

RESEARCH ARTICLE

# Results of the First Testicular Biopsies Performed in Abidjan for the Management of Male Infertility

Yeo Donafologo Daouda<sup>1,3</sup>, Yao Evrard Kouamé<sup>1,2,3</sup>, Adebayo Tawakaltu<sup>1,3</sup>, Tuo Sekou Michel<sup>3</sup>, Fofana Abroulaye<sup>1,3</sup>, Tiadjouh Brice Nelson<sup>1</sup>, Binaté Abdoul-Rahamane<sup>1</sup>, Yebouet NZibla<sup>1</sup>, Coulibaly Noel<sup>1,3</sup>

<sup>1</sup>Urology department, Treichville University hospital, Abidjan, Ivory Coast.

<sup>2</sup>Surgery department, Abidjan Military hospital, Abidjan, Ivory Coast.

<sup>3</sup>Surgery and surgery specialties department, Université Felix Houphouet Boigny, Abidjan, Ivory Coast.

Received: 02 March 2026 Accepted: 20 March 2026 Published: 23 March 2026

**Corresponding Author:** Yeo Donafologo Daouda, Surgery and surgery specialties department, Université Felix Houphouet Boigny, Abidjan, Ivory Coast.

## Abstract

**Background:** Evaluation of the male partner is essential in the management of couples with infertility. Testicular biopsy is sometimes required, especially in cases of peripheral azoospermia. The aim of this study was to report the results of testicular biopsy as a means of diagnosis and treatment of azoospermia at Treichville University Hospital.

**Method:** We conducted a cross-sectional study with retrospective data collection over 3 years, from January 2020 to March 2023. We included all patients who consulted for infertility with spermograms and hormonal tests (FSH, Testosterone) showing peripheral azoospermia. The variables studied were: socio-demographic variables; clinical variables and paraclinical variables.

**Results:** A total of 11 cases were included in the study. The mean age of our study was 40 years with a standard deviation of 9.26. The mean age for the duration of the parental project was 8 years, with a standard deviation of 6.2 years. 54.5% of our indications were azoospermia + in vitro fertilisation, compared with 45.5% for azoospermia. The sperm population was rare in 54.5% and absent (sterility) in 27.3%.

**Conclusion:** Testicular biopsy continues to play an important role in the diagnosis of peripheral azoospermia and is often the starting point for AMP techniques.

**Keywords:** Biopsy, Infertility, Spermogram, Testicular.

## 1. Introduction

Infertility is the inability of a sexually active couple without contraception to achieve a pregnancy within one year, or earlier if one of the 2 members of the couple is known to be hypofertile (woman over 35, cryptozoospermia, etc.) [1] Around 15% of couples experience infertility, of which 20% are of strictly male origin and 40% are mixed. These mixed causes include a male factor [2]. In addition, a decline in sperm quality (0.70 million/ml/year) has been observed since the early 1980s. [3] Evaluation of the male partner is an essential part of the aetiological and therapeutic approach in couples with infertility and in men with a

risk factor for hypofertility. [4] A spermogram is used for this investigation. Azoospermia is the absence of spermatozoa in the ejaculate. Testicular biopsy is part of the investigation and treatment (assisted medically procreation) of male infertility. The combination of intracytoplasmic sperm injection and various testicular sperm retrieval techniques (TESE, Micro-TESE, FNA) has revolutionised the treatment of infertility. [5] These diagnostic and procreation techniques are recent in Côte d'Ivoire. Testicular biopsy is still rarely performed because the technical facilities are limited to a few medically assisted reproduction centers.

**Citation:** Yeo Donafologo Daouda, Yao Evrard Kouamé, Adebayo Tawakaltu, *et al.* Results of the First Testicular Biopsies Performed in Abidjan for the Management of Male Infertility. Archives of Urology. 2026;8(1): 12-15.

©The Author(s) 2026. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

The general aim of this study is to report the initial results of testicular biopsy in azoospermia.

Specific objectives:

- Describe the study population
- Specify the indications for testicular biopsies
- Identify the histological aspects of the specimens.

## 2. Materials and Methods

This was a prospective cohort conducted over 3 years, from January 2020 to March 2023.

We included all patients consulted for infertility for whom the spermogram and hormonal examination (FSH, Testosterone) concluded peripheral azoospermia.

Incomplete medical observations and secretory and

central azoospermia were excluded. Sampling was non-probability consecutive and exhaustive.

Information relevant to the study was extracted from the medical records and then recorded on a data collection sheet containing the study variables.

These data were recorded using SPSS 26.0 software. The variables studied were: socio-demographic variables; clinical variables and paraclinical variables.

The qualitative variables were expressed by their numbers and percentages. Quantitative variables were expressed in terms of means, standard deviations and extremes.

