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Functional, radiological results and quality of life after primary total hip arthroplasty in Togo

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Abstract
Introduction: The objective of this work was to evaluate the clinical and radiological results; and the quality of life of patients with THA at final follow-up.
Patients and Method: This was a prospective, multicenter, multi-operator study, which was carried out in patients with THA, between January 1, 2014 and December 31, 2022. The clinical evaluation was carried out with the PMA, Devane and WOMAC activity scores. Radiologically, the analysis focused on the inclination of the cup, the peri-prosthetic lines and the bony integration of the implants.
Results: 85 patients were re-evaluated out of 145; 60 were lost to follow-up including 16 due to death, the average follow-up was 5.85 years. The average age was 51.81 years (39-85). The functional scores were generally satisfactory at the last follow-up with a mean PMA, Devane, and WOMAC score of 15.8 respectively; 2 and 76.54 and a rate of resumption of sexual intercourse after THA of 54.11%. The mechanical complications were: 8 revisions for prosthetic loosening, 4 wear and osteolysis, 02 periprosthetic margins. The patients were much more optimistic than the surgeon: 94.73% of the patients judged their results to be excellent or good while the surgeon only accepted 85.96%.
Conclusion: Degenerative hip joint pathologies seem to be increasing due to the incidence of complications of sickle cell disease. The need for joint replacement is growing despite the still expensive cost.
At the last follow-up, the overall results are satisfactory and a rate of resumption of sexual intercourse after THA of 54.11%. Chronic pain and muscle atrophy have had a significant impact on quality of life and sexual activity. Our study confirms the medium-term reliability of dual mobility with a survival rate of 90.60%. These results must be tempered because of the occurrence of long-term complications, linked to the risk of dual mobility in young subjects.

Keywords: Total hip arthroplasty, results, sexual activity, osteoarthritis, Togo

Introduction
Total hip arthroplasty (THA) has become a routine and increasingly frequent orthopedic procedure [1]. It has truly changed the functional prognosis of patients suffering from a disabling condition of the hip joint as well as the quality of life.
In sub-Saharan Africa, the indications are multiple and varied, including tropical infectious pathologies, notably infections and post-traumatic hip osteoarthritis [2]. Access to this surgery remains limited in these countries with limited resources due to difficulties linked in particular to lack of equipment, insufficient qualified personnel, the absence of universal health insurance and the expensive cost for patients [3, 4].
In Togo, as in developing countries, there is little data on the outcome and quality of life of patients undergoing THA. The main cause of hip osteoarthritis was aseptic necrosis of femoral head in 51% of cases and sickle cell disease was the most common comorbidity.
We therefore conducted this study using a multicenter approach with the aim of evaluating the short-term functional results and quality of life of patients with total hip prosthesis.

Patients and method
Patients
This is a continuous multicenter prospective study, conducted from January 1, 2014 to December 31, 2022, 145 patients were treated with total hip arthroplasty: the median age of

the patients was 53 years (28-87), there were 81 men for 64 women with an average BMI of 29.7 kg/m2, (18.32 -33.8). Six (07.06%) patients were considered obese with a BMI greater than 30.

The average preoperative PMA score was 7.6 with 6.10% of patients sedentary or semi-sedentary according to the Devane score preoperatively.

The preoperative diagnosis of the patients as well as the characteristics of the implanted THAs are reported in tables 1 and 2.

The average duration of the intervention was 128 minutes and rehabilitation was immediate with full support.

Table 1: Distribution of patients according to operative indication

	Frequency	Percentage
Aseptic osteonecrosis of the femoral head (ONATF):	75	51.7
Primary coxarthrosis	32	22.1
Femoral neck fracture	23	15.9
Post-traumatic coxarthrosis	14	9.6
Aseptic necrosis and hip dysplasia	1	0.7
Total	145	100.0

Table 2: Data regarding the surgical procedure and implanted THAs

	Frequency	Percentage
Look first		
Posterolateral approach (Moore)	80	55.2
External route (Harding)	63	43.4
Transgluteal route	2	1.4
Type of anesthesia		
Locoregional	141	97.2
General	2	1.4
Spine+epidural	2	1.4
Type of prosthesis		
Uncemented	136	93.8
Cemented	8	5.5
Hybrid	1	0.7
Type of Implants		
Anatomical upper	86	59.31
Standard rod	59	40.69
Aura II cup	84	57.93
Twin bond cup	36	24.83
Polyethylene cup	25	17.24
Head diameter:		
22.2mm	64	44.14
28mm	36	24.83
32mm	45	31.03
Collar length		
Short	55	37.94
Average	75	51.72
long	15	10.34
Friction torque		
Stainless steel-polyethylene	145	100
Complementary gesture		
Bone grafts at the acetabular base	34	23.45
Reconstruction of the acetabular roof	16	11.03

Patient monitoring method

All patients were evaluated clinically preoperatively and postoperatively at 6 weeks; 3 months; 6 months and every year by the operating surgeon and the data were recorded each time in the follow-up logbook.

