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Original Research Article

Premilinary Results of Surgical Results of Total Hip Joint Replacement at the 7A Military Hospital

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Abstract

***Purpose*:** Initial assessment of total hip replacement surgery at 7A Military Hospital. ***Subjects and research methods*:** A cross-sectional descriptive study, conducted from 3/2014 - 4/2018 on 47 patients with a total of 52 total hip joints (THJ) were replaced at 7A Military Hospital. ***Result*:** The average time of surgery was 91.92 ± 15,847 minutes. The average length of treatment: 15.5 ± 4,948 days. Evaluation by HARRIS score: Very good + good: 96.2%, Average + poor 3.8%. Complications: Superficial Infections on incision 1.9%, dislocated joints 1.9%, loose stem 1.9%, no serious complications. ***Conclusion*:** Total hip joint replacement to treat osteoarthritis, aseptic necrosis of femoral head, femoral neck fracture is an effective treatment, restoring the patients' joint movement function, and with low complication rate.
Keyword: Surgery, total hip replacement, (THJ), osteoarthritis.

INTRODUCTION

In orthopedic injuries, we often encounter severe anatomical lesions in the hip as the results of many diseases such as trauma (acetabulum rupture, femur neck fracture), osteoarthritis, and aseptic necrosis of femoral head. In the early stages of these diseases, it is possible to choose conservative treatments [1].

However, most patients come for examination at the later stage. Conservation treatments are no longer useful. The hip replacement surgery becomes a possible beneficial treatment for the patients. Depending on the patient's situation, the options can be partial or total hip replacement [1].

Total hip replacement is a surgery to remove all the damaged cartilage and epiphyseal bone of the acetabulum and femoral head, and then replace them with a total artificial joint including artificial acetabulum, femoral head and a stem placed into the hollow center of the femur [1, 2].

This technique was proposed and implemented by Charnley in 1958 and has been widely used all over the world in order to help the patient reduce pain, increase joint activity, and repair deformations [3].

Today, total hip replacement surgery is an orthopedic surgery widely applied worldwide, with 80,000 to 100,000 hip joints being replaced annually [1].

In Vietnam, total hip joint replacement surgery was first performed by Tran Ngoc Ninh in Saigon and Ngo Bao Khang in Hanoi. Since then, this technique has been increasingly developed and widely applied in the country [4, 5].

7A Military Hospital, hip joint replacement surgery has been implemented since 2013 and has achieved certain results. In order to make a more detailed and comprehensive assessment of the results and limitations of the technique, we researched the subject: "Evaluation of the results of total hip replacement surgery at 7A Military Hospital" aiming at initially assessing the results of total hip replacement surgery at 7A Military Hospital.

SUBJECT AND RESEARCH METHOD

Subjects of the research

The research subjects are 47 patients with total hip joint replacement in 7A Military Hospital, including 20 retrospective patients, 27 prospective patients, 5/47 patients who had the hip joint replacement in both sides, making a total of 52 joints replaced.

Criteria for patient selection

- The patient had had total hip joint replacement surgery.

- Having full medical records, taking X-ray images before and after surgery, and having a clear address.
- Patients came for follow-up as scheduled.

Exclusion criteria

- Patients who did not meet the above criteria.

Equipment and artificial joints

- Complete hip replacement surgery kits.
- Artificial implants for cement and cementless application with full-size range (from 44 to 64).

Study time: From March 2014 to April 2018

Research location: 7A Military Hospital, Ho Chi Minh City, Viet Nam.

Research Methods: Clinical description (including retrospective and prospective studies)

- Research design: cross-sectional description
- Sample selection method: Convenient sample selection.
- Research targets:
  - + General characteristics of patients studied.
  - + Clinical symptoms when hospitalized.
  - + Injury images on X-ray film
  - + Evaluate the results according to HARRIS W.H

Data processing methods

Collected data is processed according to medical statistics.

RESULTS

General characteristics of the patient

- Gender: Male / female ratio: 34/13 (2.61)
- Average age: 55.72 ± 12,311 years old (lowest 19 years old, highest 69 years old)
- Causes of joint replacement:
  - + Osteoarthritis: 6/47 (12.8%)
  - + Femoral neck fracture: 14/47 (29.8%)
  - + Femoral head aseptic necrosis: 27/47 (54.7%)

Clinical symptoms

Table-1: Clinical symptoms (n = 47)

Symptoms / Type	Limit hip movement		Loss of hip movement	Short limbs
	One side	Two sides		
Yes	7/47 **(14.9%)**	25/47 **(53.2%)**	14/47 **(29.8%)**	14/47 **(29.8%)**
No	40/47 **(85.1%)**	22/7 **(46.8%)**	33/47 **(70.2%)**	33/47 **(70.2%)**
Total	47 (100%)	47 (100%)	47 (100%)	47 (100%)

Comment: + Limiting hip movement in one side 7/47 (14.9%)
+ Restricting hip joint movement in both sides 25/47 (53.2%)
+ 14/47 (29.8%) of hip fracture cases lost joint movement, and have clear short limb.