Graphs were produced using OFFICE EXCEL 2013 and tables using OFFICE WORD 2013.

All biopsies were performed using the conventional testicular sperm extraction (TESE) technique (figure 1)



Figure 1. Incision of the testicular albuginea

## 3. Results

During the study period, out of 635 patients, we identified 11 patients with azoospermia who had undergone testicular biopsy.

A total of 11 cases were included in the study.

The median age was 39, with extremes between 26 and 56.

The oldest age group was 35-44 years with a percentage of 36%.

The median age for the duration of the parental project was 5 years, with extremes of 2 and 20 years (figure 2).

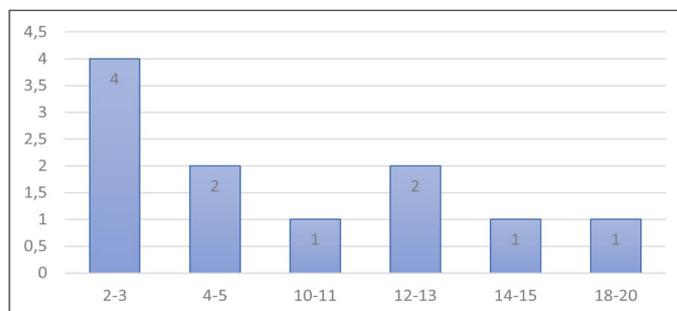


Figure 2. breakdown by duration of parental project

Table 1. Breakdown by indication for testicular biopsy

BIOPSY INDICATION	Frequency	Percent
Azoospermia	5	45,45%
Azoospermia/IVF	6	54,55%
Total	11	100,00%

We note that 6/11 of our indications were azoospermia + in vitro fertilisation and 5/11 were for azoospermia.

**Table 2.** *Distribution of biopsies by sampling site*

LATERALITY OF BIOPSY	Frequency	Percent
1 testicle	2	18,18%
2 testicles	9	81,82%
Total	11	100,00%

Our biopsies were performed in 9/11 of in both testicles.

**Table 3.** *Breakdown by number of biopsies performed on each patient*

NOMBER OF BIOPSY	Frequency	Pourcent
1	6	54,55%
2	4	36,36%
4	1	9,09%
Total	11	100,00%

One of our patients had more than 4 biopsies in our series compared with 6 who had only one biopsy.

All testes were macroscopically normal.

**Table 4.** *Distribution according to the presence of spermatozoa under microscopy*

APPEARANCE OF SPERMATOZOID IN MICROSCOPY	Frequency	Pourcent
NONE	3	27,27%
QUITE A FEW	1	9,09%
MANY	1	9,09%
FEW	6	54,54%
TOTAL	11	100,00%

The sperm population was rare in 6/11 and absent (sterility) in 3/11.

**Table 5.** *Distribution according to the presence of germ cells*

GERM CELLS	Frequency	Pourcent
NONE	1	9,09%
QUITE A FEW	4	36,36%
MANY	3	27,27%
FEW	3	27,27%
TOTAL	11	100,00%

#### 4. Discussion

The age of our study population is similar to that of Justin A. Bossa et al in Kinshasa, who found a mean age of  $38.6 \pm 4.98$  years, with extremes of 28 and 48 years. [6]

Layla Abdullah, et al in Saudi Arabia, had an average age of 24.5 years, with extremes of 22 and 70 years. [7] These different studies systematically show that young people under the age of 25 are the most concerned.

Our indications were azoospermia for diagnostic purposes and azoospermia + AMP.

Martin B et al, subdivided two types of indications for testicular biopsy for infertility. [8]

One indication is therapeutic and the other

diagnostic. The indications for therapeutic biopsies were obstructive azoospermia and non-obstructive azoospermia. The indications for diagnostic biopsies were to rule out testicular intraepithelial neoplasia in the case of testicular microcalcifications on ultrasound. They may be indicated in cases of azoospermia in patients with Klinefelter’s syndrome.

We note that our indications are different from those described by Martin B. The aim of our study was not to evaluate the type of azoospermia in our population.

In our series, we performed conventional sperm extraction (TESE) for all our biopsies.

Our results are similar to those of Justin et al in Kinshasa, who in his series only performed conventional extractions. [6]

In our French-speaking sub-Saharan African context,

most of us do not yet have the technical resources to perform microsurgery such as micro-TESE, which requires optical magnification.

