

## Short Communication

# Management of Testicular Ectopia in Senegal

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## Abstract

**Introduction:** Intra-Abdominal Testicle (IAT) is a complex form of cryptorchidism. The Shehata procedure, a minimally invasive sequential laparoscopic technique, is described as an effective alternative for preserving spermatic vascularization. No study had evaluated this technique in Senegal. Our objective was to report the results at the Main Hospital in Dakar.

**Materials and methods:** A retrospective descriptive study was conducted from January 2022 to July 2024. All children under 16 years of age with ITD who underwent laparoscopic surgery using the Shehata procedure were included. Epidemiological, clinical, therapeutic, and evolutionary parameters were analyzed.

**Results:** Ten patients, representing 20 testicles (including 15 TIA), were included. The mean age at diagnosis was 28.37 months. Cryptorchidism was bilateral in 10 patients. The main reason for consultation was scrotal emptiness. All patients underwent a two-stage Shehata procedure for unilateral TIA and a three-stage procedure for bilateral TIA. No immediate intraoperative or postoperative complications were reported. The mean length of hospital stay was 24 hours. At 12 months follow-up, all testicles were in the scrotum. The rate of testicular hypotrophy decreased from 8 preoperatively to 3 after treatment.

**Conclusion:** The Shehata procedure is a reliable and effective technique for the management of intra-abdominal testicles in children. Our series, the first in Senegal, shows results consistent with the literature, with a 100% success rate for scrotal positioning and an improvement in testicular trophicity in the medium term. Sequential laparoscopy is a therapeutic option of choice for this condition.

**Keywords:** Intra-abdominal testicle; Shehata; Dakar

## Introduction

Cryptorchidism, defined as the absence of one or both testicles in the scrotum, has an estimated prevalence of between 3 and 5% in full-term births and can reach 20 to 30% in premature babies [1,2]. Intra-Abdominal Testicles (IAT) represent a distinct clinical entity in which the gonad is exposed to a significant risk of malignant degeneration, which is 5 to 10 times higher than in the general population [3,4]. At the same time, infertility is a major concern, linked to the unfavorable thermoregulatory environment [5,6]. Finally, the psychosocial and aesthetic impact of scrotal emptiness is a significant source of concern for parents and may affect the child himself at a later age [4,7]. Laparoscopy has become the gold standard for exploring non-palpable testicles, allowing not only visualization of the gonad, but also initiation of treatment during the same surgical procedure [8,9]. The recently described Shehata procedure is a promising, sequential, minimally invasive alternative [10-12]. The international literature reports high success rates, but its application in the West African context needs to be evaluated. It is in this context that we

conducted this study, the main objective of which was to evaluate the laparoscopic management of intra-abdominal testicles in children using the Shehata procedure at the Main Hospital in Dakar.

## Patients and Methods

This was a retrospective, descriptive, and analytical study conducted in the visceral surgery department of the Main Hospital of Dakar (HPD). Data collection took place over a period of 30 months, from January 1, 2022, to July 30, 2024. All records of patients under the age of 16 with a diagnosis of unilateral or bilateral TIA confirmed by laparoscopic exploration and who had undergone the Shehata procedure were included. This technique begins with a laparoscopic exploration to visualize the testicle. Next, the lateral peritoneum adjacent to the testicular vessels is incised, and the testicle is mobilized by dissection and then fixed at a point 2.5 cm above and medial to the contralateral Anterior Superior Iliac Spine (ASIS) using a non-absorbable suture (Ethibond 2/0). A second laparoscopic procedure is performed three months later to detach the testicle and lower it into the ipsilateral scrotum. Data were collected using a standardized, anonymous survey form. Epidemiological, diagnostic, therapeutic, and evolutionary variables were studied. The data were entered and analyzed using Microsoft Excel 2019 and R software. Quantitative variables were expressed as means and qualitative variables as numbers and percentages.

