative planning done:

a. When vas and vessels found entering the deep ring: inguinal exploration followed by orchiopexy if adequate in size and orchiectomy if nubbin testis is found.
b. In case of blind ending vessels intraabdominally, no intervention was required
c. In case of intra-abdominal testis

- Testis low-lying (peeping) or <2 cm from deep ring: Single-stage laparoscopic orchiopexy
- Testis high-lying or >2 cm from deep ring: Two-stage Fowler–Stephens procedure.



Laparoscopy - Low lying Testis Laparoscopy - High lying Testis

Figure 1: Laparoscopic view of intraabdominal testis – low-lying and high-lying

For laparoscopic orchidopexy minimal use of electrocautery with good and adequate retroperitoneal mobilisation to reach the scrotum was done. The operating time and any complications were noted down

Results:

34 patients admitted with 36 nonpalpable testis underwent laparoscopy from 2014 to 2017. Mean age of the patients with nonpalpable testis was 2.6 years (range 6months – 9 years). Nineteen patients had left-sided, thirteen had right-sided nonpalpable testis and two had bilateral nonpalpable testis. Of the 36 clinically nonpalpable testis, on laparoscopy 23 were intra-abdominal (2 high-lying and 21 low-lying), 9 canalicular, 3 nubbin testis and 1 vanishing testis. 23 patients underwent laparoscopic orchiopexy (21 single-staged orchiopexy and 2 two-staged Fowler–Stephens procedure), 12 patients (9 canalicular + 3 nubbin testis) underwent inguinal exploration following laparoscopy as the vas and vessels were seen entering the deep ring. In the 3 patients who had nubbin testis the vascular pedicle was thin with sparse vessels and in remaining 9 patients with canalicular testis the vascular pedicle was thick with normal sized vessels. Mean operating time was 65 min (range 23 min–116 min). Thirty patients were discharged after 48 hrs and two patients were discharged after 72 hrs and remaining two patients were discharged after 5 days. Two patients had scrotal hematoma and two had wound infection in the immediate postoperative period which resolved on conservative management.

Table 1: Shows the laparoscopic findings and procedure done

S. No	Laparoscopic Finding	No of Nonpalpable testis	Procedure done
1	Vas and vessels entering the deep ring	12	Orchidopexy – 9 Excision of Nubbin/Atrophic testis - 3
2	Blind ending vessel-intraabdominal	1	No intervention
3	Intraabdominal testis Low High	 21 2	 Single stage orchidopexy 2 stage Fowler-Stephen surgery

Discussion:

Undescended testis remains one of the most common congenital anomalies in boys with an incidence of 1%–3% in full-term going up to 30% in preterm neonates but coming down to <1% by 1 year of age[1]. Unilateral cryptorchidism accounts for about 85% of cases[5]. Of the two stages of testicular descent, failure of first stage or transabdominal stage (between 8 and 15 weeks gestation) is rare and results in intra-abdominal testis. Failure of second stage of descent is more common resulting in testis lying anywhere between deep ring and neck of scrotum[6]. Upto 20% of undescended testis remain nonpalpable even in completely relaxed or anaesthetized childre[7,8]. It is believed that the chances of descent in Undescended testis are very minimal beyond 3 months of age. Diagnostic modalities (USG, CT, MRI etc) for nonpalpable testis never remained 100% accurate and all have their limitations.

Current recommendation for surgical intervention is anytime after 6 months of age if a testis remains undescended. A Scandinavian consensus report recommends orchiopexy before 1 year to preserve spermatogenesis[11].

The intraabdominal location and morphology of the testis are very important in deciding laparoscopic procedures. If there is blind ending vessel, diagnosis is vanishing testis and no further intervention is required[12]. In case, intra-abdominal testis is seen in low-lying position (peeping testis), single-stage orchiopexy can be performed whereas in high-lying intra-abdominal testis, single- or two-stage Fowler–Stephens technique can be performed[13]. If vas and vessels are seen entering the deep ring, the testis is canalicular which can be the case in 10%–30% of impalpable testis[12]. Inguinal exploration is performed and orchiopexy done. Orchiectomy will be required if there is only a fibrous remnant or nubbin testis. Laparoscopy and careful exploration of the abdomen and tracing of the vas and vessels is recommended in all cases of nonpalpable testis before it can be pronounced that the testis is being absent. Cortesi *et al*. introduced laparoscopy as a diagnostic procedure for impalpable testis in 1976 and now it has become a gold standard procedure for diagnosis as well as therapeutic planning[9]. Scott reported first series on pediatric laparoscopy in nonpalpable testis in 1982[10]. Laparoscopy is not only diagnostic but it is therapeutic. Jordan etal initially described laparoscopic management of UDT[14].The accuracy of laparoscopic diagnosis of nonpalpable testis is reported to be 100%[1,2].This is also true in our series.

Mean operating time was comparable to other studies[15]. 21 out of the 36 testis were low-lying intra-abdominal peeping testes, for which single-stage laparoscopic orchiopexy was employed. Only 2 out of 36 testis were high lying for which laparoscopic two-stage Fowler–Stephens' technique was employed.

Complications were far and few, mostly early (scrotal hematoma, wound infection) which resolved with conservative treatment. Overall results were good.

Conclusions:

Laparoscopy in nonpalpable testis is safe, effective and gives overall good results. Laparoscopy is highly diagnostic and potentially therapeutic modality in nopalpable testis and the procedure can be tailored according to the testicular location and morphology. It also prevents unnecessary intervention in case of vanishing testes. Good mobilisation of the testis can be achieved laparoscopically for successful orchidopexy.

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