Franco et al, in Italy, in a series of 64 patients with poor prognosis non-obstructive azoospermia, performed microTESE after conventional TESE. In the absence of spermatozoa, multiple TESE were performed. [9]

Alkandari et al and Tournaye et al show that testicular or epididymal spermatozoa collected surgically and used in ICSI give good results. [10 ;11]

The fertilisation rate was between 45 and 60% per injected oocyte. The clinical pregnancy rate is between 23% and 35% and the live birth rate is between 18% and 36%. [12 ;13]

These results are comparable to those obtained using ejaculated sperm. [14]

## 5. Conclusion

Testicular biopsy remains of major interest in the diagnosis of peripheral azoospermia and assisted medically procreation (AMP). In Abidjan, the infertility rate is low.

AMP, once it becomes more widely available and accessible, could give hope to all those patients suffering from peripheral azoospermia.

## Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Author Contributions

Yeo Donafologo Daouda: *Conceptualization*, Yao Evrard Kouame: *Data curation*, Fofana Abroulaye: *Writing– review & editing*, Tiadjouh Brice Nelson : *Methodology*, Adebayo Tawakaltu Bolasade : *Writing– review & editing*, Binaté Abdoul-Rhahamane: *Data analysis*, Yebouet Nzibla Marie Ange: *Data curation*, Coulibaly Noel : *Supervision, validation*.

*All authors are mentioned*

## Funding

Our study did not receive any external funding.

## Acknowledgments

Not applicable

## 6. References

1 Abdel-Meguid TA, Al-Sayyad A, Tayib A, Farsi HM. Does varicocele repair improve male infertility? An evidence-based perspective from a randomized, controlled trial. *European urology*. 2011;59(3):455-61.

- 2 Abdullah L, Bondagji N. Histopathological patterns of testicular biopsy in male infertility: A retrospective study from a tertiary care center in the western part of Saudi Arabia. *Urology annals*. 2011;3(1):19.
- 3 Abu-Musa AA, Nassar AH, Hannoun AB, Usta IM. Effect of the Lebanese civil war on sperm parameters. *Fertility and sterility*. 2007;88(6):1579-82.
- 4 Al-Rayess MM, Al-Rikabi AC. Morphologic patterns of male infertility in Saudi patients. *Saudi Med J*. 2000;21:625-8.
- 5 Ammal PL, Das SK. Testicular biopsy in male infertility. *J Med Sci Clin Res*. 2017;5:20616-9.
- 6 Pilatz A, Kilb J, Kaplan H, Fietz D, Hossain H, Schüttler CG, et al. High prevalence of urogenital infection/inflammation in patients with azoospermia does not impede surgical sperm retrieval. *Andrologia* [Internet]. nov 2019 [cité 5 déc 2023];51(10). Disponible sur: <https://onlinelibrary.wiley.com/doi/10.1111/and.13401>
- 7 Pilatz A, Lochnit G, Karnati S, Paradowska-Dogan A, Lang T, Schultheiss D, et al. Acute epididymitis induces alterations in sperm protein composition. *Fertility and sterility*. 2014;101(6):1609-17.
- 8 Shin D, Lipshultz LI, Goldstein M, Fuchs EF, McCallum S, Niederberger C, et al. Herniorrhaphy with polypropylene mesh causing inguinal vasal obstruction: a treatable, preventable cause of obstructive azoospermia. *Journal of the American College of Surgeons*. 2003;197(3):S94
- 9 Bendayan M, Alter L, Swierkowski-Blanchard N, Caceres-Sanchez L, Selva J, Robin G, et al. Toxiques, mode de vie, environnement: quels impacts sur la fertilité masculine? *Gynécologie Obstétrique Fertilité & Sénologie*. 2018;46(1):47-56.
- 10 Wong TW, Straus FH, Jones TM, Warner NE. Pathological aspects of the infertile testis. *Urologic Clinics of North America*. 1978;5(3):503-30.
- 11 Yamaguchi K, Ishikawa T, Nakano Y, Kondo Y, Shiotani M, Fujisawa M. Rapidly progressing, late-onset obstructive azoospermia linked to herniorrhaphy with mesh. *Fertility and sterility*. 2008;90(5):2018-e5.
- 12 Rashed M, Ragab N, Shalaby A, Ragab W. Patterns of testicular histopathology in men with primary infertility. *Int J Urol*. 2008;5:1-5.
- 13 Salama S, Boitrelle F, Albert M, Hammoud I, Huchon C, Wainer R, et al. Intérêt de la ponction épидидymaire et de la biopsie testiculaire systématique dans la prise en charge de l'azoospermie obstructive. *Basic Clin Androl*. déc 2012;22(4):252-62.
- 14 Sanogo C. Stérilité masculine au service d'urologie de l'Hôpital du Point G. A propos de 22 cas [Internet] [PhD Thesis]. Université de Bamako; 2001 [cité 5 déc 2023]. Disponible sur: <https://bibliosante.ml/handle/123456789/10625>.