

Bilateral Impalpable Testes: A Special Entity of Cryptorchidism

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ABSTRACT

Background: Cryptorchidism is one of the most common genitourinary disorders in young boys. About 1% - 2% of boys at age of 1 year have an undescended testis (UDT); this disorder is unilateral in about 90% of individuals and bilateral in about 10%. However, bilateral impalpable testes represent a special category that should be differentiated from anorchidism as well as male pseudohermaphroditism. We investigated whether bilateral impalpable testes with its inherent hormonal and genetic factors has different outcomes in terms of success of orchiopexies compared to unilateral impalpable testes. **Methods:** We retrospectively analyzed the demographic and clinical findings, as well as immediate and 6 month outcomes, in patients diagnosed with bilateral impalpable undescended testes between 2006 and 2010. Findings were reported after a minimum of 6 months from the last surgical intervention. **Results:** Nine patients underwent laparoscopy for bilateral impalpable testes, 7 of whom had testes in the region of the internal inguinal ring. The success rate after laparoscopic exploration and open orchiopexy was 60% while the success rate with unilateral impalpable testes was 63.3% in the same study. **Conclusion:** Although laparoscopy is extremely useful in both the diagnosis and treatment of patients with bilateral impalpable testes, laparoscopy should be preceded by careful cytogenetic and hormonal workup for this particular group of patients. We found that the success rates of laparoscopic management of bilateral and unilateral impalpable testes were similar, as shown by testicular size clinically assessed during serial postoperative outpatient visits.

Keywords: Bilateral Non-Palpable Testis; Laparoscopic; Intra-Abdominal; Cryptorchidism

1. Introduction

Cryptorchidism is one of the most common genitourinary disorders in young boys. About 1% - 2% of boys at age 1 year have an undescended testis (UDT), with the disorder being unilateral in about 90% and bilateral in about 10% of cases [1-3]. Almost 20% of undescended testes are non-palpable [4].

Among the methods used to evaluate and manage undescended testes are imaging modalities and various surgical procedures [5]. Over the past two decades, there have been changes in the surgical treatment of undescended testes.

However, bilateral impalpable testes represent a special category that should be differentiated from anorchidism as well as male pseudohermaphroditism. We investigated whether bilateral impalpable testes with its inherent hormonal and genetic factors has different outcomes in terms of success of orchiopexies compared to unilateral impalpable testes. This was shown by the assessment of testicular size clinically during serial postoperative outpatient visits.

2. Methods

Patients under 14 years of age undergoing laparoscopy for clinically diagnosed impalpable testes between January 2006 and December 2010 in our institution were included in the study (**Figure 1**). Their records were retrospectively reviewed. Factors recorded included patient age at operation, clinical and laparoscopic findings, operative interventions and outcomes. All patients were followed up in the outpatient clinic for at least 6 months.

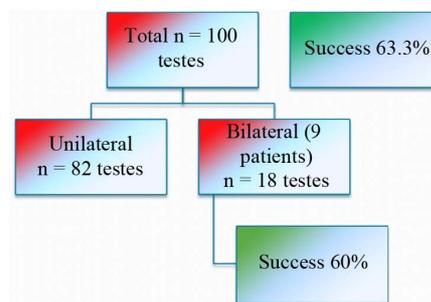


Figure 1. Percentages of successful orchiopexies in our study in different groups.

Prior to surgery, patients were examined under anesthesia to confirm that the testes were intra-abdominal. This was followed by laparoscopic exploration, including the insertion of a 5 mm port supra-umbilically using a closed technique and use of a 5 mm 0 camera. Secondary 2 - 3 mm ports were placed under direct vision if required and a 2 mm atraumatic grasper was used. Initially, we tried to identify the testes, testicular vessels, and vas deferens and whether the internal inguinal rings (IIR) were open or closed.

A "high" position of the testis was defined as being above the external iliac vessels; orchiopexy for these patients consisted of a two-stage Fowler-Stephens procedure. A "low" intra-abdominal testis was usually managed by one-stage laparoscopic orchiopexy. Orchidectomy was performed on an atrophic testis accompanied by a contralateral normal testis.

All patients were routinely followed-up at our outpatient clinic. A procedure was defined as "successful" if it resulted in a palpable testis in the scrotum of similar or increased size.

3. Results

Between January 2006 and December 2010, 91 patients, including 9 with bilateral and 82 with unilateral impalpable testes, were scheduled for therapeutic and diagnostic laparoscopy, for a total of 100 testes. Average patient age at the time of the surgical intervention was 64.3 months.

We found that the total success of orchiopexy for all testes was 63.3%. This success rate was achieved following laparoscopic exploration and open orchiopexy for testes in the region of the IRR, representing the most frequent finding in bilateral intra-abdominal testes in this series (78%) (See **Figure 1**).

There were no complications from laparoscopy in the immediate or postoperative periods. No port site hernia was detected on follow-up.

4. Discussion

Testicular descent, although not yet fully understood, takes place in two different stages, starting during weeks 8 and 25 of gestation, respectively. Failure of the first phase of descent is rarer than failure of the second phase, with failure of the first phase resulting in an intra-abdominal undescended testis [6].

Cryptorchidism is one of the most common genitourinary disorders in young boys. Although the management of boys with palpable testes has been standardized, there are no formal guidelines for the management of boys with non-palpable testes [7].

Clinical examinations have shown that 80% of UDTs are palpable. Of these, 30% are located in the inguinal superficial pouch, 20% in the inguinal canal, and 45% in

the upper scrotum, with only 5% in the perineum or thigh. In contrast, the remaining 20% of UDTs are non-palpable and are located in the abdominal cavity [8,9].

In peripubertal boys with nonpalpable testes, the presence of Sertoli cells is easily assessed by measuring serum inhibin B and/or AMH concentrations [10,11]. Inhibin B is undetectable in anorchid boys, but generally within the normal range in cryptorchid boys [12]. However, there are no significant differences in these concentrations between boys with unilateral and bilateral cryptorchidism [13].

Laparoscopy is currently the most reliable diagnostic modality in the management of impalpable testes. Laparoscopy can clearly visualize anatomy and provides information on which a definitive decision can be based [14].

The three main laparoscopic findings are an IAT, observed in 40% of patients, intra-abdominal blind-ending cord structures in 15% and cord structures entering the IRR in 45% [15].

We found that laparoscopic management yielded similar success rates in patients with bilateral and unilateral impalpable testes, as determined by testicular size.

5. Conclusion

In conclusion, laparoscopy in the management of bilateral impalpable testes should be preceded by careful cytogenetic and hormonal workup. Laparoscopic management yielded similar success rates in patients with bilateral and unilateral impalpable testes, as determined by testicular size.

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