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Research Article

Surgical Management of Coxarthrosis at Gabriel Toure Chu

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Abstract

Introduction: A therapeutic solution, PTH has completely revolutionized the management of osteoarthritis of the hip, returning patients with osteoarthritis to an approaching normal quality of life.

Objectives: To evaluate the functional result by total hip arthroplasty in the short and medium term at the orthopedics-traumatology department CHU Gabriel TOURE Bamako.

Material and Methods: This were a retrospective study of patients with unilateral or bilateral coxarthrosis treated with THA and followed from January 2014 to December 2018.

Results: We collected 47 patients with hip osteoarthritis, 9 of which were bilateral. The male sex represented 55.3%. The average age of our patients was 42.51 years, with extremes of 20 years and 70 years. Secondary hip osteoarthritis accounted for 91%. The mean algofunctional index was 10.61, associated with a vicious scoliosis attitude in 51.1%. The body mass index was normal in 76.6%. The associated defects were hypertension (5 cases), sickle cell disease (3 cases) and diabetes (1 case). Kellgren and Lawrence stage 4 was the radiological stage observed in 66% of patients. The Hardinge approach was used in all operated (100%) on ALR (100%). Antibiotic prophylaxis was performed in 85.1% and thromboembolic prophylaxis in all patients for at least 3 weeks. Hybrid PTH was achieved in 85.1%. We recorded one case of death before any surgery, 2 cases of hemorrhage linked to operational difficulties, 2 cases of early loosening (acetabular), 3 cases of limb lengthening, and superficial infection of the surgical site. The functional results after a mean follow-up of 20.23 months were excellent and good in 95.7% according to the score of Postel Merle d´Aubigné.

Conclusion: Source of disabling pain, coxarthrosis affects more and more young and active subjects. Multidisciplinary care is often necessary. The surgical treatment of hip osteoarthritis by PTH restores in the short and medium term a quality of life which is sometimes excellent. However, our modest work deserves to be evaluated in the long term.

Keywords: *Hip; Osteoarthritis; Coxarthrosis*

Introduction

Osteoarthritis is the leading cause of disability in older adults and the most common musculoskeletal disease [1]. The prevalence of coxarthrosis is 3 to 11% above the age of 35 years according to data grouped by EULAR [2]. Hip osteoarthritis is a major cause of pain, functional impairment and deterioration in quality of life in older adults [3]. Hip osteoarthritis is not the most common localization of the disease, but it is the most serious: terminal bilateral hip osteoarthritis in the terminal stage would make bedridden before hip replacement. The major problem is that of the surgical indications, which have upset the prognosis of this affection [5]. The indication of the surgical procedure and the choice of it must be based on the patient's personality, the characteristics of his disease and the possibilities of the different interventions [6]. In Mali the prevalence of coxarthrosis is not known. Pathology is more and more frequent and prosthetic hip surgery is becoming an increasingly important part of orthopedic surgery. The surgical management of coxarthrosis with medium and long-term results has been the subject of few studies, hence the present study with the objectives of evaluating the functional result by total hip arthroplasty in the short and long term. Medium term at the orthopedics-traumatology department CHU Gabriel TOURE Bamako.

Materials and Methods

This was a descriptive and single-center retrospective study of patients with unilateral or bilateral coxarthrosis treated with total hip replacement (THA) and followed from January 2014 to December 2018 (5 years).

We included all patients with unilateral or bilateral coxarthrosis treated with THA and followed for at least two years.

We did not include patients treated by other surgical methods, non-operated patients in the department and those lost to follow-up.

For each patient the following data were noted: age, sex, etiologies, antecedents, clinic according to the following criteria: pain, mobility, walking; body mass index (BMI), standard radiographs of the pelvis of the front and hip in profile to assess the severity of hip osteoarthritis according to the Kellgren and Lawrence classification (Table 1).

Pain or discomfort	The night	No	0
		Only by stirring or depending on the posture	1
		Even still	2
	During the morning rusting	Less than a minute	0
		1 to 15 minutes	1
		More than 15 minutes	2
	When standing	No	0
		Yes	1
	When you walk	No	0
		Only after a certain distance	1
		Very rapidly increasing	2
	Does your hip bother you if you sit for a long time	No	0
		Yes	1
Maximum walking perimeter	No limitation		0
	Limited but greater than 1 km		1
	About 1 km or 15 minutes		2
	500 to 900m		3
	300 to 500m		4
	100 to 300m		5
	Less than 100m		6
	Cane or crutch required		+1
	Two canes or crutches required		+2
Difficulties in daily life	No difficulty = 0 Possible with a small difficulty = 05 Possible but with difficulty = 1 Possible but very difficult = 15 Impossible = 2	Put-on your socks in front	0 to 2
		Pick up an object on the ground	0 to 2
		Go up or down a floor	0 to 2
		Getting out of a car or a deep chair	0 to 2
Total			
Results: -0 to 4 points: modest handicap -5 6 7 points: medium handicap -8 9 10 points: high handicap -11 12 13 points: very high handicap -14 points and more: unbearable extreme handicap the surgical indication is given from around 10 points			

