

# Urogenital Complications of Groin Hernia Surgery: A Multicentre Study in Guinea

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## Abstract

**Context and Objective:** Groin hernia is a common pathology in visceral surgery (2nd rank after appendicitis), which affects approximately 4.6% of the African population. Restoring the normal anatomy of the groin region is one of the most benign interventions. However, uro-andrological complications are possible. This study aimed to contribute to the improvement of the management of urogenital complications of groin hernia surgery. **Patients and Method:** We carried out a prospective study of descriptive type with a duration of 6 months from 1 August 2021 to 31 January 2022. The data were collected using a pre-established survey sheet. The study covered several sites (public hospitals and private clinics) in Guinea. **Results:** The urogenital complications of the surgery of the hernia of the groin represented 15.22% or 14 cases out of 92 patients. The average age was 37.00 years with extremes of 20 - 69 years. Polygamists occupied the first place. The reason for consultation was dominated by decreased testicular volume (42.86%), followed by a desire to conceive (21.43%). Unilateral testicular atrophy represented 63.64%, bilateral 27.27%. We performed a left orchidectomy in one patient and a cystorraphy in another simple operative follow-up. The other cases consisting of testicular atrophy, due to lack of a suitable technical platform, did not benefit from any specific therapeutic treatment. **Conclusion:** Urogenital complications of groin hernia surgery are relatively common. Testicular atrophy was the main clinical complication. The left orchidectomy and cystorraphy were the therapeutic procedures performed.

## Keywords

Hernia of the Groin, Herniorraphy, Testicular Atrophy, Orchidectomy,

## 1. Introduction

The urogenital complications of the groin herniorrhaphy are defined as the appearance of new pathological phenomena concerning the urogenital system secondary to the surgery of the groin hernia [1]. Herniorrhaphy involves restoring the normal anatomy of the groin region. It is one of the most benign interventions thanks to perfect knowledge of the anatomy of the inguinal region and the evolution of surgical techniques and therapeutic procedures. It is often discussed, as the best approach that gives less recurrence, pain and complications [2]. It is an intervention providing uro-andrological sequelae by damage to the elements of the spermatic cord and the bladder [3]. Despite the benign management of the hernia of the groin, it can be enlarded complications with unpredictable consequences. It is estimated that 20 million groin hernias are operated on worldwide each year.

It is at the origin of approximately 120,000 surgical interventions per year in France, more than 700,000 procedures per year in the United States and more than 200,000 procedures annually in Germany [4].

In New York, Wantz [5] reported 2 cases of testicular atrophy out of 1682 Shouldice-type herniorrhaphies for primary hernia and 5 cases of testicular atrophy out of 311 herniorrhaphies for recurrence. In Senegal, Sarr *et al.* [6] reported 6 cases of accidental opening of the bladder in intraoperative, a case diagnosed in immediate postoperative by a urine outlet through the surgical wound. In Guinea, the lack of previous studies on the subject and the clinical psycho-social severity related to some of these complications was the aim of this study.

## 2. Patients and Method

Ours was a prospective, descriptive study extending over a period of 6 months. It included 14 patients with urogenital complications of groin herniorrhaphy.

We used as data sources: consultation registers, operative reports, and patient medical records.

All patients presenting with urogenital complications of groin herniorrhaphy during the study period constituted our study population. Our variables were qualitative and quantitative grouped into sociodemographic, clinical, paraclinical and therapeutic variables. The sperm assessment standards used in this study were those of the WHO from 2010. Severe oligozoospermia was defined by a sperm concentration below 5 million/ml. Azoospermia was defined as an absence of spermatozoa in the semen. Hormonal assessment (dosage of FSH and testosterone) was done in cases of azoospermia and severe oligozoospermia. According to the scrotal ultrasound data, we considered any testicle whose volume was less than 5 ml to be atrophic, and any testicle whose volume was between 5

and 10 ml to be considered hypotrophic.

