

# Total Hip Arthroplasty in Octogenarians: A Local Retrospective Case Series

Peter B. Bernardo and Clint P. Guitarte

*Department of Orthopedics, College of Medicine and Philippine General Hospital, University of the Philippines Manila*

## ABSTRACT

With improving healthcare, the number of Filipino octogenarians is increasing. Projected population of octogenarians as reported by the Philippine National Statistics Office will increase by 28% to 3,227,253 by year 2040 (from 2015: 912,817). This is a multicenter retrospective case series involving 24 patients (1 patient with surgery on 2 hips), with an average age at the time of surgery of 82 years old (range: 80-88 years old) who underwent total hip arthroplasty during the period 2007-2016. Indications for total hip arthroplasty included 12 cases of degenerative osteoarthritis, 8 cases of displaced femoral neck fractures, 4 cases of untreated femoral neck fractures, and 1 case of subtrochanteric fracture with hip arthritis. Of the 24 patients, 21 were females and 3 were males. Of the 25 hips, 19 were treated with cemented total hip, 5 with hybrid implants, and 1 with calcar replacing cemented femoral stem. Average follow-up was 36 months (range: 6-87 months). All patients were able to ambulate and return to pre-morbid function. There were no intraoperative or postoperative complications encountered. Revision rate was zero percent as of last follow-up. Clinical/functional results were assessed using the Harris Hip Scoring system. The results of this study affirm that primary total hip arthroplasty is a viable treatment option for active octogenarians with end-stage arthritis and hip fractures.

*Key Words: total hip arthroplasty, octogenarians, degenerative arthritis, hip fracture, cemented, cementless, Harris Hip Score*

## INTRODUCTION

With improvement of healthcare, there is an increasing proportion of the elderly population. Projected population of individuals beyond 80 years old based on a 2015 Philippine National Statistics Office report will increase by 28% from 912,817 to 3,227,253 by year 2040.<sup>1</sup> This particular age group is vulnerable to degenerative osteoarthritis and hip fractures secondary to osteoporosis. With life expectancy increasing and people remaining healthy and active well into their eighties, total hip arthroplasty (THA) remains one of the most common orthopedic procedures carried out in this group of population for degenerative arthritis.<sup>2</sup> Total hip arthroplasty has resulted in decreased pain and increased function and has been shown to be effective in patients of all ages, including those over the age of 80 years.<sup>2</sup>

For displaced hip fractures in the elderly, the traditional method is partial hip replacement. However, there are reports of hip pain several years after because of acetabular cartilage degeneration leading to revision arthroplasty. THA may address this complication.<sup>3</sup> Another important issue is that the relatives or even physicians have the attitude that active elderly patients may not be able to tolerate this procedure.

This is a case series describing our local experience of primary total hip arthroplasty in Filipino octogenarians. The aim of this study is to report the clinical/functional results

*Paper was presented at the 67th Philippine Orthopaedic Association Annual Convention, November 16-19, 2016, EDSA Shangri-La, Mandaluyong City, Philippines.*

Corresponding Author: Peter B. Bernardo, MD  
Department of Orthopedics  
College of Medicine  
Philippine General Hospital  
University of the Philippines Manila  
Taft Avenue, Ermita, Manila 1000, Philippines  
Cell phone No: +63 9178143624  
Email: peterbbernardo@yahoo.com

of the said procedure. Should this series' evaluation show good outcomes, this then is further proof that we can and should offer total hip arthroplasty to active octogenarians, when needed.

## METHODS

Inclusion criteria included Filipinos who were eighty years old and above at the time of surgery who underwent primary total hip arthroplasty secondary to severe degenerative arthritis and displaced femoral neck fractures, and had no neoplastic, infectious, or metabolic disease. Patients who underwent revision arthroplasty were excluded in the study. Data included in the study were from patients recruited from four hospitals in Metro Manila (Philippine General Hospital, Manila Doctors Hospital, San Juan de Dios Hospital, and Cardinal Santos Medical Center) during the period 2007-2016. Patients from Manila Doctors Hospital, San Juan de Dios Hospital, and Cardinal Santos Medical Center were private patients of a single arthroplasty surgeon. Patients coming from Philippine General Hospital were service patients and were operated on by 4 different arthroplasty surgeons. Informed consent was obtained from the patients that they will be included in this study.

