

# Male Infertility as a Circumstance of Discovery of Adult Cryptorchidism: A Retrospective Analysis from the Region of Thies

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## Abstract

**Introduction:** The aim of this work is to study the clinical aspects and the impact of cryptorchidism on male infertility in the region of Thies. **Patients and methods:** This is a retrospective study involving 28 patients followed up at the Saint Jean de Dieu, Barthimée and Tivaouane hospitals of the region of Thies between January 2007 and December 2016. **Results:** Among the 223 patients followed up for the undescended testicle, 13% (n = 28) were adults or at least 15 years old. 71% (n = 20) were married. Fourteen patients were followed up for primary infertility lasting for a period of time averaging 7 years. The mean age of the patients was 28 years (range: 17 years and 45 years). Cryptorchidism was unilateral in 82% (n = 23) and bilateral in 18% (n = 5). The mean delay of consultation varied from 1 to 13 years. The main reason for consultation was couple infertility (50%). The semen analysis was requested in all our patients. The levels of FSH, LH and testosterone were measured by immunoassay for the patients with azoospermia (n = 9). We noticed 2 cases of hypotestosteronemia and 3 cases of increased FSH serum level. Computed Tomography scans (CT) were performed in 28.5% of patients (n = 8) and ectopic testicles were found very high in the inguinal area in 5 cases. The open inguinal approach was used. In perioperative period, the testicle was found, high in the inguinal region in 5 patients (17.8% of the cases) and low in inguinal region in 19 patients (67.8%). In 4 cases the testicle was in abdominal position. The testicle was atrophied in 53.5% of the patients (n = 15) and 8 patients presented testicular hypotrophy. An orchidectomy was performed in 1 patient in whom it was impossible to lower the atrophied testicle. The post-operative period was uneventful and simple. The mean follow-up duration after the operation was 36 months (12 - 60 months).

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## Keywords

Cryptorchidism, Adult, Azoospermia, Semen Analysis, Infertility

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### 1. Introduction

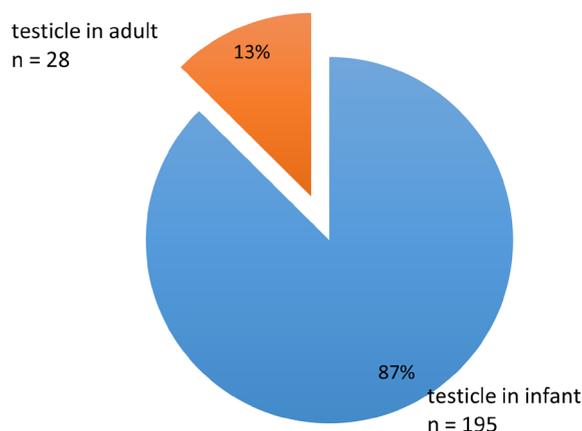
Cryptorchidism is the non-descent of the testicle which is permanently located outside the scrotum. It is a congenital condition and its diagnosis is easily suspected whenever the scrotum is empty. The circumstances of discovery are early in childhood. In that period, the surgical procedure is easier with very good results [1]. Therefore, the majority of studies are devoted during this period. However, in some situations, cryptorchidism may go unnoticed and show up in adulthood. In this context, the prognosis of testicular function and its impact on spermatogenesis can be really compromised [2]. Because the result of the surgery remains hypothetical, indeed, the procedure is more difficult and when the lowering is not possible, the other options can be the orchiopexy or orchiectomy because of severe hypotrophy or atrophy with alteration of the exocrine function [3]. The aim of this work is to study the clinical aspects and the impact of adult cryptorchidism on male infertility in the region of Thies.