Injury on X-ray

Table-2: Pre-surgery X-ray results (n = 47)

Diagnosis / X-ray	Osteoarthritis	Femoral neck fracture	Femoral head aseptic necrosis	Total
	Quantity (%)	Quantity (%)	Quantity (%)	
G3, G4 Femoral neck fracture	0	14 (100%)	0	14 (100%)
Narrow joint space	6 (100%)	0	0	6 (100%)
Head necrosis	0	0	22 (100%)	22 (100%)
Combination with former Femoral neck fracture	0	0	5 (100%)	5 (100%)
Total	**6 (12.8%)**	**14 (29.8%)**	**27 (57.4%)**	**47 (100%)**

Comments

+ 6 patients with Osteoarthritis on X-ray showed typical narrow joint space.
+ In 27 patients who had aseptic necrosis, there were five patients having previous femoral neck fractures.
+ The remaining 14 patients had X-ray images of typical G3, G4 femoral neck fractures.

Surgical results

Early results

Table-3: Early results after joint surgery (n = 52)

Postoperative results			Case #:	Percentage %
Complications during surgery		Yes	0	0%
		No	52	100%
X-ray after surgery	Acetabulum in the right position	Yes	52	100%
		No	0	0%
	Correct stem, head	Yes	52	100%
		No	0	0%
Early complications	Bleeding	Yes	0	0%
		No	52	100%
	Infection of the incision	Yes	1	1.9%
		No	51	98.1%
	Dislocate	Yes	1	1.9%
		No	51	98.1%
Average surgery time		91.92 minutes ± 15.847 (Minimum: 60; Maximum: 120)		
The total duration of treatment from admission to discharge		15.5 days ± 4,948 (Minimum: 8; maximum: 31)		

Comments

- 100% of cases do not have any complications during surgery.
- The primary intention healing of the incision accounted for 98.1%. There was 1 case of superficial infection of the wound on the 3rd day after surgery (1.9%).
- X-ray results after surgery: Correct positioning of the acetabulum was 100%, and of the stem and head was 100%.
- The average surgery time was 91.92 minutes; the shortest was 60 minutes; the longest was 120 minutes.
- The average duration of treatment from admission to discharge was 9.52 days; the shortest time was 8 days; the longest time was 31 days.

Long term results

Table-4: Evaluate HARRIS W.H score by artificial joint type (n = 52)

Ranking / Joint type	Very good (90 - 100p)	Good (80-89p)	Average (70-79p)	Poor <70p	Total
	Quantity (%)	Quantity (%)	Quantity (%)	Quantity (%)	
Total hip replacement without cement	14 (46.7%)	15 (50%)	0 (0%)	1 (3.3%)	30 (100%)
Total hip replacement with cement	4 (18.2%)	17 (77.3%)	1 (4.5%)	0 (0%)	22 (100%)
Total	**18 (34.6%)**	**32 (61.5%)**	**1 (1.9%)**	**1 (1.9%)**	**52 (100%)**

Comment

- In total, 52 hip joints replaced, there were 30 cases without cement, accounted for 57.7%, and 22 cases with cement, accounted for 42.3%.
- HARRIS W.H scored very well in both types of hip joint replacement was 34.6% and good 61.5%
- There was 1 in 30 cases of cementless replacement got a poor score, which accounted for 3.3%.
- 1/22 cases of hip joint replacement with cement classified as medium, accounting for 4.5%
- There was no difference between 2 types of joint replacement, cementless, and cement in postoperative results evaluation according to HARRIS WH (p> 0.05).

Re-examination X-ray results: There was1 case in which the patient fell and broke the bones and stem, accounted for 1.9%.

Evaluate the overall results

Table-5: Evaluation of overall results (n = 52)

Results	Very good + good	Medium + poor
Quantity	50	2
Ratio	96.2%	3.8%
Total	**52 (100%)**	

Comments

- Based on the ***HARRIS WH score*** and x-ray results, we evaluated the overall results as follows:

+ Very good and good were 50/52 cases, accounting for 96.2%.

+ Average and poor were 2/52 cases, accounting for 3.8%.

