



Future of AVF in Hemodialysis Patients at the Donka National Hemodialysis Center

Aly Traoré^{1,3*}, Mohamed Lamine Tégui Camara^{1,3}, Soriba Bangoura^{1,3}, Abu Tolno³, Mamadouba Camara³, Kadiatou Mamadou Bobo Barry^{1,3}, Amadou Yaya Diallo^{1,3}, Mamadou Malal Diallo³, Fousseny Diakité^{1,3}, Mohamed Lamine Kaba^{1,3} and Alpha Oumar Bah^{1,3}

¹Gamal Abdel Nasser University of Conakry, Guinea

²General Medicine Department at the Regional Hospital of Kankan, Guinea

³Donka Nephrology-Hemodialysis Department, Guinea

*Corresponding Author: Aly Traoré, Gamal Abdel Nasser University of Conakry, Guinea.

DOI: 10.31080/ASNE.2025.08.0855

Received: July 18, 2025

Published: August 18, 2025

© All rights are reserved by Aly Traore, et al.

Abstract

Introduction: Hemodialysis is one of the substitute treatment modalities of replacement therapy for renal failure, it requires vascular access capable of delivering a blood flow between 200 to 600 ml/min. An arteriovenous fistula is an opening obtained by the surgical creation of an anastomosis between an artery and a juxtaposed vein.

The objective of our study was to assess the survival and fate of AVF in hemodialysis patients at the Donka National Hemodialysis Center.

Material and Methods: This was a prospective, descriptive study lasting 15 months, taking into account all AVFs created between 2018 and 2019 at the CNHD. Were included in our study, all chronic hemodialysis patients with AVF, who agreed to participate in the study, with informed consent at the Donka National Hemodialysis Center.

Results: On 90 chronic hemodialysis patients on AVF, we obtained an AVF frequency of 65.22%. We found a male predominance which represented 55 cases, or 61%, the most affected age group was 29 to 38 years with 26 cases, or 28.89%. Multiple hematoma was the problem with the AVF puncture in 30% of cases. The dominant complication was aneurysm 54.4%, the outcome of AVF was 92%.

Conclusion: arteriovenous fistula is a vascular approach which dominates a better quality of life, it can progress to complications which require efficient diagnostic means.

Keywords: AVF; Chronic Hemodialysis; CNHD

Introduction

Hemodialysis is one of the replacement treatment modalities for chronic renal failure [1]. The AVF provides better blood flow. This average flow rate is around 350 ml/min. If it is less than 300 ml/min, there is a loss of hemodialysis efficiency of around 20 to 30% with a reduction in solute clearance and a risk of insufficient

dialysis [2]. The maturation period is 3 to 4 weeks for a fistula in adults and 3 to 6 months in children. A significant hospital cost is associated with complications of hemodialysis vascular access [3]. In France between 2005-2012, in total, 53,092 adult HD patients with an arteriovenous fistula (AVF) and creating it 6 months before starting, only 8.9% of patients started HD with an AVF-NF,

and 47.4% with an F-AVF [4]. In 2020 in Mali the study carried out by COULIBALY. M et al. On 52 hemodialysis patients showed that 83.3% had an AVF [5]. In 2019 in Guinea the study carried out by BALDE. M.S et al. Of 102 hemodialysis patients noted that 58% had an AVF [6]. In Guinea, an AVF manufacturing program in place since 2017(2019 has made it possible to create 138 vascular access points at the Donka national hemodialysis center (AVF register). The increasingly frequent number of hemodialysis patients with AVF, the rarity of previous studies on the subject and the concern for the sustainability of this ideal vascular approach. This work aimed to evaluate the fate of AVFs in hemodialysis patients at the Donka national hemodialysis center.

Methodology

Study framework

the national hemodialysis center of Donka served as a setting for carrying out our study. Its purpose is: care, training and re-research.