Table 1: *Lequesne's algofunctional index.*

The indication for PTH was given according to the pain assessed according to the Lequesne algofunctional index (Table 2). Hardinge's first was used in all patients and complications have been described. Thromboembolic prophylaxis was instituted in all patients for at least 3 weeks. A physiotherapy protocol was carried out in all the operated on.

Grade	Radiological criteria
0	Normal radio
1	Pinching of the joint line with or without osteophytes
2	Osteophytes, absence or weak joint pinching
3	Moderate osteophytes, joint pinching, sclerosis, possible deformity
4	Large osteophytes, marked pinching of the joint space, severe sclerosis, deformity

Table 2: *Kellgren and Lawrence radiological criteria.*

Functional results were evaluated according to the Postel and Merle d 'Aubigné score.

Data entry and analysis were done using SPSS 20.0 software.

Results

We collected 47 patients with coxarthrosis including 9 bilateral (Figure 1a and 1b). We recorded 26 male patients, i.e. 55.3% and 19 female subjects (44.7%), i.e. a sex ratio of 1.23. The average age of our patients was 42.51 years, with extremes of 20 years and 70 years. Secondary hip osteoarthritis was the most represented with 91% and primary hip osteoarthritis were noted in 9%. The aetiologies of secondary osteoarthritis were: osteonecrosis of the femoral head in 38 cases (80.85%) (Figures 2a and 3a), trauma sequelae in two cases (4.25%): dislocation of the hip (Figure 4a)) and one acetabular fracture and one case of sequelae of septic arthritis of the hip. In two cases (4.25%) the cause was familial (Figure 1a). The associated defects were hypertension (5 cases), sickle cell disease (3 cases) and diabetes (1 case). The pain was debilitating in all patients. The mean algofunctional index was 10.61. Pain was associated with vicious scoliosis in 51.1%. Side thigh muscular atrophy was observed in all patients. We noted hip stiffness with decreased hip range of motion: mean flexion amplitude was 90 degrees, abduction 21 degrees, adduction 20 degrees, lateral rotation 22.5 degrees. In 35 cases (75%) the walking perimeter was less than 100 meters, and between 100 - 500 meters in 12 cases (25%). The mean body mass index was 23.2 kg/m^2 normal in 76.6% and > 25 kg/m^2 in 24.4%. According to Kellgren and Lawrence we observed the following radiological stages: stage 2 in 6 cases (12.7%), stage 3 in 10 cases (21.2%) (Figure 2a) and stage 4 in 31 cases (66%) (Figure 3a). The Hardinge approach was used in all operated (100%) under locoregional anesthesia (LRA) (100%). Antibiotic prophylaxis was performed in 40 cases (85.1%). This antibiotic prophylaxis was performed in 25 cases (62.5%) with Ciprofloxacin 500 infusion and Metronidazole 200 mg infusion for 3 days and in 37.5% with Ceftriaxone 1G. We instituted antibiotic therapy in 7 cases (14.9%). Thromboembolic prophylaxis in all patients for at least 3 weeks. Cementless PTH was performed in 7 cases (14.89%) and hybrid in 40 cases (85.1%). We reported 9 cases of complications (19.14%): one case of death occurring just before any surgical procedure, 2 cases of hemorrhage linked to operating difficulties, 2 cases of early loosening (acetabular figure 4b), one case of infection of the surgical site (superficial), 3 cases of lengthening of the operated limb. All of our patients have undergone rehabilitation sessions. The functional results after a mean follow-up of 20.23 months were excellent and good in 95.7% according to the score of Postel Merle d´Aubigné.

