

# Torsion of the Spermatic Cord in Adults: Epidemiological, Diagnostic and Therapeutic Aspects Observed in 46 Patients at the Bouake Teaching Hospital

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## Abstract

**Introduction:** Torsion of the spermatic cord (TSC) is a serious surgical emergency because it is responsible for acute ischemia that can lead to the loss of the testicle. Very few studies have been carried out in Côte d'Ivoire and particularly in Bouaké, on torsion of the testicle. The general objective of this work was to describe the epidemiological, diagnostic and therapeutic aspects of testicular torsion in our context. **Materials and Methods:** This is a retrospective study on 46 patients received urgently at the Teaching Hospital of Bouaké over a period of nine (9) years from December 01, 2010 to November 30, 2019 for torsion of the spermatic cord in adults. **Results:** The mean age of patients was 26.6 years with extremes of 17 to 41 years. 33 patients were seen before the sixth hour and 13 beyond. Scrotal pain, swelling of the hemibursa and testicular ascent were the dominant physical signs. Orchiectomy + contralateral testicular fixation was performed in 11 patients (23.9%). The average length of hospital stay was three (3) days. The immediate post-operative follow-up was simple. Late complications were marked by two testicular atrophy. **Conclusion:** Our series was marked by a high rate of orchiectomy. Actions to raise caregivers' awareness of the population must be carried out so that they consult quickly in front of any painful stock market board to avoid the delay in diagnosis and management detrimental to the vitality of the torsional testicle.

## Keywords

Torsion, Testicular Cord, Orchiectomy, Orchiopexy, Atrophy

## 1. Introduction

Torsion of the spermatic cord (TSC) is a serious surgical emergency because it is responsible for acute ischemia of the testicle leading to the loss of its vitality in the absence of urgent restoration of vascular circulation and also alteration of the contralateral testicle compromising the fertility of the patient. TCS constitutes some 20% of scrotal emergencies [1]. Its classic clinical presentation is that of a large painful acute bursa. Its diagnosis is clinical and the time factor remains the main element. Thus, early diagnosis and treatment before the first 6 hours after torsion of the spermatic cord can prevent the destruction of the testicle.

Thus, as the assertion says, “opening the scrotum unnecessarily for epididymitis is only a small error of diagnosis without consequence. Letting a torsion of the testicle evolve is a serious mistake: it results in the loss of the testicle”; justifying that “any large painful non-febrile acute bursa in adolescents must be considered as a torsion of the testicle”.

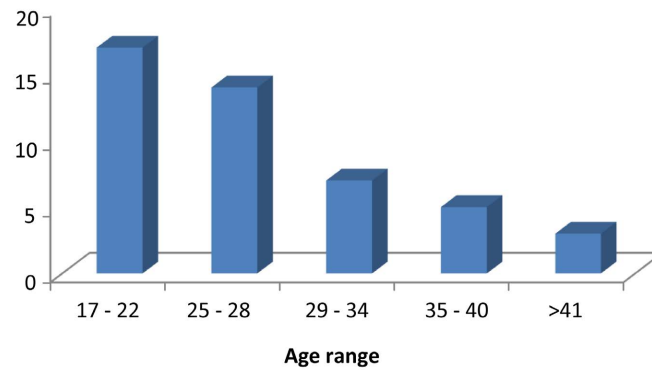
In Côte d’Ivoire, and particularly at the Bouaké Teaching Hospital, very few studies have been carried out on testicular torsion. Thus, we decided to conduct this study whose general objective was to describe the epidemiological, clinical and therapeutic aspects of spermatic cord torsion (TSC) at the urology department of the Bouaké Teaching Hospital.

## 2. Materials and Methods

This was a retrospective cross-sectional study for descriptive and analytical purposes, covering a nine-year period from 1 December 2010 to 30 November 2019. This study took place at the Bouaké Hospital and University Center. During this period, 46 cases of torsion of the spermatic cord were collected. All patients who had been hospitalised and operated on for testicular torsion and had complete records were included in the study. The parameters studied were age, occupation, reason for consultation, consultation time, seat, physical signs, time for surgical management, surgical findings, gestures performed and postoperative follow-up. The data were collected on a survey sheet and processed using EPI INFO 3.5.1. Qualitative variables were presented as proportions. The quantitative variables were entered in the form of averages with standard deviations and extremes values. The comparison of the proportions (relationship between the time to consultation and the condition of the testicle; the relationship between the time to treatment and the condition of the testicle) was made using the  $\text{Khi}^2$  test or the  $\text{Khi}^2$  test with Yates’ correction or Fischer’s exact test when the application conditions of  $\text{chi}^2$  test were met. The explained variable was the non-viability of the testicle and the explanatory variables were the time to consultation and the time to treatment. The significance threshold was set for a value of  $p < 0.05$ .