Inclusion criteria

Included in our study were all chronic hemodialysis patients with an AVF made in Guinea, who agreed to participate in the survey, with consent.

Non-inclusion criteria

Chronic hemodialysis patients with AVF created outside the study period and those who did not agree to participate in our study were not included.

Study variables

Our variables were quantitative and qualitative.

Data were collected from the date of creation of the AVF, the complications observed during clinical examination and the results of additional examinations. They are recorded on the survey sheet. The analysis was manual.

Result

Discussion

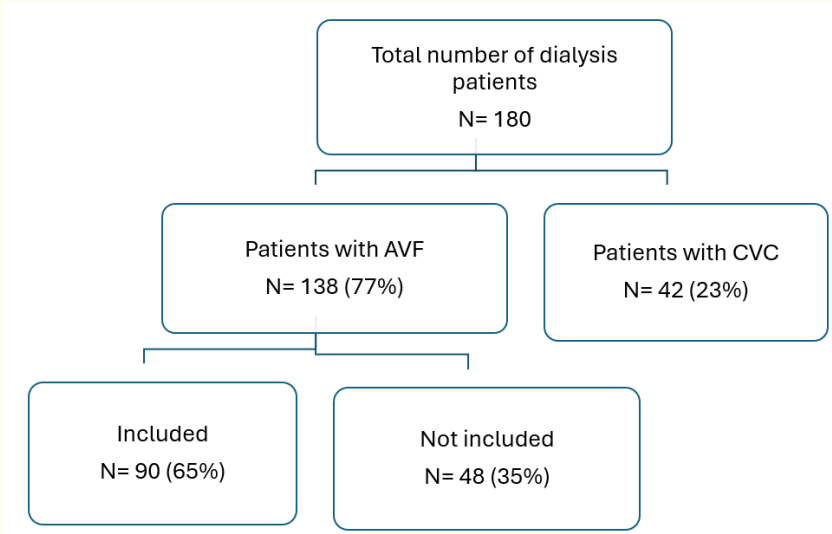


Figure 1: Frequency of hemodialysis on AVF during the duration of our study.

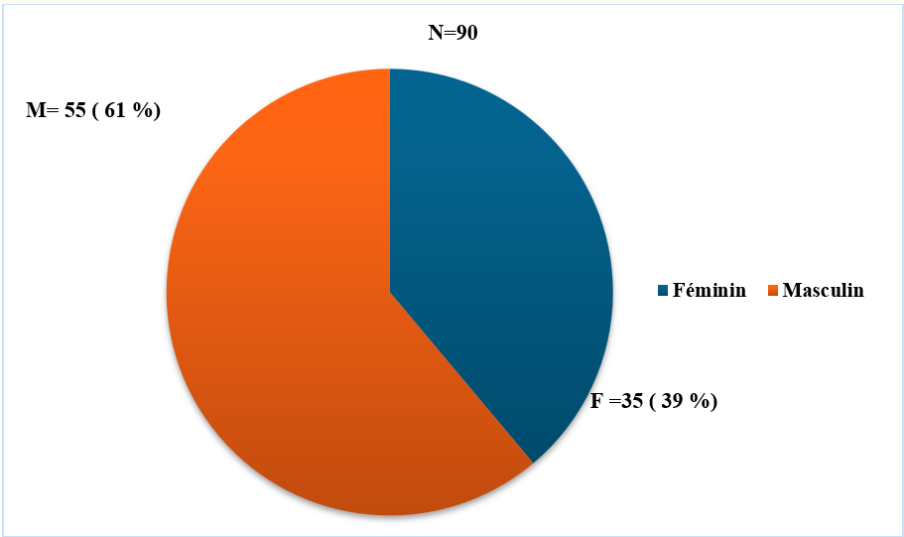


Figure 2: Distribution of patients by sex.

