

# Septic Hip Arthritis at CHU Gabriel TOURE: Therapeutic and Evolutionary Aspects

Abdoul Kadri Moussa<sup>1,2</sup>

<sup>1</sup>Mahamadou Diallo, Layes Touré, Mamadou B Traoré, Tiéman Coulibaly, Adegne, Togo

<sup>2</sup>Service d'Orthopédie-Traumatologie CHU Gabriel TOURE, Faculté de Médecine et d'Odontostomatologie (FMOS), Bamako, Mali

Email: [abdoukaderm47@gmail.com](mailto:abdoukaderm47@gmail.com)

**How to cite this paper:** Moussa, A.K. (2023) Septic Hip Arthritis at CHU Gabriel TOURE: Therapeutic and Evolutionary Aspects. *Surgical Science*, 14, 162-169.  
<https://doi.org/10.4236/ss.2023.143020>

**Received:** January 1, 2023

**Accepted:** March 10, 2023

**Published:** March 13, 2023

Copyright © 2023 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

**Introduction:** Septic hip arthritis involves the functional prognosis of the hip in case of joint destruction. The aim of this work was to evaluate the hospital frequency, to determine the therapeutic and evolutionary aspects of septic arthritis of the hip at the trauma orthopedic department of CHU Gabriel TOURE Bamako. **Methods:** This was a descriptive, monocentric, cross-sectional study of patients with septic hip arthritis, managed from January 2010 to December 2019. **Results:** We collected 48 patients. Gender male was represented 58.3% with a sex ratio of 1.4. The average age of our patients was 17.02, with extremes of 7 and 80. Septic hip arthritis was observed in a chronic mode in 87.5% (more than 3 weeks). Diagnosis was based on clinical, bacteriological and imaging. Trauma was incriminated in 5 cases (10.4%). The radiographic assessment at the time of the consultation was normal in 66.7% of cases. Staphylococcus aureus was the most common germ with 47.9%, and the culture was sterile in 10.4%. Septic hip arthritis was complicated in 18.75% of cases. Antibiotic therapy was probabilistic with the combination of ciprofloxacin and metronidazole in 24 cases (50%). Watson Jones antero-lateral arthrotomy was performed in 35.71%. We observed 66.6% complications. After an average decrease of 41.6 months, functional results were good in 58.3%. **Conclusion:** Septic hip arthritis is a serious condition of the child and adolescent. Diagnosis must be early; management must also be early, multidisciplinary and adapted to minimize sequelae.

## Keywords

Hip, Arthritis, Septic, Treatment, Evolution, Mali

## 1. Introduction

Hip is the second location of septic arthritis after knee [1] [2] [3]. Septic hip

arthritis can affect age groups with extreme severity in the first months of life [4]. The septic arthritis of the hip is a complex condition characterized by a variety of clinical presentations, a challenging diagnosis and different surgical treatment options, including arthroscopy, resection arthroplasty and one and two-stage total hip replacement. Diagnosis is of varying difficulty and relies on the identification of the germ which is crucial for the success of treatment. It is a diagnostic and therapeutic emergency [5]. The prognosis remains gloomy with mortality above 10% and sequelae in almost half of cases [1]. In Mali, septic arthritis specifically of the hip has not been studied. The purpose of our study was to assess the hospital frequency of septic hip arthritis, to determine therapeutic and evolutionary aspects.

## 2. Materials and Method

This was a descriptive, monocentric cross-sectional study of patients with septic hip arthritis from January 2010 to December 2019 (10 years).

All patients with septic hip arthritis having treatment and follow-up performed on the ward were included. Diagnostic criteria were: clinical (indolence, joint mobility, apyrexia for more than 15 days, absence of shortening of the lower limb), biology with an inflammatory syndrome (VS and CRP, NFS: PNN hyperleukocytosis, blood cultures, joint puncture, identification of the germ), imaging (standard radiography, ultrasound, scanner). Clinical, para-clinical, therapeutic and developmental information was collected from patient records and follow-up in consultation. For each patient the following data were noted: age, gender, etiology, clinic, time between symptomatology and consultation, standard x-Rays of the hip face and profile and biology for diagnosis and specify the type of complications.