### 2. Patients and Methods

This is a retrospective study conducted over a period of 10 years between January 2007 and December 2016, following data collection from 28 patients being followed up at the 3 hospitals of the area of Thies: Saint Jean de Dieu hospital, Barthimée de Thies and the Abdoul Aziz Dabakh hospital of Tivaouane. Included in this study were adult patients aged 15 years and older with unilateral or bilateral cryptorchidism and spermogram. Excluded Patients included those aged less than 15 years, or with varicocele, or had a history of inguinal hernia or testicular surgery. The parameters were collected from the medical files of the patients followed up for infertility in Urology unit; Data concerning age, occupation, marital status, medico-surgical history, reasons and time to consultation, semen analysis results, medical imaging, surgical modalities and progress under treatment were analyzed. Patients benefited from inguinal open surgery consisting of testicular lowering followed by orchidopexy in dartos or orchidectomy. Oral treatment with antioxidants was administered to the patients after the surgery for 2 months to enhance the semen (Vitamin E, Zinc, Selenium). A semen analysis was performed in all patients 3 or 6 months after surgical cure. The study was approved by the ethical committee of Thies University.

### 3. Results

Out of a total of 223 patients followed up for the undescended testicle, 13% (n = 28) of the patients were adults aged at least 15 years (**Figure 1**).



**Figure 1.** The distribution of cryptorchidism in adults.

Seventy-one point four percent ( $n = 20$ ) were married. Fourteen patients were followed up for primary infertility lasting for a period of time averaging 7 years (range 1 - 13 years). The mean age of the patients was 28 years (range: 17 years and 45 years). Medical history revealed a unilateral cryptorchidism in 3 patients. The average delay consultation time varied from 1 to 13 years. The main reason for consultation was couple infertility (50%), followed by the observation of scrotal vacuity by the patient himself in 14.3% of the cases (**Table 1**).

Cryptorchidism was unilateral in 82% ( $n = 23$ ) of patients and bilateral in 18% ( $n = 5$ ). Concerning unilateral cryptorchidism, 14 patients presented it on the right versus 9 on the left. Physical examination revealed a testicle in 60.7% of patients ( $n = 17$ ) and not palpable in 13 patients. One patient presented with hydrocele and testicular hypotrophy in 5 patients. No patient had an ectopic testicle. The semen analysis was requested in all our patients and allowed to objectify the results indicated in **Table 2**.

The levels of FSH, LH and testosterone were measured by immunoassay for the Patients with azoospermia ( $n = 9$ ). It showed a decrease in testosterone in 2 patients, an increase in FSH in 3 patients, and in 4 patients the testosterone, FSH and LH levels were normal. Pelvic or scrotal ultrasound was performed in all our patients. The presence of a testicle high in the inguinal region was noted in 2 patients and a contralateral varicocele was observed in 6 patients. Computed tomography scans (CT) were performed in 28.5% of patients ( $n = 8$ ) and undescended testicles were found very high in the inguinal area in 5 cases. However, it could not identify testicles in 3 cases. Concerning management, the open surgical inguinal approach was used in all our patients. In the perioperative period, the testicle was situated high in the inguinal area in 5 patients (17.8%) of the cases, low inguinal area in 19 patients or 67.8%, while 4 patients presented with testicles in the abdominal position. In 6 patients, it was impossible to pull down the testicle into the scrotum. In the bilateral forms, the cure was carried out in a single operation. Three patients required a second surgical procedure to complete the reduction over a period varying between 3 to 5 years. The testicle was atrophied in 53.5% of the patients ( $n = 15$ ) and 8 patients had testicular hypotrophy.

**Table 1.** The different reasons for consultation.

Reason for consultation	Number	Percentage (%)
Scrotal vacuity	4	14.3
Couple infertility	14	50
Inguinal swelling	3	10.7
Pelvic pain	2	7.1
Others	5	17.9
Total	28	100

**Table 2.** Distribution of patients according to the results of semen analysis.

Semen analysis	Number of patients	Percentage (%)
Light and Moderate Astheno-teratozoospermia	10	35.8
Severe oligospermia	5	17.8
Azoospermia	9	32.1
Asthenoteratozoospermia necrospermia	4	14.3
Total	28	100

An orchiectomy was performed in 1 patient in whom it was impossible to pull down the atrophied testicle into the scrotum. None of the patients presented with malignant degeneration of acryptorchidic testicle. The postoperative period was uneventful and simple with no complications noted in our patients. The mean follow-up duration after the operation was 36 months (12 - 60 months). We observed a marked improvement in the spermogram for 13 patients. Three of them have a child. We did not record cases of malignant degenerative on the cryptorchid testis or lowered our study.

