



## Revisiting the role of ultrasonography in preoperative localization of undescended testes in children

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### Description

For many years, ultrasonography has been a standard tool in the diagnostic approach to undescended testes in pediatric patients [1]. Its non-invasive nature, lack of radiation exposure, and ability to provide real-time imaging made it an attractive option for preoperative localization. Several studies touted ultrasound as an accurate method for identifying the location of undescended testes, guiding surgical planning and decision-making [2-5].

However, as pediatric urology has advanced, we've improved our understanding and procedures for examining undescended testes. Recent research and clinical experience have highlighted several limitations of ultrasound in this context. One key challenge is the operator-dependent nature of ultrasound imaging, which can lead to variability in interpretation and inconsistent results [3]. Additionally, ultrasound struggles to visualize undescended testes in certain anatomical locations, such as the inguinal canal or intra-abdominal region, particularly in cases of retractile or ectopic testes [3]. Ultrasound similarly cannot reliably localize a non-palpable testis or confirm an absent/vanished testis.

Recent studies have demonstrated that ultrasound alone may not provide sufficient accuracy or reliability for preoperative localization of undescended testes [3]. A systematic review found that ultrasound had a sensitivity of only 45% and specificity of 78% in detecting non-palpable undescended testes, with a significant false-negative rate. This suggests that relying solely on ultrasound for surgical decision-making may lead to missed diagnoses and inappropriate management strategies [3].

In light of these challenges, contemporary practice guidelines oppose the routine use of ultrasound in evaluation of non-palpable undescended testes [6,7]. Interventions such as diagnostic laparoscopy or open exploration are the preferred approach in all non-palpable undescended testes [1]. Palpable undescended testes on the other hand can be located in physical examination by the hands of an experienced provider or specialist and need no imaging [8].

The benefits from utilizing other imaging modalities in evaluation of non-palpable undescended testes are also limited. The cost and ionizing radiation exposure associated with CT scanning precludes its use. MRI with or without angiography while having greater sensitivity and specificity (than ultrasonography), is expensive, not widely available and requires anesthesia for use [9].

Laparoscopy, is currently the most preferred option for evaluating non-palpable undescended testes [1,10]. It facilitates direct visualization of intra-abdominal structures, allowing for precise localization and simultaneous surgical intervention if necessary. Its use is however limited by cost and non-availability in resource-poor settings. Open surgical exploration and

staged orchidopexy have also been shown to be a viable option where laparoscopic intervention is not available [5,11].

The evolving understanding of undescended testes localization has important implications for clinical practice. Pediatric urologists and radiologists must recognize the limitations of imaging modalities such as ultrasound when evaluating patients with suspected undescended testes. A guided approach, incorporating thorough clinical examination with rational use of imaging studies, and surgical expertise, is essential for accurate diagnosis and optimal management.

### **Conclusion**

In conclusion, the role of ultrasound in preoperative localization of undescended testes in children has undergone significant scrutiny in recent years. While ultrasound remains a valuable tool in certain cases, its limitations must be acknowledged, and a multimodal approach to clinical diagnosis and imaging should be considered.

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