Patients who were not managed and followed up in the ward did not retain TB septic arthritis, post-operative septic hip arthritis, and patients who had lost sight. All patients underwent surgical arthrotomy. A physiotherapy protocol was instituted in all patients after surgery. Cure criteria were clinical (no clinical relapse), biological (CRP-VS normalization, NFS) and radiological (stabilization of radiological lesions).

Results were appreciated:

- Excellent: no sequelae, functional or radiological;
- Good: minimal pain, decreased joint amplitudes without significant functional impairment;
- Bad: relapse, chronicity, joint destruction. The size of our sample was random since this is the first study focusing only on septic arthritis of the hip treated by arthrotomy in our service. The size was determined after defining the inclusion criteria.

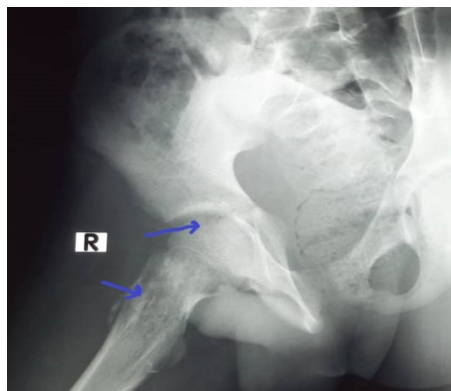
Data collection and analysis was performed using STATA 16, Word and Excel 2010. Student statistical test with a significant risk  $p < 0.05$  was used for data comparison.

### 3. Results

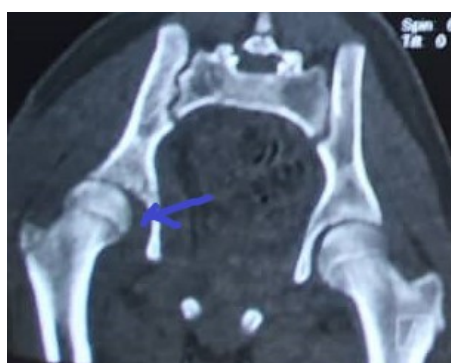
We collected 48 patients. Septic hip arthritis accounted for 1.07% of hospitalized patients in our study (48/4,458 hospitalized patients during the study period). We recorded 28 men (58.3%) and 20 women (41.7%) with a sex ratio of 1.4. The average age of our patients was 17.02, with extremes of 7 and 80 (**Table 1**). The reasons for consultations were: hip pain alone in 30 cases (62.5%), hip pain associated with lameness in 12 cases (25%) and pain associated with functional impotence of the lower limb in 16 cases (33.3%). Patients saw within an average of 28.5 days with extremes of 5 days and 72 days. Patients had a history of sickle cell disease in 5 cases (10.4%), 5 trauma cases (10.4%) and 1 case (2.1%) of kidney disease. Septic hip arthritis was observed in a chronic mode in 42 cases or 87.5% (more than 3 weeks) and acute in 6 cases (12.5%). Clinically, we observed pain in 100%, functional impotence in 33.3%, fever in 19 cases (39.5%), pallor in 9 cases (18.75%), and impairment of the general condition in 5 cases (10.41%). Biologically, we noted an increase in CRP in 32 cases (66.6%), hyperleukocytosis in 21 cases (43.75%), anemia in 13 cases (27.08%) and positive blood culture in 14 cases (29.1%). Bacteriologically, the culture was sterile in 5 cases (10.4%). *Staphylococcus aureus* was the isolated germs in 2 cases (4.79%), *Streptococcus* in 6 cases (12.5%), *Klebsiella* in 5 cases (10.4%), *Salmonella* 5 cases (10.4%) and *Escherichia coli* in 4 cases (8.3%). Trauma was implicated in 5 cases (10.4%). X-Ray examination performed at a time of consultation was normal in 66.7% of cases and showed signs of cartilage involvement in 15 cases (31.3%) (**Figure 1**), 2 cases of hip subluxation associated with signs of osteocartilage involvement (4.1%). Hip ultrasound performed in 10 cases (20.8%), Scanner in one case (**Figure 2**). On diagnosis, hip septic arthritis was complicated in 9 cases (18.75%). Osteoarthritis septic of the hip (4 cases) (**Figure 3**), subluxation of the hip in 2 cases, stiffness of the hip in 2 cases and inguinal fistula in one case (**Figure 4**) were the complications. On the therapeutic level we introduced after sampling a probabilistic antibiotic therapy and then adapted the germ to the antibiogram. Combination of ciprofloxacin and metronidazole was the probabilistic antibiotic therapy in 24 cases (50%), amoxicillin plus clavulanic acid in 13 cases (27.1%) and amoxicillin plus clavulanic acid associated with metronidazole in 11 cases (22.9%). Open-pit arthrotomy surgery has been associated with antibiotic therapy. This arthrotomy was performed by the antero-lateral route of Watson Jones in 17 cases (35.71%), the Hueter route in 16 cases (33.04%) (**Figure 5**) and the