## 3. Results

The mean age of patients was 26.6 years with extremes of 17 and 41 years (Figure 1).



**Figure 1.** Distribution of patients by age groups.

The majority of people affected were students (**Figure 2**).

All our patients consulted for unilateral testicular pain.

The majority of patients (71.74%) consulted less than 6 hours after torsion of the spermatic cord (**Table 1**).

Painful swelling of the testicle was the most observed physical sign in 95.65% of cases (**Table 2**).

Torsion of the spermatic cord sat on the left testicle in 80.43% of cases.

The majority of patients were operated on less than one hour after diagnosis of spermatic cord torsion (69.57);  $n = 32$  (**Table 3**).

Regarding intraoperative findings:

- 35 patients presented to scrototomy a reaction fluid that was translucent in 76.08% of cases and ladle in 23.90% of cases.
- Twenty-nine (29) patients had two (2) turns of whorls or 63.04% or in 29 patients.
- In 95.65% of cases *i.e.*  $n = 44$ , the torsion was counterclockwise.
- Before the distortion, the epididymo-testicular block had a normal color in 71.74% of cases (**Table 4**).
- Appearance of the epididymo-testicular block after distortion and saline bathing: (**Table 5**).

Testicular epididymis block retained its normal color in 71.74% of cases. The two cases with purplish colour reverted to normal colour and 11 cases retained blackish colouration.

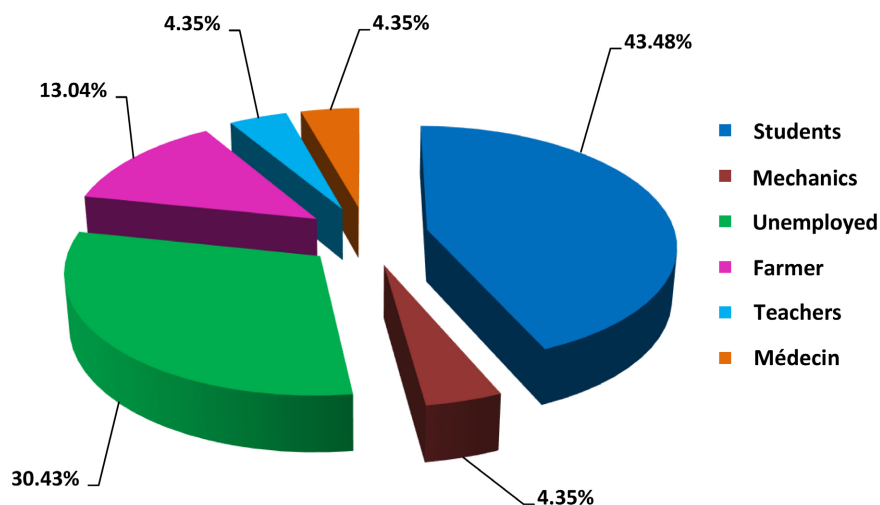
- The testis was viable in 35 patients in 76.09% versus 23.91% in 11 patients who had a necrotic testicle.

The distortion associated with homo and contralateral orchidopexy was the most performed operative procedure in 65.21% of cases (**Table 6**).

The postoperative period was punctuated by the occurrence of two testicular atrophies on twisted and fixed testicles.

The majority of testicular necrosis was found in patients who consulted after the twelfth hour. The time frame is a risk factor for testicular necrosis (**Table 7**).

The postoperative period was punctuated by the occurrence of two testicular atrophies on twisted and fixed testicles.