Problem related to puncture	Staff	Percentage
Hematoma	27	30
Prolonged hemostasis time	22	24,44
Bleeding around needles	8	8,89
Deep	5	5,56
Hyper speed	5	5,56

Table 1: Frequency of patients according to problems related to AVF puncture.

Antecedent	Staff	Percentage (%)
HTA	35	38,88
Age ≥	18	20
AgHbs	11	12,22
Pulmonary pathology	5	5,55
Heart failure	3	3,33

Table 2: Distribution of patients by history and field.

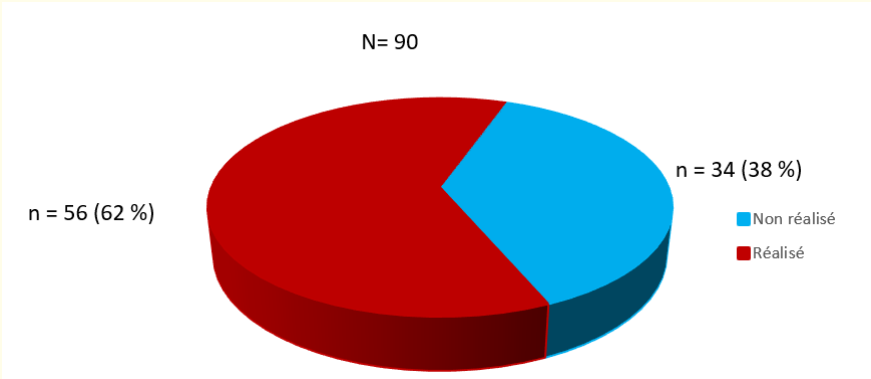


Figure 3: Distribution of patients according to the performance of Doppler ultrasound of AVF.

AVF	Radial	Proximal
Functional	62 (69%)	28 (31%)
Non-functional	0	0
Maturation time	Staff (90)	Percentage
≤ 1 an	88	97,77
> 1 an	2	2,22
Types of complications		
Aneurysm	49	54,44
Thrombosis	7	7,77
Haemorrhage	6	6,66
Prognosis		
Good prediction	83	92
Poor prognosis	7	8

Table 3: Frequency of patients according to the outcome of AVF.

During 15 months of retrospective descriptive study whose objective was to evaluate the fate of AVFs in hemodialysis patients at the national hemodialysis center in Donka.

The frequency of AVFs in our study was 90 cases or 6.5.22%.

Our result is lower than that of COULIBALY M., *et al*, in Mali in 2020 reported that out of a total of 52 hemodialysis patients 83.3% had AVF [5]. This could be explained by the size of our sample and the duration of the study. In our series, the male sex represented 55 cases or 61%.

Our results are different from those of Sguet F., *et al*, in Morocco in 2016 found a predominance of the female sex i.e. 53% [7]. This could be explained by the difference in the series of studies on the one hand and by a demographic difference on the other.

The duration of maturation of the arteriovenous fistula was 4 to 9 weeks with 60 cases or 66.67%, the mean time was 9.62 weeks.

Our result is comparable to that of LAGOU D A., *et al*, in Côte d'Ivoire in 2017, out of 95 hemodialysis patients, the mean maturation time of AVF was 34.27+- 10.63 days [8]. This could be roughly explained by the sample size.

Regarding problems related to fistula puncture, we found 27 cases Hematomas or 30% Our results are lower, in Guinea in 2019 Baldé MS., *et al*, had found 42.9% of hematomas [6]. The reasons could be the average level of some nurses in relation to the AVF puncture, the movement of some patients after the puncture and the non-compliance with haemostasis times.

The history of hemodialysis patients was dominated by arterial hypertension with 35 cases or 38.89%. Our result is similar, in Tunisia LADHARI N in 2016 out of 110 patients had reported 36% of cases of arterial hypertension [9]. This is due to the fact that hypertension is the leading cause of CKD.

The dominant functional sign was represented by pain with 7 cases or 7.78%.