**Table 1.** Sex-age groups.

Sexe	Age				Total
	0 - 9 years	10 - 19 years	20 - 29 years	≥30 years	
M	0	19	7	2	28
F	3	15	2	0	20
Total	3	34	9	2	48



**Figure 1.** Pelvic X-ray: Signs of infectious and bone chondral lesion (osteoarthritis of the right hip).



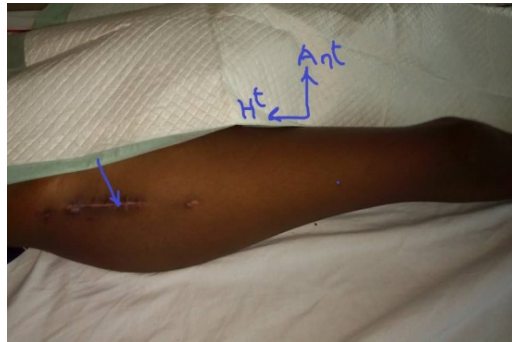
**Figure 2.** Pelvic CT scan: right hip and femoral incongruence (right hip subluxation).



**Figure 3.** Pelvic X-ray showing images of osteoarthritis of the right hip at 3 months of development.



**Figure 4.** Clinical study showing right inguinal fistula.



**Figure 5.** Hueter intervention scar at right hip.

Hardinge route in 15 cases (31.25%). We associated with surgery immobilization of the limb and traction of the limb in 5 cases (10.41%). The average length of hospitalization was 26.6 days with extremes of 10 days and 43 days. Our average follow-up time was 41.6 months with extremes of 21 months and 90 months. Thus we observed 66.6% complications. These complications were: hip stiffness in 11 cases (22.9%), shortening of the limb in 9 cases (18.8%), septic osteonecrosis of the femoral head in 8 cases (16.7%), subluxation of the hip in 4 cases (8.3%) (**Figure 2**), and one case of superficial surgical wound infection with delayed healing. At an average decrease of 41.6 months we recorded 28 cases (58.3%) of good functional results and 20 cases (41.7%) of bad results.

#### 4. Discussion

During our study, we were faced with difficulties among other things: insufficiency of bibliography relative to septic arthritis of hip, no financial means for patients to perform scanner procedure, lack of regular repetition of biological examinations.

The average age of our series was 17.02 years; this is lower than that of Dghaies *et al.* [6] who find 50, 3 years, and higher than that of Eyichukwu *et al.* [7] 10.2 years; explained by our methodology including all patients with septic hip arthritis. Male predominance was observed at 58.3%. Our results are close to those of Eyichukwu *et al.* [7] with 52.5%, but different from those of Dghaies *et al.* [6] which find a female predominance with a ratio of 2.33 in favour of women. The most common reason for consultation was pain with 100% of cases. Our results corroborate those of the literature: Helder de Souza Miyahara *et al.* [8] who find pain in 86, 6% and Saavedra *et al.* [9] in 81%. Our average time between symptoms and consultation was 26 days. This average consultation time is superimposed on those of Dghaies *et al.* [6] with 47 days and Helder de Souza Miyahara and al [8] with 24 days. On the other hand, our average time is lower than those of Weston *et al.* [10] which find 9.7 days, Affleck *et al.* [11] with 16.5 days and Akakpo *et al.* [12] with 8 days. This relatively long average time is explained by the frequent use of traditional first-line treatment and the late referral to specialist consultation. In our series, 22.9% of patients had a history. Sickle cell disease made up 10.41%; our results are far from those of Affleck *et al.* [11] found 83.3%.