DISCUSSION

General characteristics of the patients

The ages of the patients were from 19 to 69 years; the average age was 55.72 ± 12,311. Mostly men 34/47 accounted for 72.3%. This group is the main labor in the family, leading to their family economy being seriously affected.

In our study, three common conditions cause joint replacement: Osteoarthritis, femoral neck fracture, and femoral head aseptic necrosis.

Table-6: Compared to studies of other authors

Causes / Author	Osteoarthritis	Femoral neck fracture	Femoral head aseptic necrosis
Luu H.T (2012) [4]	63.48%	6.95%	29.57%
Tran D.C (2012) [5]	5.1%	82.1%	12.8
Our research	12.8%	29.8%	54.7%

Regarding the causes of joint replacement in our study and some other authors were different. In our opinion, the differences in results are due to the long and short study time, the different sample sizes, and the different epidemiological characteristics. Therefore, this comparison is only an estimate and a reference.

Symptoms upon admission

Clinical manifestations: Most patients who had been diagnosed with osteoarthritis and femoral head aseptic necrosis shown typical symptoms of the acquired disease because they all came to the hospital at the later stage of the disease (1 - 5 years) and had undergone medical treatment or taken traditional medicine, but the symptoms did not reduce. 100% of patients had pain, limiting movement on one or both hips.

Fourteen patients femoral head fractures mainly due to traffic accidents or domestic accidents with symptoms such as loss of mobility in the injured hip and apparent short limb.

In the study of the other Vietnamese authors [4, 5] or international authors [6-9] on clinical symptoms also showed similar results. The reason for the similarity is that except for patients with acute trauma (hip fracture) who would come to the hospital immediately after the accident, patients with osteoarthritis and necrosis came to the hospital at a later stage.

X-ray: In our study, there were six patients with osteoarthritis who had X-ray results of typical narrow joint spaces (12.8%). Fourteen patients with new femoral neck fracture (29.8%), and 27 patients with necrosis (57.4%). In the study of Luu, 2012 [4], 41/67 cases of osteoarthritis and necrosis had images of narrowing of joints on x-ray (61.2%). 27/27 patients with necrosis showed necrotically and collapsed head. This result showed the fact that most patients with the chronic hip disease (osteoarthritis and necrosis) came to the hospital at a later stage with symptoms of severe pain and limited movement. At this stage, the medical treatment and conservation method bring minimal results; the hip replacement solution is the best treatment method.

Surgical results

In our study, the average hospitalization time was 15.5 ± 4,948 days, which was relatively long compared to other groups of patients. The reason was that many patients had chronic diseases such as hypertension (23.1%) or bacterial foci on the body. Therefore, we had to treat those conditions until stable before surgery, leading to extended treatment time. Besides, hip joint replacement is major surgery, so patients needed time to practice, rehabilitate, and being monitor before releasing from the hospital. Through this study, we found that the patients needed to be treated, combining with early rehabilitation after surgery in order to make the hospitalization time shorter.

Evaluate the early results

There was one patient (1.9%) had a superficial infection on the incision the 3rd day after surgery. The patient was treated; daily bandages changed, given combination antiseptic, and got the incision back to normal on day eighth. The case also raised concerns in terms of before and after surgery sterilization. According to Jonsson *et al*. 2014 [10], the deep infection rate after the hip replacement was 1%, the superficial infection was more common with 3%.

There was 1 case of dislocated hip groin 16 days after discharge, due to falling (1.9%). The patient was then back to the hospital for testing and had hip replacement surgery again after six days. The postoperative was stable. The rate of dislocated joints after the hip replacement was 2% [11, 12].

Long term results upon follow-up visits

Based on *HARRIS W.H* score and the results of X-ray examination, we got the following assessment results:

+ Very good and good were 50/52 cases accounting for 96.2%

+ Average and poor were 2/52 cases, accounting for 3.8%.

Table-7: Compare with other authors

Results	Very good + good	Average	Poor
Domestic [4,5]	95.5%	2.7%	1.8%
International [6,7,8,9]	96.15%	3.85%	0 %
Our research	96.2%	1.9%	1.9%

We found that the results of our study and some other authors were similar [4-9]. Although in our study the study period was not long, the number of patients was not large, and there were still some cases with a medium and poor score, results still showed that total hip joint replacement is a promising method to treat hip disease (osteoarthritis, aseptic necrosis, and femoral neck fracture).

CONCLUSIONS

Total hip joint replacement is effective in treating osteoarthritis, femoral head aseptic necrosis, and femoral neck fracture; help restore the ability of hip movements to patients. Good and very good results reached 96.2%.

DECLARATION

Scientific Responsibility Statement: The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement: All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

CONFLICT OF INTEREST

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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