### 3. Results

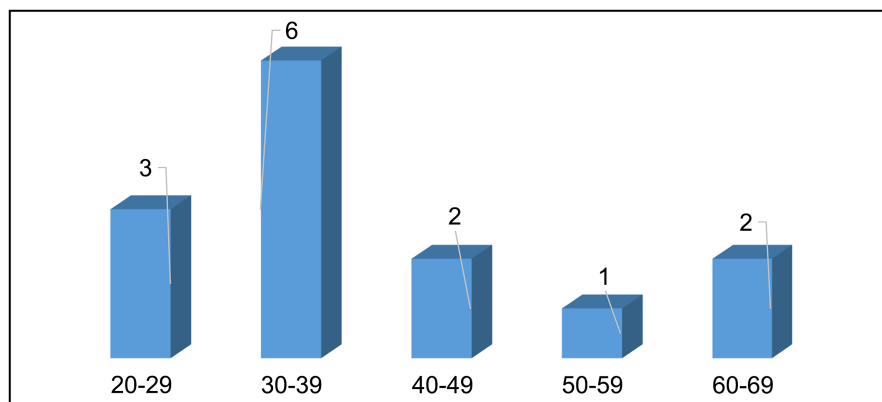
Urogenital complications of groin herniorrhaphy represent 15.22% or 14 cases out of a total of 92 patients with a history of inguinal herniorrhaphy. The average age of the patients was 37.00 years with extremes ranging from 20 - 69 years (**Figure 1**). The reasons for consultation were mainly dominated by the desire to conceive (42.86%).

Marital status was superimposed on the reason for consultation. We noted six polygamists and one divorced.

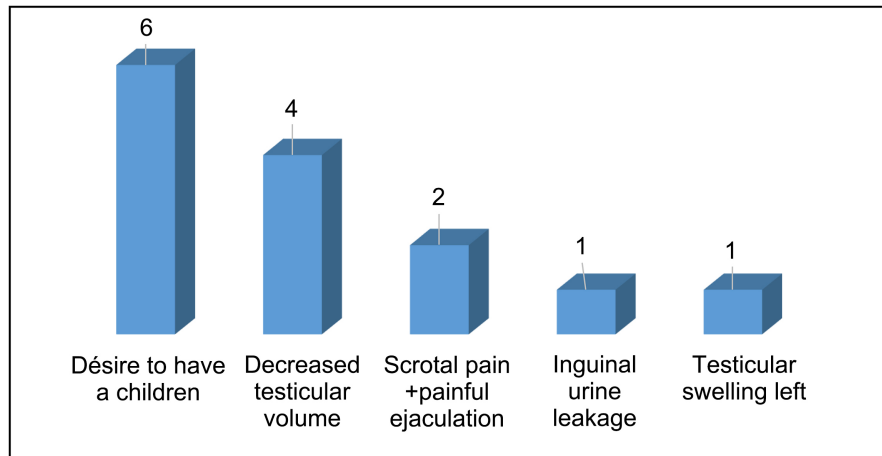
According to the status of the operating doctors, we noted 9 urogenital complications among doctors acting as interns. The main health structures providing urogenital complications in our study were private clinics, *i.e.* 42.86%. The findings of the sperm assessment carried out in six patients were azoospermia in four and severe oligozoospermia in two patients. FSH levels were elevated in four patients. Thirteen patients performed the ultrasound which concluded that there was testicular hypotrophy in twelve patients and suppurative orchitis in one patient who underwent an orchiectomy with simple consequences. Cystorrhaphy was done for accidental opening of the bladder in a patient. Due to our technical platform, other patients were referred to better-equipped centers for better care.

### 4. Discussion

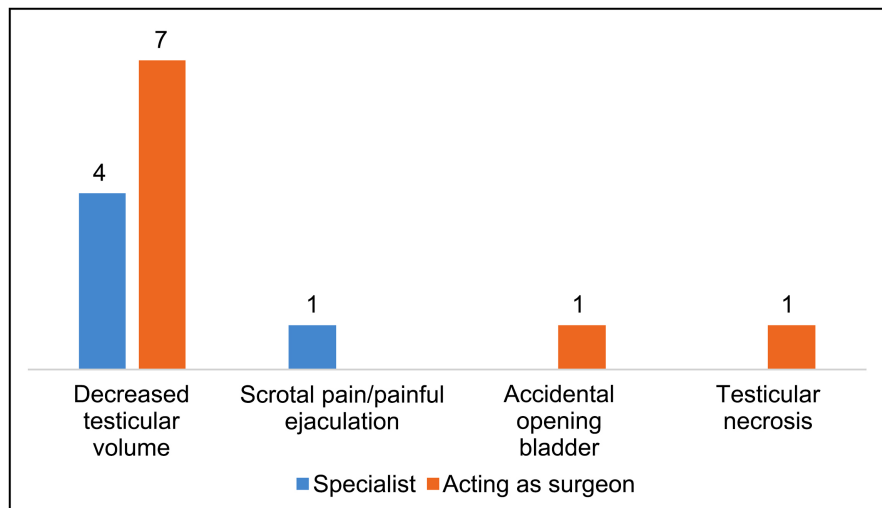
Groin hernias are described in the literature as the 2nd most common pathology in visceral surgery, and occur mainly in adulthood and old age [7]. The mechanism is thought to be the strain placed on the abdominal wall by certain activities and the parietal weakness associated with advanced age. In our study, the mean age was 37.00 years, with extremes of 20 - 69 years. El Omari [8] reported a mean age of 48.9 years, with extremes of 30 - 65 years. Urogenital complications of groin herniorrhaphy are difficult to assess, as published series are short or concern very specific isolated cases [9].