This is not a series of consecutive patients but are contributions from different surgeons from different hospitals. A total of 24 patients were gathered. One patient

underwent a staged bilateral total hip replacement by a single surgeon. Another patient with subtrochanteric fracture with hip arthritis underwent total hip arthroplasty using a calcar replacement femoral stem. A calcar replacement is a special femoral stem that is used in intertrochanteric or subtrochanteric fractures needing hip replacement so that the leg length can be adequately restored. All patients were active independent patients with no cognitive disability preoperatively.

All patients underwent complete medical clearances prior to surgery. Of the twenty-five hips, two were approached anterolaterally and twenty-three were approached posterolaterally, depending on the surgeon's preference. Postoperatively, patients were followed by the surgeon and physical therapy was started, and continued until full weight bearing. Charts of each patient were reviewed to determine the indication for surgery, age, gender, date of operation, hospital where procedure was done, as well as the occurrence of postoperative complications such as dislocation, periprosthetic fracture, infection, or loosening leading to revision. Office charts were also reviewed to determine the length of follow-up. Functional and clinical results were evaluated using the Harris Hip Score [HHS] preoperatively and on latest follow-up for all the cases. The Harris Hip scoring system is an outcome-based measure frequently used to evaluate patients following total hip arthroplasty. The parameters used are pain severity, function (which is made up of activities of daily living and gait),

**Table 1.** Summary of Patients' Data

	Name	Age/Sex	Diagnosis/Laterality	Date of surgery	Implant used	Follow-up [mos]	HHS preop	HHS postop
1	C.G	82/F	Fem neck fx- L	Jul 12-16	Cemented	6	32	86
2	J.A.	80/F	Deg OA- R	Apr 16-16	Hybrid	8	38	88
3	M.M	84/F	Deg OA- R	Jan 20-16	Cemented	11	36	88
4	A.G	84/F	Fem neck fx- L	Dec 15-15	Cemented	12	30	86
5	O.O	84/F	Deg OA- L	Sep 23-15	Cemented	16	36	87
6	S.P.	86/F	Deg OA- R	Jun 24-15	Cemented	18	38	88
7	M.J.	88/F	Fem neck fx- R	Jun 02-15	Cemented	18	32	86
8	A.L.	83/F	Untx fem neck fx- L	Feb 10-15	Cemented	22	36	86
9	V.R.	81/F	Fem neck fx- L	Feb 02-15	Cemented	22	32	86
10	C.V.	82/M	Untx fem neck fx- L	Jun 14-14	Cemented	30	36	86
11	T.T.	82/F	Deg OA- R	May 12-14	Hybrid	31	40	88
12	D.I.	81/F	Deg OA- R	Oct 09-13	Cemented	37	42	89
13	F.E	80/F	Deg OA- R	Jan 21-13	Cemented	45	40	88
14	F.E.	80/F	Deg OA- L	Mar 22-13	Cemented	43	40	87
15	P.A.	80/F	Deg OA- L	Feb 22-13	Cemented	45	38	88
16	Q.G.	84/M	Fem neck fx- L	Jan 30-13	Cemented	40	32	86
17	G.N.	82/F	Untx fem neck- R	May 12-12	Cemented	52	36	86
18	H.P.	86/M	Fem neck fx- L	Jul 24-10	Hybrid	40	30	84
19	C.F.	80/F	Fem neck fx- L	Feb 17-10	Cemented	50	32	86
20	L.L.	80/F	Fem neck fx- L	Oct 28-09	Cemented	50	32	88
21	G.L.	82/F	Subtrochfx- L	Jul 01-09	Cemented- calcar	40	30	86
22	A.I.	82/F	Deg OA- R	Dec 08-09	Cemented	50	36	89
23	A.J.	80/F	Deg OA- L	Oct 07-09	Hybrid	87	38	88
24	T.F.	80/F	Deg OA- R	Mar 08-08	Hybrid	70	36	88
25	Q.E.	80/F	Untx fem neck- L	Jun 05-07	Cemented	60	32	86