## Results

Our series included 10 patients, representing a total of 20 testicles, of which 15 intra-abdominal testicles (IAT) were treated. These 15 IATs represented 10% of all cryptorchidism cases (n=150 testicles) recorded during the study period. The mean age at diagnosis was

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28.37 months (range: 1 month to 9 years). The mean age at the first stage of the Shehata procedure was 3.25 years (range: 2 to 10 years). The most represented age group was infants (n=8). Half of the patients (n=5) came from a low socioeconomic background. Parents were the main referrers (n=5), followed by midwives (n=4). The majority of patients (n=5) came from the department of Dakar. In 8 patients, the diagnosis was made during a scheduled consultation motivated by scrotal emptiness. TIA was unilateral in 5 cases, with a left-sided predominance (n=4). Micropenis was the most frequently observed anomaly in 2 patients, followed by hypospadias and Müllerian persistence with 1 case each. An abdominopelvic ultrasound was performed in all patients. It confirmed the intra-abdominal position of the testicle(s) in all cases. It revealed testicular hypotrophy in 8 patients. No hormone testing (testosterone, FSH, LH) or karyotyping was performed in our series. During laparoscopic exploration, all testicles were found to be in an intra-abdominal position with a normal macroscopic appearance in all patients and a volume considered hypotrophic in 8 testicles. All patients had a short spermatic cord during the first stage. Epididymo-testicular dissociation was noted in 3 patients. The distribution was balanced between two-stage descent (for unilateral TIA, n=5) and three-stage descent (for bilateral TIA, n=5). No orchiectomy was necessary. The average length of stay was 24 hours (range: 12-28 hours). No intraoperative or immediate postoperative complications were observed. At the 12-month follow-up, clinical examination revealed that the testicles had descended into the scrotum. Ultrasound showed a significant improvement in trophicity, with the number of cases of atrophy decreasing from 8 preoperatively to 3.

## Discussion

Our study, the first to evaluate the Shehata procedure in Senegal, demonstrates the efficacy and safety of this sequential minimally invasive technique for the management of Intra-Abdominal Testis (IAT) in children. The results, including a 100% scrotal positioning success rate at one year and improved testicular trophicity, are consistent with data from the international literature [10,11,13]. The average age at diagnosis in our series was 28.37 months (2.36 years). This result is comparable to that reported by Shehata et al. [13] (2.3 years), but earlier than in the study by Dembélé et al. [14] in Mali (6.5 years). This delay in diagnosis reflects a common reality in sub-Saharan Africa, influenced by a lack of knowledge about the disease among families and sometimes among frontline health workers [15,16]. The predominance of referrals by parents (50%) and patients from disadvantaged socioeconomic backgrounds (50%) in our study corroborates this finding [15,16], highlighting the need to strengthen awareness and training on the systematic examination of the scrotum in newborns and infants. As expected, the main reason for consultation was scrotal emptiness (50%), a result consistent with most published series, where this reason often exceeds 80% [14,17]. The high frequency of bilateral TIA (50%) in our cohort is notable and higher than that reported in other studies (10-30%) [11,18,19]. The prevalence of associated abnormalities, particularly micropenis (25%), which is higher than in other series, reinforces the recommendation for a complete clinical examination and, in some cases, endocrine and genetic testing in the presence of a TIA, particularly in cases of bilateral involvement or sexual ambiguity [20]. Our study confirms the central role of laparoscopy, which enabled all TIA to be located and treated with great precision. Although ultrasound was performed systematically, in our context it was only of guidance value, with definitive confirmation and treatment based

on laparoscopy, in accordance with the current consensus that this is the "gold standard" [8,9]. The choice of the Shehata procedure proved to be a wise one. The 100% success rate for scrotal descent at one year is excellent and comparable, if not superior, to the 85-95% rates reported by its designer and other teams [10,11]. The major advantage of this technique is that it preserves the main spermatic vascularization, avoiding the risks of postoperative atrophy associated with the vascular ligation of the Fowler-Stephens technique [10,21]. We opted for a three-stage procedure for bilateral cases (50% of our series), an adaptation from Shehata's initial protocol, which treated both sides in two stages. This modification aims to prevent the risk of spermatic cord fusion, a potential technical complication. The most striking development in our series is the significant improvement in testicular trophicity. The number of cases of hypotrophy decreased from 8 preoperatively to 3 after 12 months of follow-up. This observation suggests that early scrotal positioning, even when performed sequentially, allows testicular growth to resume once the optimal thermal environment has been restored [5,6]. This result is crucial for the functional prognosis (future fertility) of these children and is a strong argument in favour of early surgery and a technique that preserves vascularization.

## Conclusion

Our series, the first in Senegal, shows results consistent with the literature, with a 100% success rate for scrotal positioning and an improvement in testicular trophicity in the medium term. Sequential laparoscopy is a therapeutic option of choice in this pathology. The Shehata procedure is a reliable and effective technique for the management of intra-abdominal testicles in children in our context as well.

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