Our results are lower than those of FILALI KHATTABI Z in Morocco in 2019, out of 84 patients reported 32 cases of pain, i.e. 38% [10]. This could be explained by the use of local anesthesia cream before the puncture of our patients.

In our study, patients were divided according to the type of AVF, with 62 cases of distal fistula, or 68.88%. Our result is similar to that of KABBALI N., *et al*, in Morocco in 2014 out of 2066 chronic

hemodialysis patients, dialysis was performed on a distal AVF in 74.8% and proximal in 22.5%, five of which were prosthetic [11]. Because FAV is distal to a faster maturation than the others in the literature and due to the size of our sample.

Complications were dominated by an aneurysm with 49 cases or 54.44%.

Our results are similar to those of Baldé MS., *et al*, in 2019 reported that out of 59 aneurysm fistulas was 52.20% [6]. This would be explained by the age of the fistula and the number of IVF are contributing factors.

Nevertheless, the outcome of AVF was considered good in 83 cases, i.e. 92%.

Our result is different from that of EL ATI Z., *et al*, in Tunisia in 2017, found a median survival of 5.56+-3.67 years [12]. This could be explained by the difference in the time taken for the maturation of the AVF and the duration of the study carried out.

Conclusion

The arteriovenous fistula is a vascular approach that gives a better quality of life in hemodialysis, but from the garment to the puncture, it can evolve into complications that require effective diagnostic means and management by an expert vascular surgeon.

Bibliography

1. Sidawy A., *et al*. "The society for vascular surgery: clinical guidelines for the placement and maintenance of arteriovenous hemodialysis access". *The Journal of Vascular Surgery* 48.5 (2006): 2S-25S.
2. Quarello F., *et al*. "Do central venous catheters have advantages over arteriovenous fistulas or grafts?" *Journal of Nephrology* 19 (2006): 265-279.
3. Tordoir J., *et al*. "EBPG on vascular access". *Nephrology Dialysis Transplantation* 22.2 (2007): 88-117.
4. Alencar de Pinho N., *et al*. "Arteriovenous fistulas not functional at the initiation of hemodialysis". *Nephrology and Therapeutics* 11.5 (2015): 257-462.
5. Coulibaly M., *et al*. "Mortality in the hemodialysis unit of the Mali Gavardo Hospital in Sebenikoro". *Mali Medical* 35.3 (2020): 12-14.
6. Baldé MS. "Nephrology Department Donka National Hospital: Complications of arteriovenous fistulas in hemodialysis patients at the Donka National Haemodialysis Centre". *Revue Internationale des Sciences Médicales RISM* 21.4 (2019): 334-337.
7. Sguet F., *et al*. "Nephrology-hemodialysis-kidney transplantation, Ibn Sina University Hospital: Angioplasty of arteriovenous hemodialysis fistulas". *Nephrology and Therapeutics* 12.5 (2016): 289.
8. Lagou DA., *et al*. "Risk factors for early failure of native arteriovenous fistula in 95 hemodialysis patients". *African Journals OnLine* 19.4 (2017).
9. Ladhari N., *et al*. "Internal medicine A, Charles Nicolle Hospital: Arterial hypertension in chronic hemodialysis". *Nephrology and Therapeutics* (2016): 12(5) :259-428.
10. Filali Khattabi Z. "Department of Nephrology and Hemodialysis of the Ibn Rochd University Hospital, Casablanca: Management of pain during puncture of the arteriovenous fistula (2019): 307.
11. Kabbali N., *et al*. "Nephrology-Dialysis-Transplantation Department of the Hasan II University Hospital of Fez: Profile of diabetics on chronic hemodialysis in Morocco". *Pan African Medical Journal* 17 (2014): 125.
12. El Ati Z., *et al*. "Hemodialysis, Tahar Sfar Hospital, Mahdia: Metabolic syndrome and survival of arteriovenous fistula on hemodialysis". *Nephrology and Therapeutics* 13.5 (2017): 265-426.