The evaluation at the last follow-up was made by the same investigating doctor through in-person checks. Complications were also sought.

Assessment protocol

At the last follow-up, the patients were evaluated according to the PMA [5] and Devane functional scores [6]. The quality of life of patients with PTH was assessed with the WOMAC score [7].

The quality of resumption of sexual activities was analyzed using the modified Currey and Meyer scale [8].

The radiological result was evaluated on frontal pelvis, frontal hip and profile images and research: the quality of the bone integration of the implants; has the presence of progressive peri-prosthetic borders. The inclination of the cup was calculated according to the technique described by Sutherland [9].

Results

On One hundred and forty-five (145) patients treated with total hip prosthesis, we reviewed 66 patients in person and contacted 19 patients by telephone call, i.e. 85 patients re-evaluated (58.62٪). All complications observed represented 16.47% (n=14). They included 8 (9.41%) cases of

loosening, 4 (4.70%) of osteolysis, 2 (2.35%) periprosthetic lines.

Radiological analysis: The inclination of the cup varied from 40 to 50° (Table 3) for 50 (58.82%) hips (Fig 1).

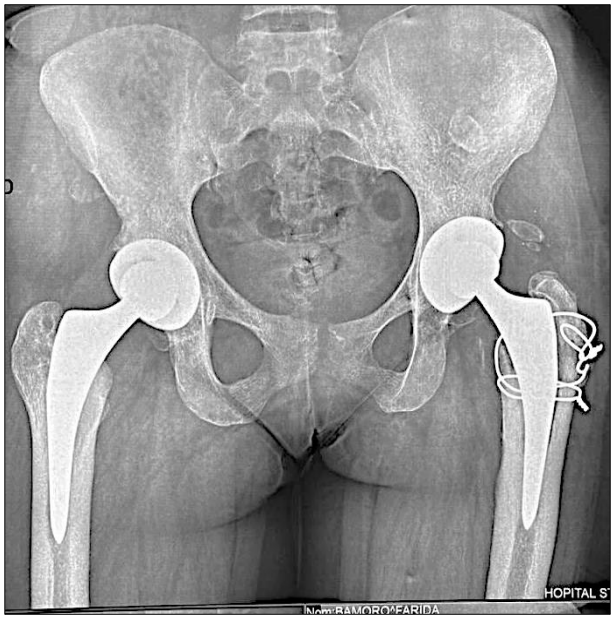

Fig 1: Radiographic appearance of a THA at final follow-up

Table 3: Radiographic evaluation of THA at final follow-up

	Number	Percentage
Cup Tilt Angle	-40-50° 50 ->50° 14	58.82 16.47
Femoral deviation in Varus/Valgus	07	08.24
Prosthetic loosening	08	09.41
Wear and Osteolysis	04	04.71
Peri-prosthetic border	02	02.35
Total	85	100

Functional results

The average WOMAC score was 76.54 with extremes of 39 and 90. (Figure 2). The mean PMA score at last follow-up was 15.8 with extremes of 13 and 18; i.e. a gain of +7. The overall results and postoperative subjective data at the last follow-up were excellent to good in 79% (n=68) and 80.17% (n =69) respectively with regard to the patient's impression.

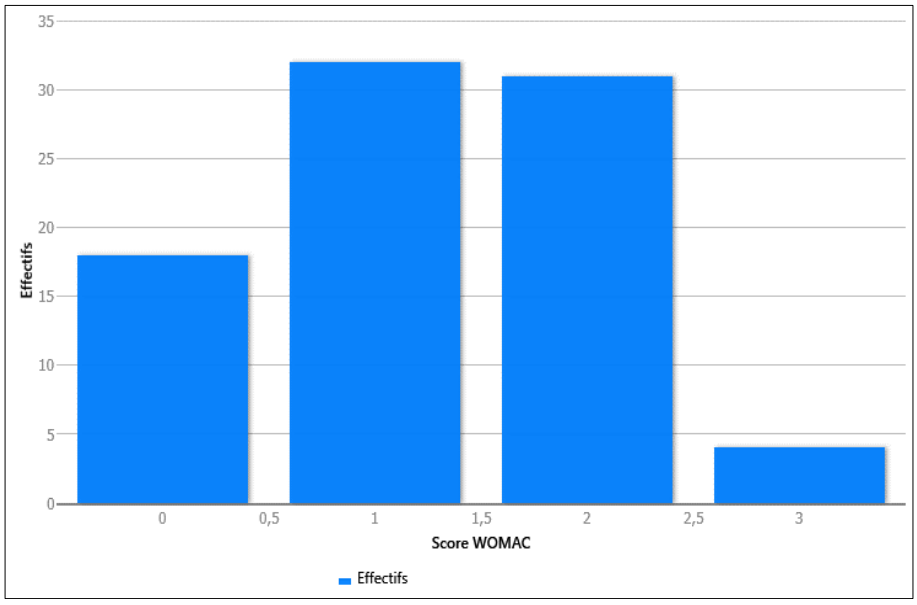

Fig 2: Mean WOMAC score of patients at last follow-up

Table 4: Evaluation of the PMA functional score at last follow-up

	Pre-operative		Post-operative	
	PMA (extreme)	Number (%)	PMA (extreme)	Gain
Pain	3.2 (2-5)	68 (81.93)	5.8 (5-6)	+2.6
Mobility	3.3 (1-5)	50 (59.52)	5.2 (4-6)	+1.9
On/Stability	2.6 (1-5)	23 (27.38)	4.8 (2-6)	+2.2
Overall PMA	9.1 (2-15)		15.8 (13-18)	+7.0