The difference could be explained by the size of our sample. The clinical picture was dominated by pain (100%) and functional impotence of the hip (33.3%). Our results are superimposed on those of Helder de Souza Miyahara *et al.* [8] and Saavedra *et al.* [9] with 86.6% and 81% respectively for pain. Functional impotence rate is lower in our case than that of Helder de Souza Miyahara *et al.* [8] with 73.3%. This difference could be explained by the chronic evolution of the clinical picture found in 10.4% of fever cases. Our results are far from those of most of the literature: Helder de Souza Miyahara *et al.* [8] with 53.3% of fever cases ( $p = 2.0002$ ), Saavedra *et al.* [9] (with 62%) and Wagner N *et al.* [13] with 60%. This difference is explained by the long time before the consultation, the delay to the reference with the use of antibiotic that decapitates the infection. Standard Radiography performed was normal in 66.7% and showed signs of osteoarticular involvement in 31.3%. Dghaies *et al.* [6] found normal Radiography in 36%, as well as Medinger *et al.* [14] during acute involvement. These signs of osteoarticular involvement can be explained by the chronicity of arthritis before consultation. *Staphylococcus aureus* was the most common germ (47.5%). The same observation was made by Helder de Souza Miyahara *et al.* [8] in 73.3%, Morgan *et al.* [15] in 37% *Staphylococcus aureus* in their series, Nathalie Rouiller *et al.* [16] of *Staphylococcus aureus* in 50%, and Ntsiba *et al.* [17] found 46.42% *Staphylococcus aureus*. We performed an open-air arthrotomy in 100%, combined with antibiotic therapy adapted to the antibiogram, a discharge of the hip for at least 21 days, a traction of the hip in 5 cases, All associated with a physiotherapy protocol for hip relaxation. Eyichukwu *et al.* [7] perform arthrotomy in 100%, Debrach Prapit Teparrukkul *et al.* [18] (in 72%), Debrach AC *et al.* [19] perform arthrotomy in 8.3%. As for Raphaël Kohlprath *et al.* [20], there are currently no studies preposing a standardized support. Our preference for open-pit arthrotomy is explained by the chronicity of the lesions, the ease of this technique and the lack of arthroscopy in our structure. We used Watson Jones's first path in 35.71%. Our results differ from those of Helder de Souza Miyahara *et al.* [8] who use the Smith-Petersen pathway for arthrotomy in 100%. The first is preference and habit. Our average length of hospitalization was 26.6 days. Our data are superimposed on the literature: Helder de Souza Miyahara *et al.* [8] find an average duration of 27 days, Affleck *et al.* [11] (21.7 days), Prapit Teparrukkul *et al.* [18] (22 days) and Julie Eberst-Ledoux *et al.* [21] which find an average duration of 25 days. This relatively long average duration reflects the severity of the condition and regular hospital follow-up. We observed 66.6% complications. We recorded 11 cases of hip stiffness (22.9%), 9 cases of shortening of the lower limb (18.8%), 8 cases of septic necrosis of the femoral head (16.9%) and 3 cases of hip subluxation (6.25%). These complications are explained by the delay in diagnosis and management and the frequency of complications at the time of diagnosis. Eyicukwu *et al.* [7] observed 27, 5% of complications in their series.