*Diagnosis: Fem neck fx - Femoral neck fracture; Deg OA - Degenerative Osteoarthritis Untxed fem neck fx - Untreated femoral neck fracture; Subtroch fx - Subtrochanteric fracture. Laterality: R - Right; L - Left.*

deformity, and range of motion. The cumulative score is graded as excellent (90-100 points), good (80-90 points), fair (70-80 points), poor (<70 points).<sup>4</sup>

### RESULTS

Table 1 shows the patients' demographics in this series. Eleven patients had end-stage degenerative osteoarthritis of the hip. All eleven patients were female. The mean age was 81.5 (range: 80-86 years old). One patient underwent a staged bilateral total hip arthroplasty (Figure 1). The patient was an eighty-year-old female and the operations were done 2 months apart by the same surgeon. Eight were operated due to acute femoral neck fracture. Of the eight, two were males and six were females. All femoral neck fractures were incurred due to fall from a standing height. The mean age was 84.1 years old (range: 80-88 years old). Four patients underwent total hip arthroplasty due to untreated displaced femoral neck fracture. Untreated femoral neck fracture

is defined as a displaced femoral neck fracture treated non-operatively (i.e., bed rest) for more than thirty days. Immediately prior to surgery, all patients were wheelchair dependent and still with residual hip pain. The four patients comprised of three females and one male. Mean age was 81.8 years old (range 80-83 years old). All four hip fractures were incurred due to a fall from a standing height. One patient, an eighty-two-year-old female had a subtrochanteric fracture due to a fall. She underwent total hip arthroplasty using a cemented acetabular component and a cemented calcar replacing femoral implant (Figure 2).

On the acetabular side, cemented fixation was done in twenty hips. A cementless type of fixation was done in 5 hips. In the cementless group, the mean age was 81.6 years old (range: 80-86 years old) whereas in the cemented group, the mean age was 82.3 years old (range: 80-88 years old). In the cementless group, four were due to degenerative osteoarthritis and one had acute displaced femoral neck fracture. There were four females and one male. In the



Figure 1. Staged Bilateral Total Hip Arthroplasty. [80/F - Degenerative Osteoarthritis Bilateral (Cemented)].



Figure 2. Total hip arthroplasty using a cemented acetabular component and a cemented calcar replacing femoral implant. [82/F - Subtrochanteric Fracture CALCAR Replacement Stem (Cemented)].

cemented group, eight had degenerative osteoarthritis, seven acute displaced femoral neck fractures, four untreated displaced femoral neck fractures, and one subtrochanteric fracture with severe hip arthritis.

Contrary to the acetabulum, a cemented type of fixation was utilized in all of the femoral components. In one patient with a subtrochanteric fracture, a cemented calcar replacing femoral implant was used to restore equal leg length.

Majority of the patients treated were females. There were twenty-one females and three males. Two males had acute displaced femoral neck fractures and one had an untreated femoral neck fracture. Of the twenty-one females, six had acute femoral neck fractures, nine degenerative osteoarthritis, two untreated femoral neck fractures, and one subtrochanteric fracture.

The average follow-up was 36 months [range 6-87 months]. There were no postoperative complications reported such as dislocation, periprosthetic fracture, infection, deep vein thrombosis, or loosening leading to revision arthroplasty. Clinical/functional results using the Harris hip scores showed a preoperative score of 34 points for the arthritis group, 36 points for the untreated hip fractures, and 32 points for acute hip fractures. Postoperative Harris hip scores were 88 and 86 points, respectively, for the arthritis/untreated fractures and acute hip fractures.<sup>2</sup> This can be assessed to be good results as of latest follow-up.