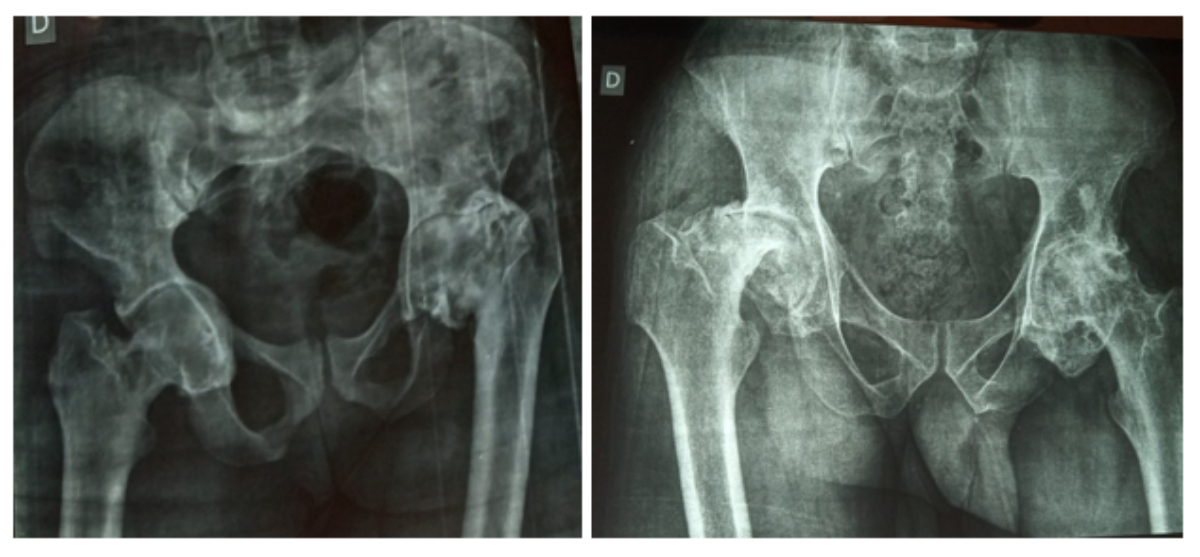

Figure 1: *1a: AP pelvic x-ray: bilateral familial coxarthrosis in a 26-year-old woman, stage 4 of Kellgren and Lawrence. 1b: bilateral coxarthrosis stage 4 of Kellgren and Lawrence with fracture of the right femoral neck.*

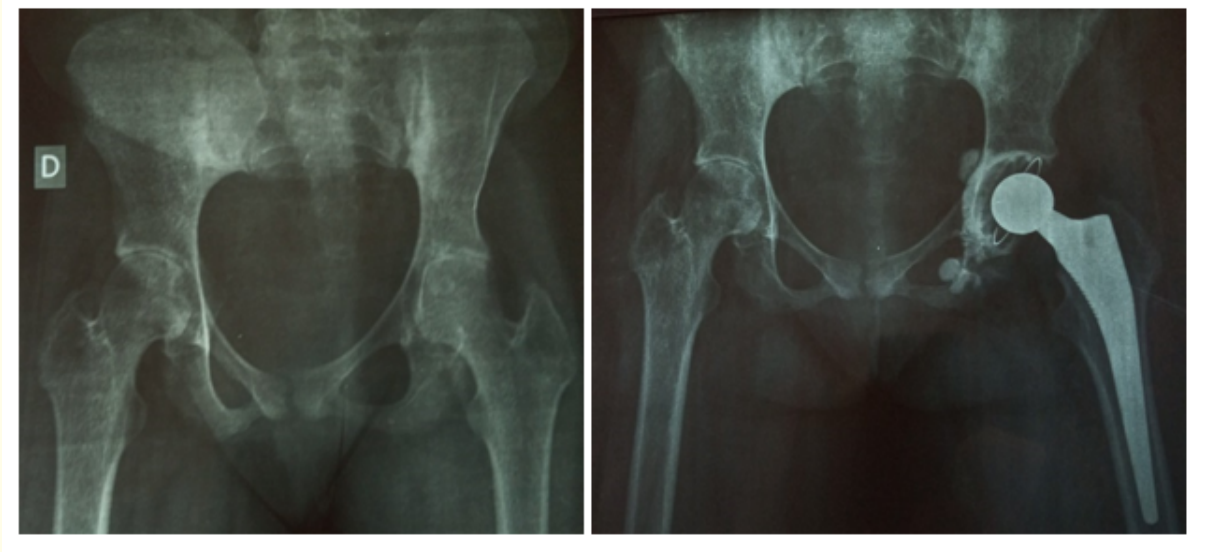

Figure 2: *2a: AP pelvis x-ray: Kellgren and Lawrence stage 3 left hip osteoarthritis. 2b: pelvic x-ray: left THA cemented acetabulum.*