Significant functional sequelae have been reported in the literature: Dubost *et al.* [1] 50% sequelae, Ntsiba H *et al.* [17] (50% mechanical and functional sequelae but there is a statistically significant difference with  $p = 0.0450$ ), Mathews *et al.*

[22] report 30% - 50% of functional consequences and Guggenbuhl P *et al.* [23] (50% of functional sequelae). On the other hand, Fernandez FF *et al.* [24] found 5% complications ( $p = 0.000$ ). At the mean follow-up of 41.6 months, our results were good in 58.3%. Our results are lower than those of Journeau P *et al.* [3] who found 85% excellent and good results ( $p = 0.0026$ ), Affleck *et al.* [10] (with 91.6% excellent and good results), Akakpo-Numado *et al.* [11] (100% excellent and good results with  $p = 0.0153$ ) and Fernandez *et al.* [24] who find 95% excellent results. Our results could be explained by the high rate in our series of complications on admission related to the long delay in consultation, diagnostic delay with signs of osteocartilaginous damage during the radiographic assessment.

## 5. Conclusion

Septic hip arthritis is a relatively rare but serious condition in children and adolescents. Despite an adequate arthrotomy the prognosis remains reserved. The diagnosis must be early, its multidisciplinary management also be early and adapted to minimize the sequelae.

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

## References

- [1] Dubost, J.J., Soubrier, M. and Souvezie, B. (2000) Arthrite septique à pyogène de l'adulte. *Revue du Rhumatisme*, **67**, 11-21.  
[https://doi.org/10.1016/S1169-8330\(00\)80043-5](https://doi.org/10.1016/S1169-8330(00)80043-5)
- [2] Cornu, O., Van Canter, M., *et al.* (2016) Arthrites septiques aiguës, Orthopédie pratique. OER-UCLouvain-Université, Swiss, 1-9. <https://oer.uclouvain.be>
- [3] Journeau, P., Wein, F., Popkov, D., *et al.* (2011) Arthrite septique de hanche de l'enfant: évaluation du traitement par aspiration à l'aiguille suivie de lavage. *Revue de Chirurgie Orthopédique et Traumatologique*, **97**, 295-301.  
<https://doi.org/10.1016/j.rcot.2011.03.004>
- [4] Scott, J. (2004) Differentiation between Septic Arthritis and Transient Synovitis of the Hip Children with Clinical Prediction Algorithms. *Journal of Surgery*, **5**, 957-959.
- [5] Bodard, S., Edgard-Rosa, G., Azuelos, A. and Amaroni, C. (2018) Infections ostéo-articulaires de l'enfant et de l'adulte Orthopédie. Traumatologie IKB Edition 2018, Editions Vernazobres Grego Août, France, 48-74.
- [6] Dghaies, A., Boussaid, R., Ben Aissa, S., *et al.* (2020) Monoarthrite: Profil clinique et paraclinique orientant vers le diagnostic d'arthrite septique. *Revue du Rhumatisme*, **87**, A221-A222. <https://doi.org/10.1016/j.rhum.2020.10.390>
- [7] Eyichukwu, G.O., Onyemaechi, N.O.C. and Onyegbule, E. (2010) Outcome of Management of Non-Gonococcal Septic Arthritis at National Orthopaedic Hospital, Enugu, Nigeria. *Nigerian Journal of Medicine*, **19**, 69-76.  
<https://doi.org/10.4314/njm.v19i1.52484>
- [8] de Souza Miyahara, H., Helito, C.P., Oliva, G.B., *et al.* (2014) Clinical and Epidemiological Characteristics of Septic Arthritis of the Hip, 2006 to 2012, a Seven-Year Re-