## DISCUSSION

This study has shown that total hip arthroplasty in active octogenarians resulted to good functional outcome, similar to the reported results of other larger studies. With regard to functional outcome and health-related quality of life, in a large series of patients undergoing total hip arthroplasty, Jones et al. concluded that joint-specific pain, function, vitality, and general health were significantly improved 6 months following joint replacement and that age was not a significant determinant of pain or functional outcome.<sup>5,6</sup> A retrospective study by Wurtz et al. concluded that in patients over the age of 80 years, elective total hip arthroplasty is a safe and effective treatment for end-stage osteoarthritis of the hip.<sup>2</sup> They recommended that primary care physicians should not hesitate to refer the active, elderly patient to an experienced arthroplasty surgeon should the patient experience severe pain and limitation of function as a result of advanced hip arthritis.<sup>2</sup> In this series, all had good results, which should dispel doubts among our populace [patients and relatives], and even physicians, that such a major procedure cannot be done in octogenarians without accompanying complications.

Cemented fixation on the femoral side was favored over cementless fixation due to the issue of osteoporosis and prevention of periprosthetic fractures.<sup>7</sup> However, on the acetabular side 20 out of 25 were cemented and 5 out of 25 were cementless. Cementless fixation was used because

the surgeon intraoperatively assessed that the bone stock was good for this type of fixation. This type of hybrid fixation is widely used and has good clinical results.<sup>8</sup>

The claimed advantages of cementless fixation, including faster surgery and potentially reducing cardiopulmonary stress and risk of embolization related to the use of cement, sound particularly appealing for older patients who often have several chronic diseases.<sup>9</sup> However, new evidence suggests that the possible advantage of cementless over cemented hip replacements in implant survival is lost when patients are older than 75 years.<sup>10</sup> Periprosthetic fracture was the most common reason for revision of a cementless hip replacement. This is not surprising because older age, female sex, and cementless (femoral) fixation have been identified as risk factors for early (within 90 days) periprosthetic fracture in a study by Stroh.<sup>11</sup> Jansen et al. found a high early failure rate of cementless primary THAs in octogenarian patients with osteoarthritis.<sup>12</sup> Women, in particular, were at high risk for early revision and cementless fixation provided no benefit in terms of mortality or length of perioperative hospitalization.<sup>12</sup>

Total hip arthroplasty in displaced hip fractures is performed because recent literature showed that it has better longevity compared to open reduction and internal fixation and hemiarthroplasty. A meta-analysis by Zi-Cheng comparing total hip arthroplasty and hemiarthroplasty in the elderly with acute displaced femoral neck fractures, concluded that THA in the elderly for displaced femoral neck fractures may provide better results in terms of lower reoperation rate, more pain relief, and better functional improvement compared to hemiarthroplasty over time.<sup>3</sup> In open reduction and internal fixation, there is a high failure rate because of poor quality of bone, and is associated with nonunion, avascular necrosis. Another disadvantage is that patients cannot ambulate early until union occurs. In hemiarthroplasty, there is possibility of acetabular cartilage degeneration resulting in pain, which would later lead to conversion to a total hip replacement. It is interesting to note that there were no dislocations in our series. Studies have shown that the dislocation rate for total hip arthroplasty in femoral neck fracture is higher compared to degenerative arthritis.<sup>13</sup>

The Harris hip scores were good, but none had excellent results. This might be due to the fact that in these elderly patients, there were concomitant medical co-morbidities or arthritides, with note of deterioration over time.

This study is limited by selection bias and consists of octogenarians who have been medically cleared and who have consented to the procedure.

THA is a surgical procedure that can be offered to active octogenarians who present with advanced degenerative arthritis or displaced femoral neck fractures. In this series of 24 patients involving 25 hips, the procedure was safe and resulted in good functional/clinical outcomes, as measured by the Harris hip scores. No complications were identified in these patients during the period of follow-up.

### Statement of Authorship

All authors have approved the final version submitted.