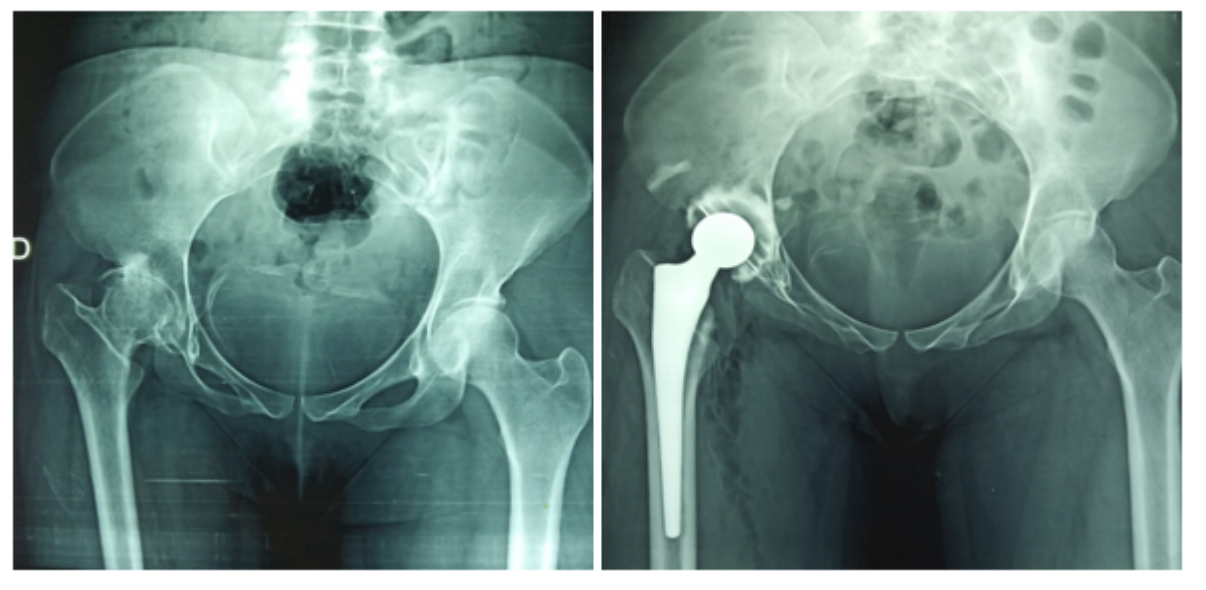

Figure 3: *3a: Right hip osteoarthritis/ONA stage 4 of Kellgren Lawrence. 3b: Straight PTH cemented acetabulum.*

Figure 4: *4a: Kellgren and Lawrence stage 3 left hip osteoarthritis after trauma. 4b: Left THA with early acetabular loosening.*

Discussion

Coxarthrosis is responsible for pain and joint stiffness causing significant functional impairment [7]. The only definitive curative treatment is total hip replacement [7,8]. During our study we noted a slight male predominance with 55.3%. Our results are close to those of Manga., *et al*. [9] with 61.73% but different from those of Conrozier., *et al*. [10] who find a female predominance with 60%. On the other hand, Compaoré C., *et al*. [11] find an equal ratio. The average age of our patients was 42.51 years. This average age is in agreement with that of Rohimpitiavana., *et al*. [12] with 42.5 years, but different from those of Manga., *et al*. [9] and Lubega., *et al*. [13] who each found an average age of 52 years. In most series, the average age of patients with hip osteoarthritis is around 50 years. This frequency of young subjects in our series is explained by the frequent occurrence of predisposing factors to osteoarthritis at young age. Secondary osteoarthritis represented 91%, of which aseptic osteonecrosis of the femoral head (ONATF) represented 80.85%. Our data are different from those of Manga., *et al*. [9] (40% ONA), by Compaoré C., *et al*. [11] (40% caput varum-retrosum) and Lubega., *et al*. [13] (47.9% ONA). This frequency of ONA is explained by the frequency of sickle cell anemia, sequelae of trauma and a history of osteochondritis of the hip. The mean algofunctional index was 10.61. The handicap was important. The main clinical manifestations of osteoarthritis are pain and stiffness in the morning leading to reduced joint mobility and progressive gait disturbance [14]. The body mass index (BMI) was normal in 76.6%. There was no association of overweight or obesity related to hip osteoarthritis in our series. Epidemiological data have shown a positive association between obesity and hip osteoarthritis, but the results are discordant according to Liying Jiang., *et al* [1]. Kellgren and Lawrence stage 4 was observed in 66% of cases. This stage 4 frequency testifies to the long course of the disease with its corollary of disabling pain. We used the first approach for total hip replacement in 100%. This first route is the most used route in our department where we have not experienced any complications related to this first route. Our results are superior to those of Manga A., *et al*. [9] who used the Hardinge route in 88.7%. But data do not agree with those Arzakane M., *et al*. [15] who use Moore's posterior approach in 100%. The routes initially are a function of trend and school. We implanted 85.1% of total hybrid hip prostheses (all cemented acetabulum). This cementation of PTH is due to the significant destruction of the acetabular cavity by geodes which weaken the bottom of the acetabulum. Manga A., *et al*. [9] achieved 33.04% hybrid PTH (cemented femoral stem). We noted 19.14% of complications including one death linked to vasoplegic shock, death occurring before any surgical procedure, despite the resuscitation measures. We estimate that our complication rate is slightly higher than that of Manga., *et al*. [9] who find 15.65% and Azarkanet., *et al*. [15] (17%]. Our high rate can be explained by the size of our sample. At the mean follow-up of 20.23 months, we obtained 95.7% very good results. Our results are superimposable on those of Conrozier T [10] (90% excellent results), Rohimpitiavana., *et al*. [12] and Panayiotis Christofilopoulos., *et al*. [16] (91% at 10 years), but our follow-up is well below that of Conrozier [10] and by Christofilopoulos., *et al*. [16] The high cost of implants for our populations has limited the realization of total hip prostheses.

