

Indications and Results of Hip Arthroplasty and Hemiarthroplasty at Treichville University Teaching Hospital

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Abstract

Objective: Hip arthroplasty has variable and codified indications. The interest of this study results from the need to adapt our practices to the socio-economic status of our patients. The aim of this study was to describe the epidemiological profile of patients, the indications and results of hip arthroplasties performed in our hospital. **Methodology:** A descriptive monocentric study was conducted from January 2010 to December 2019 at Treichville University Teaching Hospital. All patients, who underwent total hip arthroplasty or hemiarthroplasty with intermediate or cervico-cephalic prosthesis, were included in the study. Epidemiological, clinical, therapeutic and follow-up data were analysed. **Results:** We collected 95 patients with 97 hips operated. The mean age was 67 years. 56% of patients were male. Arthroplasty was performed after femoral neck fractures in 78% of cases, followed by osteonecrosis of the femoral head (15%). The left side was affected in 51% of cases. The Moore's posterior approach was used in 79% of cases, followed by the Hardinge's lateral approach (21%). Hemiarthroplasties were implanted in 78% of patients. We observed 4 dislocations and 3 post-operative infections at 48 months of follow-up. The mean Harris score was 75.2. **Conclusion:** Arthroplasty has improved the function of our patients. Most of young males undergo the arthroplasty. Intermediate prostheses are commonly used implants.

Keywords

Arthroplasty, Hemiarthroplasty, Hip

1. Introduction

Hip arthroplasty or hemiarthroplasty is defined as the replacement of complete

or incomplete coxofemoral joint using prosthetic implants. Hip arthroplasty restores the hip function, and thus, gives to patients a stable, mobile, and pain-free joint. It is a common procedure in the Western Europe, particularly in France, where almost 140,000 total hip replacements are performed every year [1]. There are many indications for arthroplasty, ranging from traumatic to degenerative or infectious reasons. In France, the primitive coxarthrosis is the first indication of arthroplasties [2]. In our country, the primary indication of arthroplasties is femoral neck fractures [3]; however, other indications, such as degenerative or infectious lesions are reported. In addition, despite the increase of hip arthroplasty in orthopedics departments of our country, few epidemiological data were reported. Because of social or technical difficulties, the usual indications are sometimes modified and adapted during patient management. The objective of this study was to describe the epidemiological profile of patients, and the indications and results of hip arthroplasties performed at Treichville University Teaching Hospital in Abidjan, Cote d'Ivoire.

2. Methods

A retrospective, single-centre, and descriptive study was carried out at the Orthopaedic and Traumatological Surgery Department of the Treichville University Teaching Hospital in Abidjan, Cote d'Ivoire. All patients, who underwent hip arthroplasty or hemiarthroplasty between January 2010 and December 2019, were included. Patients who were not followed up after surgery, lost during to the follow-up and had incomplete medical records were not included in the study. 95 patients with 97 hip arthroplasty were included in our study. 2 patients presented bilateral lesions. We collected the data of the age, the sex, the side of the lesion, and clinical information (type of lesion, radiological classification and treatment) from the medical records of our patients. Pre-injury autonomy was assessed according to Parker's score [4]. The Garden classification [5] was used to identify femoral neck fractures. The Kellgren-Lawrence [6] and Arlet-Ficat [7] classifications were used for coxarthrosis and osteonecrosis of the femoral head, respectively. All patients underwent surgery in the lateral position using standard table. Posterolateral Moore [8] and lateral Hardinge-Thomine [9] [10] approaches were used for arthroplasties. Standard X-ray of the pelvis was used to assess the position of the prosthesis and its evolution (Figure 1). The functional rehabilitation was undertaken within 30 days. 82 patients were assessed using the Harris score [11] at 48 months mean follow-up. The Kruskal-Wallis's test was used for comparisons.

3. Results

The average age of the patients was 67 years old with extremes of 21 and 90 years. Among the patients, 56% were male and 44% female. The left side was involved in 49% of cases, and the right side was 48% of cases. Arthroplasty was performed in 78% of cases in patients with femoral neck fractures and in patients with

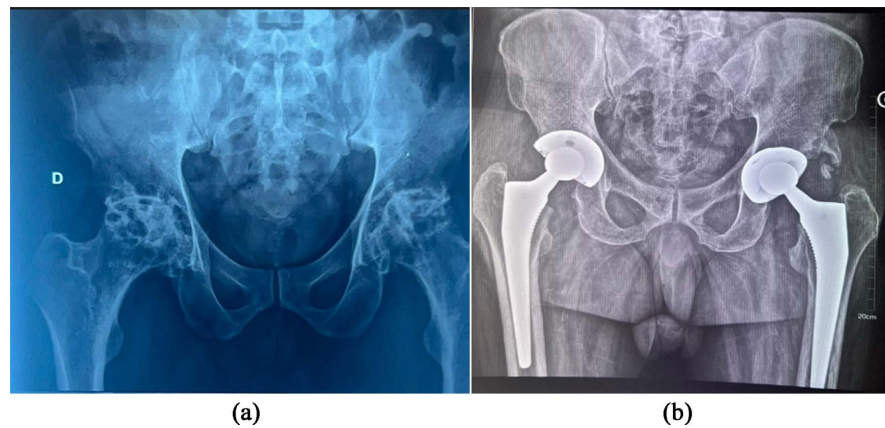


Figure 1. (a) Bilateral coxarthrosis due to aseptic osteonecrosis of the femoral head; (b) Postoperative image at 1 year after double total arthroplasty.