**Figure 2.** Distribution of patients by professional activity.

**Table 1.** Distribution of patients by time to consultation.

Consultation period in Hours	Effective	Percentage
<b>0 - 6 h</b>	<b>33</b>	<b>71.74</b>
7 - 12 h	5	10.67
13 - 18 h	4	8.7
19 - 24 h	2	4.35
More than 24 h	2	4.35
Total	46	100.00

**Table 2.** Frequency of physical signs of TSC.

Physical sign	Frequency	Percentage
Sign of Governor	40	86.95
Sign of PREHN	37	80.43
<b>Painful swelling testicle</b>	<b>44</b>	<b>95.65</b>
Abolition of the reflex Cremasterian	10	21.73

**Table 3.** Distribution of patients by time to management surgical.

Pick-up time in hours (H)	Workforce	Percentage
<b>&lt;1 H</b>	<b>32</b>	<b>69.57</b>
1 - 4 H	10	21.74
2 - 4 H	3	6.52
>4 H	1	2.1
Total	46	100.00

**Table 4.** Color of the epididymo-testicular block before distortion.

Colour	Effective	Percentage
<b>Normal</b>	<b>33</b>	<b>71.74</b>
Purplish or bluish	2	4.34
Blackish	11	23.91
Total	46	100.00

**Table 5.** Colour of epididymo-testicular block after distortion associated with saline bath.

Recoloration	Effective	Percentage
Positive	35	76.09
Negative	11	23.91
Total	46	100.00

**Table 6.** Distribution of patients by surgical procedure.

Surgical procedures	Effective	Percentage
<b>Homo and contralateral distortion + orchidopexy</b>	<b>30</b>	<b>65.21</b>
Orchiectomy + Contralateral Orchidopexy	9	19.56
Detorsion + Homolateral Orchidopexy	5	10.86
Orchiectomy + contralateral orchidopexy	2	4.34
<b>Total</b>	<b>46</b>	<b>100.00</b>

**Table 7.** Distribution of patients by surgical procedure.

Surgical Procedures	Number of staff	Percentage
<b>Homo and contralateral distortion + orchidopexy</b>	<b>30</b>	<b>65.21</b>
Orchiectomy + Contralateral Orchidopexy	9	19.56
Detorsion + Homolateral Orchidopexy	5	10.86
Orchiectomy + contralateral orchidopexy	2	4.34
<b>Total</b>	<b>46</b>	<b>100.00</b>

The majority of testicular necrosis was found in patients who consulted after the twelfth hour. The time frame is a risk factor for testicular necrosis (**Table 8**).

- A consultation time  $\leq 6$  hours was statistically associated with testicular viability ( $p = 0.0007$ ).
- A consultation time of between 13 and 18 hours was statistically associated with testicular non-viability ( $p = 0.002$ ).

The majority of testicular necrosis has been observed in patients with a management time greater than 7 hours (**Table 9**).

**Table 8.** Relationship between consultation time and testicular condition.

Counselling time	Non-viable Testicle %	Viable Testicle %	p
0 - 6 H	3 (9.09)	30 (90.91)	0.0007
07 H - 12 H	0 (0.00)	5 (100)	0.317
<b>13 H - 18 H</b>	<b>4 (100)</b>	<b>0 (0)</b>	<b>0.002</b>
<b>19 H - 24 H</b>	<b>2 (100)</b>	<b>0 (0.0)</b>	<b>0.0833</b>
<b>&lt;24 H</b>	<b>2 (100)</b>	<b>0 (0.0)</b>	<b>0.0833</b>

**Table 9.** Relationship between management and testicular condition.

Counselling time	Non-viable Testicle (%)	Viable Testicle (%)	p
<1 H	5 (15.63)	27 (84.38)	0.159
1 - 2 H	2 (20)	8 (80)	1
<b>7 - 8 H</b>	<b>3 (100)</b>	<b>0 (0.0)</b>	<b>0.108</b>
>8 H	1 (100)	0 (0.0)	0.5363

#### 4. Discussion

In our study, patients who experienced spermatic cord torsion had an average age of 26.6 years with extremes of 17 and 41 years. This result is superimposed on those found in the study by Kaboré *et al.* in Burkina Faso [2], and Fahad *et al.* in Saudi Arabia [3] which was respectively 26 and 26.4 years. The occurrence of TSC in these young people could be explained by the practice of intense sports activity.

Pupils and students accounted for 43.48% of the torsions of the spermatic cord in our series, followed secondarily by the unemployed who accounted for 30.43%. This result is identical to that of Kaboré *et al.* in Burkina Faso which was 43.50%, followed by the unemployed which was 30.40%. This result could be explained by the organization of many sports activities in schools and universities.

In our work, all patients consulted for testicular pain. This result is superimposed on that of Audenet *et al.* in France, and Bah *et al.* in Guinea Conakry [4], which were respectively 90% and 100%. In Kaboré *et al.* painful swelling of the testicle was present in all patients. This result could be explained by the non-tolerance of scrotal pain.