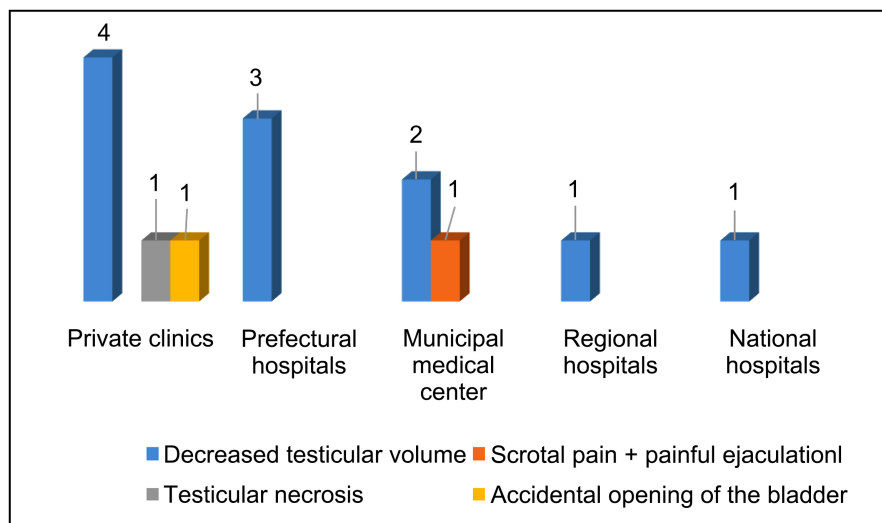
**Figure 1.** Distribution of patients according to age groups.



**Figure 2.** Distribution of patients according to reasons for consultation.



**Figure 3.** Distribution of complications according to the status of the operating physician.



**Figure 4.** Distribution of complications according to the level of structure.

Considered a benign procedure, herniorrhaphy can be fraught with urogenital complications with unpredictable consequences, the frequency of which varies from 3% to 39% [10] in the literature. In our study of a population of 92 patients, we recorded 15.22% urogenital complications. This result is higher than that reported by Djé *et al.* (6.2%) [9]. The multicentric nature of our study would explain this difference. Groin herniorrhaphy (according to the Mac-Vay, Bassini and Shouldice techniques mainly used in Guinea-Conakry) is reputed to be under tension and responsible for compression of the spermatic cord elements [11] [12]. The result is impaired testicular exocrine function due to ischemic testicular atrophy, which is one of the causes of male infertility [12]. We noted four cases of azoospermia and two cases of severe oligozoospermia. Shin *et al.* reported fourteen cases of azoospermia [13].

In addition to their clinical aspects, the urogenital complications of groin herniorrhaphy have psychosocial repercussions, notably polygamy of necessity and divorce. In our study polygamists were the most represented (42.86%). This polygamy known as “necessity” [14] [15] is superimposed on the consultation patterns where the desire for design took first place (Figure 2). Frequent and diversified surgical practice is increasingly bold and routine in our working environment. The surgeon’s experience is a not inconsiderable factor in the genesis of the disease post groin herniorrhaphy urogenital complications [9]. In our study, 64.29% of operating physicians are acting surgeons, whose inexperience coupled with a deaf financial concern would be a risk factor for the occurrence of these urogenital complications of groin herniorrhaphy (Figure 3). In our work context, there is a parallelism between the qualification of health professionals and the health pyramid in Guinea. In contrast to the base, which is the main source of urogenital complications from groin herniorrhaphy, the summit is equipped and staffed with qualified personnel (Figure 4).

## 5. Conclusions

Post-herniorrhaphy urogenital complications are relatively frequent and are essentially dominated by testicular atrophy, the treatment of which depends on the type of lesion and the time of diagnosis.

With a frequency of 15.22% in this study, they represent a possible iatrogenic cause of male infertility that is underestimated and associated with psychosocial repercussions that include the following:

- Polygamy of necessity;
- Divorce.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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