Conclusion

Source of disabling pain, coxarthrosis affects more and more young and active subjects. Multidisciplinary care is often necessary. The surgical treatment of hip osteoarthritis by PTH restores in the medium term a quality of life which is sometimes excellent. However, complications are not uncommon. A question: the distant future of these prostheses in these subjects and assets? thus all the merit of our modest work to be evaluated in the long term.

Bibliography

1. Liying Jiang., *et al*. "Relationship between body mass index and osteoarthritis: systematic review and meta-analysis of the literature". *Rheumatism Journal* 77 (2010): 568-574.

2. Pascal Richette. "Rapid destructive coxarthrosis". *Rheumatism Journal* 76 (2009): 341-345.

3. Manon Belhassen., *et al*. "Hip Muscle Weakness in Osteoarthritis Patients: Gender-Specific Differences and Associations with Hip Morphology and Symptoms". *Rheumatism Journal* 87 (2020): 406-418.

4. Bernard Mazières. "Treatment of coxarthrosis in the light of international recommendations". *Rheumatism Journal* 76 (2009): 346-355.

5. Aude Quesnot., *et al*. "Unoperated coxarthrosis". Musculoskeletal rehabilitation. Volume 1: Lower limb, 2nd edition (2010): 81.

6. Courpied J P and L Vastel. "Surgical treatment of coxarthrosis". Encycl. Med Chir 14-315-A-10 (1999): 8.

7. Jeremy Maillet and Henri Lellouche. "Place of intra-articular procedures in hip osteoarthritis?" *Rheumatism Review Monographs* 86 (2019): 279-285.

8. Magda Choueiri., *et al*. "Recommendations on taking coxarthrosis: critical reading". *Rheumatism Review Monographs* 86 (2019): 271-277.

9. Manga Alexandra., *et al*. "Surgical treatment of coxarthrosis by total hip arthroplasty in Yaoundé". *Health Sciences and Disease* 19.4 (2018).

10. Thierry Conrozier. "Recognize and manage hip osteoarthritis". EMC, Traite de Médecine Akos, 7-0720 (2009): 1-5.

11. Christian Compaoré., *et al*. "Risk factors for the onset of coxarthrosis". *Rheumatism Review* 76 (2009): 325-330.

12. Rohimpitiavana H., *et al*. "Total hip prostheses performed in a precarious environment; our results in 10 years of experience". *Tropical Surgery Review* 10 (2016): 39-42.

13. Lubega N., *et al*. "Joint arthroplasty in Malawy: establishment of a national Joint Registry". *Journal of Bone and Joint Surgery. British Volume* 91-B.3 (2009): 341-343.

14. Paul Ornetti., *et al*. "Analysis of gait as a follow-up criterion in coxarthrosis or knee osteoarthritis: systematic review of the literature". *Rheumatism Journal* 77 (2010): 372-377.

15. Arzakane Mohamed., *et al*. "Late complications of total hip replacement: a report of 42 cases". *Pan African Medical Journal* 14 (2013): 17.

16. Panayiotis Christofilopoulos., *et al*. "Update on total hip replacement". *La Revue Médicale Suisse* 6 (2010): 2454-2458.

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