#### 4. Discussion

Cryptorchidism is a common congenital disorder accounting for about 1% to 3% of all urogenital malformations [2]. However, its incidence decreases with age, it is estimated in adults to be about 0.23% to 0.28% [1] [4]. There is little epidemiological data on cryptorchidism in adults [1].

Its mechanism of occurrence is not completely elucidated, various theories including hormonal (androgens) and anatomical (gubernaculum testicle) have been advanced [4]. Elsewhere, Damgaard [5] incriminated the role of intra-uterine insemination and the use by the mother of nicotinic derivatives in the mechanism of occurrence of cryptorchidism.

Unilateral forms are more frequent at about 80% against 20% for bilateral forms [6]. In our study, cryptorchidism was predominantly right sided, unlike Jeddou [7] who encountered a slight left predominance. Sallami [1] states that the incidence from side to side is not significant.

The diagnosis is usually easy before an empty scrotum from birth. Yet this obvious situation contrasts the high rate of patients reporting not being aware of

the situation up until the time of an assessment for a couple's infertility or for military or corporate recruitment. However, half of the patients acknowledged that they had neglected this condition for a long time because they were completely unaware of the repercussions of this condition. Ismail [8] had identified nearly 1/3 of the patients claimed to have discovered during a physical examination of military service or for infertility of the couple. Para clinic explorations are of indicated in the event of an undescended testicle search during a clinical examination or in association with extended physical examination in case of other associated congenital malformations and the context of general surveillance [9].

The late discovery of cryptorchidism in adults exposes the problem of screening and the risks of potential complications including infertility and malignant degeneration. Indeed, the risk increases with age and it is not modified by the orchidopexia [10].

Hormone therapy is indicated during the first years of life; therefore, it does not find its place in the management of adults. Surgery remains the basic treatment. The preservation or not of the cryptorchidic testicle for adults is diversely appreciated. Indeed, some authors like Kucheria [11] propose a preventive orchidectomy in case of unilateral cryptorchidism due to the increased risk of degeneration and torsion. Authors such as Mathers [12] recommended keeping and monitoring the undescended testicle. It should be noted that the semen analysis is all the more altered as the testicle is elevated or pull down late [13]. In such cases it is advisable to propose an orchidectomy or conservative surgery, taking into account the degree of alteration of the semen analysis and the location of the undescended testicle. Thus, orchidectomy is indicated in cases of high testicular localization with a highly altered spermiogram.

The parameters of the semen analysis are often perturbed in patients with cryptorchidism in adulthood and even more frequent in cases of bilateral cryptorchidism [1] [14]. According to Saenger [4], the fertility rate is inversely correlated with the age of the intervention. The higher the age of the intervention, the more irreversible and severe are the lesions. It is in this context that a semen analysis should be systematically performed to assess the effect on the reproductive function. It is clear from the work of most authors that cryptorchidism, even one-sided, is a factor that should be taken into account in the causes of infertility [12].

Malignant degeneration is a real complication. Indeed, Darzi [15] had estimated 10% of testicular tumors occurring on cryptorchidic terrain. Chilvers [16] even suggests an absolute risk of developing testicular cancer at 1%. Seung [17] has been noted that a late operation for undescended testis is associated with an increased risk of testicular malignancy and infertility. In the literature, the delay of degeneration after orchidopexy is diversely appreciated. Thus, this period varies from 15 years according to Swerdlow [18] to 29.4 years according to Tolodano [19] between 20 and 49 years. Dysgenesis of the gonad, irreversible even after pulling down the testicle and orchidopexia, are at the origin of the tumors [20]. In all cases, it is recommended to lower the testicle to improve spermat-

genesis but to monitor for possible malignant degeneration [21].

## 5. Conclusion

Cryptorchidism in adults presents a real risk for causing infertility. Therefore, close monitoring is required even after orchidopexy. It has a significant impact on the status of the individual's fertility. Better prevention is required by systematic neonatal examination, parental awareness and surgical cure in the first years of life.

## Conflict of Interest

There is no conflict of interest.

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