- view *Clinics (Sao Paulo)*, **69**, 464-468. [https://doi.org/10.6061/clinics/2014\(07\)04](https://doi.org/10.6061/clinics/2014(07)04)
- [9] Weston, V.C., Jones, A.C., Bradbury, N., *et al.* (1999) Clinical Features and Outcome of Septic Arthritis in a Single UK Health District 1982-1991. *Annals of Rheumatic Diseases*, **58**, 214-219. <https://doi.org/10.1136/ard.58.4.214>
- [10] Angalla, A.R.L., Lamini, N., Pam, B., *et al.* (2021) Les arthrites septiques à Brazzaville (Congo): Une étude de 12 cas. *Health Sciences and Diseases*, **22**, 1-6.
- [11] Akakpo-Numado, G.K., Gnassingbe, K., Songue, B., *et al.* (2008) L'arthrite septique de hanche chez l'enfant drépanocytaire. *Revue de Chirurgie Orthopédique et Réparatrice de l'appareil Locomoteur*, **94**, 58-63. <https://doi.org/10.1016/j.rco.2007.09.004>
- [12] Jesus, S.-L., Falup-Pecurariu, O., Faust, S., *et al.* (2017) Bone and Joint Infections. *The Pediatric Infectious Disease Journal*, **36**, 788-798. <https://doi.org/10.1097/INF.0000000000001635>
- [13] Wagner, N., Ceroni, D., Niederer, A., *et al.* (2017) Prise en charge des infections ostéoarticulaires aiguës de l'enfant. *Paédiatrica*, **28**, 7-11.
- [14] Medinger, S.C. (2006) Cem Gabay Les arthrites septiques. *Revue Médicale Suisse*, **2**, 702-708.
- [15] Morgan, D.S., Fischer, D., Merianos, A. and Currie, B.J. (1996) An 18 Year Clinical Review of Septic Arthritis from Tropical Australia. *Epidemiology & Infection*, **117**, 423-428. <https://doi.org/10.1017/S0950268800059070>
- [16] Rouiller, N., Petignat, P.A. and Bally, F. (2010) Arthrite Septique. *Revue Médicale Suisse*, **6**, 1914-1917.
- [17] Ntsiba, H., Makosso, E., Nangadeu-Singue, M. and Yala, F. (2006) Les arthrites septiques en zone tropicale à propos de 176 cas observés à Brazzaville. *Le Mali Médical*, No. 1, 49-53.
- [18] Teparrukkul, P., Nilsakul, J., Dunachie, S. and Sakul, D.L. (2017) Clinical Epidemiology of Septic Arthritis Caused by *Burkholderia pseudomallei* and Other Bacterial Pathogens in Northeast Thailand. *The American Journal of Tropical Medicine and Hygiene*, **97**, 1695-1701. <https://doi.org/10.4269/ajtmh.17-0288>
- [19] Debrach, A.C., Lazarou, I., Gabay, C. and Uçkay, I. (2018) Prise en charge médico-chirurgicale de l'arthrite septique. *Revue Médicale Suisse*, **14**, 516-521.
- [20] Kohlprath, R., Uçkay, I., Cuerel, C., *et al.* (2015) Arthrite septique bactérienne communautaire chez l'adulte: Du diagnostic au traitement. *Revue Médicale Suisse*, **11**, 882-866.
- [21] Erbest-Ledoux, J., Tournadre, A., Mathieu, S., *et al.* (2012) Arthrite septique à bactériologie négative chez l'adulte: Etude rétrospective de 74 cas. *Revue du Rhumatisme*, **79**, 137-141. <https://doi.org/10.1016/j.rhum.2011.05.019>
- [22] Mathews, J.C., Weston, V.C., Jones, A., Field, M. and Coakley, G. (2010) Bacterial Septic Arthritis in Adults. *The Lancet*, **375**, 846-855. [https://doi.org/10.1016/S0140-6736\(09\)61595-6](https://doi.org/10.1016/S0140-6736(09)61595-6)
- [23] Guggenbuhl, P., Albert, J.D., Tattevin, P. and Arvieux, C. (2006) Conduite à tenir devant une arthrite septique à pyogène de l'adulte: Arbre décisionnel. *Revue du Rhumatisme*, **73**, 199-205. <https://doi.org/10.1016/j.rhum.2005.12.002>
- [24] Fernandez, F.F., Langendörfen, M., Wirth, T. and Eberhardt, O. (2013) Traitement of Septic Arthritis of the Hip in Children and Adolescents. *Zeitschrift für Orthopädie und Unfallchirurgie*, **151**, 596-602. <https://doi.org/10.1055/s-0033-1350933>