Quality of resumption of sexual activities in the couple

Of the 85 patients evaluated, 46 (54.11%) patients resumed sexual activities without difficulty since THR placement while 22 patients (25.88%) resumed sexual intercourse but with difficulty**.** There were 17 patients who stopped all sexual activity; the causes were diverse: death of the partner

(n=8), fear of a mechanical complication (n=6), stopping voluntarily for no particular reason (n=3).

Discussion

This prospective study has many lost to follow- up; nevertheless the average clinical follow-up seems sufficient to us to highlight the almost imposed relevance of the choice of implants because of the limited technical platform and the socio-economic conditions in our context of practice. However, our multicenter study used several functional scores of the hip for the reassessment of patients, which scores were supplemented by the subjective evaluation of the patient and finally the quality of the resumption of sexual activities after THA, which constitutes a strength of our study.

We noted a low prevalence of 24.5 prostheses implanted per year compared to European series [1, 10, 11] due to the absence of universal health insurance and the impoverishment of the population.

Functional results

The improvement in quality of life after THA is indisputable. In addition, traditional supposedly objective scores are in practice easily biased: bias of the observer, the presence of the operator in front of the patient, patient wanting to please his surgeon.

The mean PMA at last follow-up was 15.8 (13-17). Overall the results were excellent in 56.14%, good in 29.82% and average in 12.29%. Our series can be superimposed on most of the series at the last follow-up, among others Lautridou [12], Leclercq [13], Laghmouche [14], Tardy [15], who respectively found at the last follow-up a mean PMA score of 17.1; 17; 17.6; 16.2. On the other hand, the Devane score reveals the existence of a strong correlation between activities and the young age of patients. The population has gained in grade: from 6.89% sedentary or semi-sedentary preoperatively to 5.17% (3 cases) active or not very active at follow-up.

There was no difference between Charnley's score and Devane's. Our results are similar to the series of Cochu [16] and Sidibé [17].

In our series, the WOMAC score improved significantly in our series at the last follow-up with an average score of 76.54. Our average score is lower than the majority of European series which have often recorded excellent results such as the series of Capone [18], Collins [19], Lavigne [20], Driessche [21] with respectively an average WOMAC score of 94, 82, 86, and 87.

We believe that this notable difference could be explained by the delay in the treatment of degenerative and inflammatory pathologies of the hip where PTH is often implanted on a hip that is already poorly functional and very damaged.

For the resumption of sexual activities, 17 patients (20.00%) declared that they had not resumed sexual intercourse since the insertion of the THA for various reasons. Lafosse [22] reported in his series severe to major sexual difficulties in 19% of patients with pain as the main causes, then joint stiffness. The frequency of intercourse is increased after THA significantly more often in women than in men. Only 17% of patients had received information regarding sexual activity after THA (Resumption time and/or positional risks)

Mechanical complications and implant survival

In our series we reported 08 revisions for prosthetic loosening, 04 wear and osteolysis, 02 peri-prosthetic margins and 16 deaths without a cause linked to PTH; we think that greater hindsight as well as a larger series will allow us to better analyze our results by comparing them with the different series. In the literature, one of the prognostic factors identified is the influence of the inclination of the cup. The more vertical the cup, the greater the risk of it loosening. Viard [23] reported in his series 14 revisions for aseptic acetabular loosening, 3 for femoral or bipolar loosening, 9 intra-prosthetic dislocations and 1 sepsis. We do not find any dislocation of early or late THA, the current survival is 51% at 20 years follow-up for 1st generation dual mobility THA.

The absence of dislocation at 6 years in our series confirms the effectiveness of the principle of dual mobility in the prevention of prosthetic instability; therefore a low dislocation rate found in the series of Philippot [24] and that of Vielpeau [25] with results at 15 years of 0 and 0.45% respectively.

Conclusion

Degenerative hip joint pathologies, due to their etiological diversity, seem to be increasing due to the incidence of complications of sickle cell disease in sub-Saharan Africa.

The functional and socio-economic repercussions are important because young active subjects are the most affected. The overall results are satisfactory according to the different scores and therefore quality of life. Chronic pain and muscle atrophy have had a significant impact on quality of life and sexual activity. Our study confirms the medium-term reliability of dual mobility with a survival rate of 90.60%. These results must be tempered because of the occurrence of long-term complications, linked to the risk of dual mobility in young subjects.

Conflicts of interest: None.

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