### Author Disclosure

All authors declared no conflicts of interest.

### Funding Source

This study was funded by the senior author.

### REFERENCES

1. Projected Population by Five- Year Age Group and by Sex, by Five-Year Interval, Philippines: 1995-2040 (High Assumption) [Online]. 1995 Census-Based population Projections. Table 8. Philippine Statistics Authority [cited 2016 Oct]. Available from <https://psa.gov.ph/statistics/census/projected-population>.
2. Wurtz LD, Feinberg JR, Capello WN, Meldrum R, Kay PJ. Elective Primary Total Hip Arthroplasty in Octogenarians. *J Gerontol A Biol Sci Med Sci*. 2003; 58(5):M468-71. doi: 10.1093/gerona/58.5.M468
3. Zi-Sheng A, You-Shui G, Zhi-Zhen J, Ting Y, Chang-Qing Z. Hemiarthroplasty vs primary total hip arthroplasty for displaced fractures of the femoral neck in the elderly: a meta-analysis. *J Arthroplasty*. 2012;27(4):583-90.
4. Nilsson A, Bremander A. Measures of hip function and symptoms: Harris Hip Score (HHS), Hip Disability and Osteoarthritis Outcome Score (HOOS), Oxford Hip Score (OHS), Lequesne Index of Severity for Osteoarthritis of the Hip (LISOH), and American Academy of Orthopedic Surgeons (AAOS) Hip and Knee Questionnaire. *Arthritis Care Res (Hoboken)*. 2011; 63 Suppl 11:S200-7. doi: 10.1002/acr.20549.
5. Jones CA, Voaklander DC, Johnston DW, Suarez-Almazor ME. Health related quality of life outcomes after total hip and knee arthroplasties in a community based population. *J Rheumatol*. 2000;27(7):1745-52.
6. Jones CA, Voaklander DC, Johnston DW, Suarez-Almazor ME. The effect of age on pain, function, and quality of life after total hip and knee arthroplasty. *Arch Intern Med*. 2001;161(3):454-60.
7. McLaughlin JR, Lee KR. Total hip arthroplasty with uncemented femoral component. Excellent results at ten-year follow-up. *J Bone Joint Surg Br*. 1997;79(96):900-7.
8. Ogino D, Kawaji H, Kontinen L, et al. Total Hip replacement in patients 80 years old of age and older. *J Bone Joint Surg Am*. 2008;90(9):1884-90. *JBJS AM* 2008;90:1884-90.
9. McAuley JP, Moore KD, Culpepper WJ 2nd, Engh CA. Total hip arthroplasty with porous-coated prosthesis fixed without cement in-patients who are sixty five years of age or older. *J Bone Joint Surg Am*. 1998;80(11):1648-55.
10. Mäkelä KT, Eskelinen A, Pulkkinen P, Paavolainen P, Remes V. Total hip arthroplasty for primary osteoarthritis in patients fifty-five years of age or older: an analysis of the Finnish arthroplasty registry. *J Bone Joint Surg Am*. 2008;90(10):2160-70.
11. Stroh DA, Zywiell MG, Johnson AJ, Mont MA. Excellent survivorship with the use of proximally coated tapered cementless stems for total hip arthroplasty in octogenarians. *Geriatr Orthop Surg Rehabil*. 2011;2(3):100-4.
12. Eskelinen A, Peltola M, Mäkelä K. High early failure rate after cementless hip replacement in the octogenarian. *Clin Orthop Relat Res*. 2014; 472(9):2779-89. doi: 10.1007/s11999-014-3641-7.
13. Lee BP, Berry DJ, Harmsen WS, Sim FH. Total hip arthroplasty for the treatment of an acute fracture of the femoral neck: long term results. *J Bone Joint Surg Am*. 1998;80(1):70-5.

Have you read the current trends in  
Medical and Health Research in the Philippines?

# Acta Medica Philippina

The National Health Science Journal

Access Online: [www.actamedicaphilippina.org](http://www.actamedicaphilippina.org)