Table 1. Distribution of the causes of arthroplasty.

Causes	Number of cases (n)	Percentage (%)
Femoral neck fracture	76	78
Garden IV	60	-
Garden III	13	-
Garden II	3	-
Aseptic osteonecrosis of the femoral head	14	15
Coxarthrosis	7	7
Total	97	100

coxarthrosis (7%) (**Table 1**). Femoral neck fractures were due to a domestic accident in 72% of cases, followed by road traffic accidents for 28%.

The mean Parker score was 7.8 ± 1.5 with 64% of patients having a score of 9. Femoral neck fractures were classified as Garden Stage IV in 79% of cases. For coxarthrosis according to Kellgren-Lawrence, 6 patients were classified Stage 4, and 1 patient was Stage 3. The 14 patients with aseptic osteonecrosis were classified as Stage 4 according to Arlet and Ficat. We performed intermediate hemiarthroplasty in 78.3% of cases and total hip arthroplasty in 21.7%. Regarding to hemiarthroplasty, intermediate prosthesis was realized for 58% of patients and cervico-cephalic prosthesis in 42%. 88% of patients with femoral neck fractures benefited from hemiarthroplasties, while those with osteonecrosis and coxarthrosis (57.1%) underwent total hip arthroplasty (**Table 2**).

We reported 4 dislocations and 3 post-operative infections at the mean follow-up of 48 months. 7 patients presented lower limb length inequality of 3 cm. Cotyloiditis was found in 4 patients with hemiarthroplasty. The mean Harris score was 75.2 ± 17.5 , and 45% of patients had a Harris score between 80 - 100.

Patients with total hip arthroplasty had a better functional result compared to those with hemiarthroplasties (**Table 3**).

Table 2. Distribution of causes according to the type of arthroplasty.

Causes	Cervico-cephalic prosthesis	Intermediate prosthesis	Total hip replacement
	n	n	n
Femoral neck fractures	29	38	9
Aseptic osteonecrosis of the femoral head	2	4	8
Coxarthrosis	1	2	4
Total	32	44	21

Table 3. Distribution of type of arthroplasty according to Harris score.

Types of arthroplasty	Average Harris score \pm standard deviation	p
Cervico-cephalic prosthesis	65.6 \pm 19.1	<0.001
Intermediate prosthesis	76.8 \pm 13.2	
Total hip replacement	86.6 \pm 12.9	

4. Discussion

The objective of our study was to describe the epidemiological profile, the indications and the results of hip arthroplasties performed. The limits of this study were related to its retrospective nature and problems of the final functional evaluation of patients treated with hip arthroplasties. However, the significant sample size and time of evaluation helped to validate this study. The study showed that arthroplasties were mainly performed in young male patients due to the low life expectancy of the population in our region and the intense physical activity of the youth which make them vulnerable to hip pathologies.

This predominance of arthroplasties in young males has been described in several African studies [12] [13]. In contrast to our reports, European studies have identified a high frequency of elderly women, and therefore, resulted from the osteoporosis [14] [15].

In our study, femoral neck fractures were the most occurring causes of arthroplasties while the aseptic osteonecrosis of the femoral head was the non-traumatic cause, which was prevalent in our region. The aseptic osteonecrosis of the femoral head was considerably associated with haemoglobinopathies, such as the sickle cell disease, as described by other African studies [12].

These haemoglobinopathies are favored by the consanguineous weddings in some of Sub-Saharan Africa. Intermediate prostheses were mainly performed in our study (45%). This can be explained by the lower cost of these medical devices compared to the total prostheses. Our patients generally have low incomes and no social security. As a result, we use less expensive hemiarthroplasties to treat our patients, although the total arthroplasty is the appropriate indication. Nowadays, total arthroplasties are gradually accessible and present a better functional

outcome compared with hemiarthroplasty.

The functional score of our patients was satisfactory, even though the majority of patients underwent hemiarthroplasty. It would be, therefore, interesting to study the functional results of hemiarthroplasties compared with total arthroplasties in our study population in order to adapt our indications to their social level.

5. Conclusion

The hip arthroplasties are generally performed after femoral neck fractures within the young males. Intermediate prostheses are the most commonly used implants because of their lower cost and the low socio-economic status of the patients.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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