33 of our patients among the 46 or 71.74% consulted less than 6 hours after the onset of symptomatology. Zinil *et al.* found a result superimposed on ours in his work [5]. This could be explained by the fact that young people in this age group do not tolerate pain and prefer to consult early. 28.26% of patients consulted more than 6 hours after the onset of symptomatology.

In our series, unilateral scrotal swelling was the most common physical sign in 95.65% of cases. This result is contrary to that of Zinil *et al.* [5] and Kaboré *et al.* which were respectively 95% and 100%, in favor of the governor's sign. This result could be explained by the non-specificity of the physical signs in front of the

TCS.

In our series, TSC predominated on the left with 80.40% of patients. This result is contrary to that of Sarr *et al.* in Dakar [6], where the predominance was right. No explanation could be found for this variability in topography.

Torsion of the spermatic cord is a surgical emergency because it is responsible for acute ischemia of the testicle beyond 6 hours of time. It can lead to a loss of vitality in the absence of an urgent restoration of vascular circulation. Thus, the time factor remains a crucial element in the vital prognosis of the testicle. In our study, 32 of the 46 patients received were treated in less than an hour. This result is consistent with those of Sarr *et al.* in Dakar and Artus *et al.* [7] who received 30 and 34 patients respectively. This result could be explained by the application of the predictive clinical score (TWIST) to the usefulness of performing an exploratory scrototomy quoted from 1 to 7 [8]. This score uses urological history and physical examination to assess the risk of the twisted testicle. Parameters include swelling of the testicle (2 points), hard testicles (2 points), absence of the cremasteric reflex (1 point) nausea/vomiting (1 point) Governor's sign (1 point). Of the 46 patients received, 14 received care for more than one (1) hour. This result could be explained by the taboo related to sex in our societies on the one hand and on the other hand, the delay in surgical care, due to the limited financial means of patients, difficulties in accessing health centers.

In 35 patients or 76.09%, the reaction fluid was translucent, while in the other 11 patients, the reaction fluid was blackish. These results are superimposed on those of Odzébé *et al.* [9], in Brazzaville, which was 70.09% for the translucent liquid. In general, all serous people react to inflammation by producing fluid.

In our series, 33 patients have had more than two (2) turns of whorl on scrototomy and 13 patients have one (1) turn of whorl. Ten (10) patients out of the thirty-three (33) who had more than two (2) turns of whorl had their testicles necrotic while only one patient out of the thirteen (13) who had one (1) round of whorl had his testicle necrotic. These results are comparable to those of Nding *et al.* [10] in Libreville and Vamina *et al.* [11] in Switzerland who also observed that patients with a non-viable testicle had a whorl turn count greater than or equal to two. This result could be explained by a more significant strangulation of the vascular pedicle resulting in ischemia, hypoxia and rapid necrosis of the testicle.

In our series, systematic contralateral orchiectomy + orchidopexy accounted for 23.9% compared to 76.1% for homo and contralateral distortion + orchidopexy. This result is similar to that of Bah *et al.* in Senegal, which was 23.01% against 76.99%. This result could be explained by the delay in consultation and management in our study, which seems to be the main predictor of testicular loss.

In our series, the postoperative follow-up was punctuated by two testicular atrophy. This result is lower than that of Sarr *et al.* in Senegal. This atrophy could be explained by the presence of micro lesion passed unnoticed responsible for ischemia postoperatively.

In our series, the majority of testicular necrosis occurred in patients who consulted after the twelfth hour. Consultation time greater than or equal to twelve (12) hours was a significantly high-risk factor for testicular necrosis. This result is comparable to that of Kaboré *et al.* in Burkina Faso. This finding may be due to the fact that the risk of testicular necrosis is high when the consultation time is longer than 6 hours of time.

In our series, the majority of testicular necrosis was found in patients with a management time greater than 7 hours. Time to management beyond 7 hours was a significantly elevated risk factor for testicular necrosis. This result is comparable to that of Sarr *et al.* in Dakar. This may be because the later the management, the more imminent the risk of necrosis.

## 5. Conclusion

Torsion of the spermatic cord is a surgical emergency that involves an exploration of the testicle under anesthesia. This exploration must be carried out at the slightest doubt in order to avoid the permanent loss of the testicle. Actions to raise caregivers' awareness of the population must be carried out so that they consult quickly in front of any painful stock market chart to avoid the delay in diagnosis and management detrimental to the vitality of the torsional testicle.

## Ethical Committee Approval

The study was ethical approval from the local ethical committee of our University.

## Conflicts of Interest

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

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