

Impalpable Testes—Is Imaging Really Helpful?

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*Manuscript received: June 6, 2005, Initial review completed: August 19, 2005;
Revision accepted: March 29, 2006.*

The study evaluated the role of imaging studies in the diagnosis of impalpable undescended testes. A total of 40 children referred with 45 impalpable undescended testes had an ultrasound scan and clinical examination by a pediatric surgeon. 22 out of these 45 testes were found to be palpable on clinical examination by a pediatric surgeon. Of the remaining 23 boys (23 units of testes), 21 underwent MRI scan for identification of testes and results were compared with findings at laparoscopy. The diagnostic agreement of ultrasound and MRI in correctly localizing the testes was 19% and 52%, respectively whereas the sensitivity of detection was 60% and 55%, respectively. Imaging studies therefore have a limited role in pre-surgical evaluation of boys with impalpable testes.

Key words: *Laparoscopy, MRI, Ultrasound, Undescended testes.*

CRYPTORCHIDISM is a common finding in pediatric practice. The incidence varies from 21% in preterm infants to 1.8-4.0% in term boys(1). This drops down to 0.8% by the first birthday(2). The proportion of cryptorchid boys with impalpable testes has been reported to vary from 8-20%(3). Current imaging studies do not reliably determine the exact site of impalpable testis. The purpose of this study was to analyze the role of imaging studies in the management of children with impalpable undescended testes.

Subjects and Methods

The study included all boys referred with undescended testis over a period of four years (2000–2004). All children referred with impalpable testis by the referring physician underwent an ultrasound scan prior to clinical

review. This was followed by detailed clinical examination by a pediatric surgeon. Children with palpable undescended testis were treated by conventional open orchidopexy through an inguinal approach. MRI scan was done for those children in whom the testes could not be felt even at subsequent examination by the same surgeon. Children with impalpable testes also underwent laparoscopy. The sensitivity and specificity of ultrasound and MRI was calculated on the basis of findings at laparoscopy.

For laparoscopy, a 5 mm camera port was inserted through the umbilicus after creating CO₂ pneumoperitoneum. The following details were recorded: open or closed internal ring; status of vas and quality of vessels; presence or absence of testis; size and position of testis and feasibility for a single stage or two stage orchidopexy. Two 3 or 5 mm

ports were introduced for further procedures like laparoscopic orchidopexy, laparoscopic clipping or division of the testicular vessels for high intraabdominal testis.

Results

A total of 95 children with 105 undescended testes were studied over 4 years. The right testis was undescended in 62 children (65%) and the left in 23 (24%) whereas 10 (11%) children presented with bilateral undescended testes. 40 boys (45 units) were initially referred with impalpable undescended testes by their treating doctor. All these children had undergone an ultrasound scan to locate the position of the testis. These children underwent repeat physical examination by a pediatric surgeon who was not aware of the results of the ultrasonography (US). On re-evaluation, 17 boys (22 units) had clinically palpable testes. Of the remaining 23 boys (23 units), 21 underwent MRI scan whereas laparoscopy was done in all. At laparoscopy, 10 (43%) testes were canalicular, 12 (52%) abdominal and 1 (4%) was absent. All children recovered well following surgery.

Ultrasonography (US) results for all the 21 children with impalpable testes who also underwent MRI were compared with laparoscopic findings. US located 12 testes 9(43%) of which were incorrectly located. Out of the 9 testes not located by US, 8 were found to be present on laparoscopy. Thus, the overall diagnostic agreement of US with laparoscopy was seen in only 4 out of 21 cases (19%).

MRI located 11 testes out of which 10 were correctly located. MRI did not locate 10 testes 9 (43%) of which were present at laparoscopy. The overall diagnostic agreement of MRI with laparoscopy was 52% (11 out of 21 cases).

Discussion

8-20% of boys with cryptorchidism have an impalpable testis(3). The aim of surgery for impalpable undescended testis is to locate the testicle when present and bring it to the scrotum when possible. This gives it the best chance to function in an endocrine capacity, contribute towards fertility and help early detection in case of malignancy. Any testis that cannot be positioned in the scrotum should be removed after puberty.

Over the years, many imaging modalities have been used to detect impalpable testis. These include ultrasound, computed tomography, magnetic resonance imaging and invasive procedures like arteriography and venography(4-8). However, none of these investigations has acceptable accuracy to detect position or absence of the testis.

Laparoscopy was introduced as a diagnostic technique for the impalpable testis by Cortesi in 1976(9) and Scott reported the first series in children in 1982(10). Laparoscopy can be performed to determine the position, size and structure of the testis with great accuracy and minimal complications. It also has the advantage of being able to carry out therapeutic procedures like laparoscopic orchidopexy or orchidectomy at the same time.

Laparoscopy also helps to distinguish between low intra abdominal testis which can be readily manipulated into the internal ring and high intra abdominal testes which may need staged orchidopexy. Three children required a staged procedure in the present series.

In the present study, 22 of the 45 units of testes referred for being impalpable were found to be palpable on examination by a pediatric surgeon ruling out the need for an ultrasound in the first place. This re-

Key Messages

- Routine preoperative imaging for undescended testes has a limited role.
- US or MRI localize a true non palpable testis only rarely and hence does not alter surgical management

emphasizes the need of a clinical evaluation by a pediatric surgeon experienced in dealing with these cases.

Ultrasound is considered to be an inexpensive and the least invasive form of imaging. However, in the present study, US could correctly locate only 3 of the 20 testes which were detected at laparoscopy. Of the 9 testes not located on US, 8 were found to be present on laparoscopy.

MRI has been believed by some to be more accurate in identifying an undescended testis(11). Of the 21 children in the current study, MRI correctly located 10 out of 20 testes. Interestingly 9 of the 10 testes not located on MRI were detected at laparoscopy. This is of utmost importance because leaving a testis in an undescended position risks malignancy in the future. The increased risk of testicular cancer in cryptorchid patients is estimated to be 4 - 6 % overall and is higher in those with intra abdominal testes(12,13). Earlier studies support our finding that neither US nor MRI are currently sensitive enough to stand as a screening modality for an impalpable testis(14,15).

Laparoscopy facilitates localization of impalpable testis and the planning of subsequent treatment. Saving the expense of unhelpful investigations saves cost to the patient.

In conclusion, routine preoperative imaging for undescended testes is neither necessary nor helpful. Ultrasound or MRI do not accurately localize a true non palpable

testis and hence does not alter surgical management. As leaving a probable atrophic or viable intra abdominal testis missed by these investigations may expose the child to the risk of future malignancy, laparoscopy directly should be used for evaluation of children with impalpable undescended testes.

Acknowledgment

The authors are thankful to Dr. Aparajita Shukla, Assistant Professor in Department of Preventive and Social Medicine, V.S. Hospital, Ahmedabad for her help with the statistical analysis of the data.

Contributors: Both authors were involved in concept, design of the study, review of literature, data collection and drafting the manuscript.

Funding: None.

Competing Interests: None.

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