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Artículos

Short-term complications of hip bipolar hemiarthroplasty with anterior approach in patients with femoral neck fracture admitted to the emergency department of Yasuj Shahid Beheshti Hospital in 2016-2018

Complicaciones a corto plazo de la hemiartroplastia bipolar de cadera con abordaje anterior en pacientes con fractura de cuello femoral ingresados en el departamento de emergencias del hospital Yasuj Shahid Beheshti en 2016-2018

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Abstract:

Hip fractures comprise about 20% of workload in orthopaedic trauma centres, of which intra-articular femoral neck fractures account for about 50%. There are several surgical approaches including Anterior Approach (Smith-Petersen), Anterolateral Approach (Watson-Jones) and Direct Lateral Approach (Hardinge). A total of 20 patients were randomly selected from those admitted to Yasuj Shahid Beheshti Hospital, Iran, with a diagnosis of femoral neck fracture from 2012 to 2014 and enrolled in this cohort study. The patients underwent hip bipolar hemiarthroplasty through the anterior approach. Furthermore, 40 patients with hip fracture underwent hip bipolar hemiarthroplasty through the posterior approach and matched with those underwent the anterior approach in terms of age, gender and underlying diseases were enrolled in this study. Regarding the functional status of patients after surgery, the mean Harris Hip Score (HHS) of patients treated with the anterior approach was 74.41 in the 6th month and 83.31 in the 12th month. In patients treated with the anterior approach, the lowest score was 55 in the first 6 months and 68 in the first 12 months, and the highest score was 90 in the first 6 months and 100 in the first 12 months. The mean score of patients treated with the posterior approach was 68.61 in the 6th month and 74.31 in the 12th month. In patients treated through the posterior approach, the lowest score was 34 in the first 6 months and 45 in the first 12 months, and the highest score was 84 in the first 6 months and 96 in the first 12 months. The results of this study showed the relative advantage of the anterior approach over posterior approach; but similar studies in larger populations are recommended for better evaluation.

Keywords: Anterior approach, Posterior approach, Shahid Beheshti Hospital.

Resumen:

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Las fracturas de cadera comprenden aproximadamente el 20% de la carga de trabajo en los centros de traumatología ortopédica, de las cuales las fracturas intraarticulares del cuello femoral representan aproximadamente el 50%. Existen varios abordajes quirúrgicos que incluyen abordaje anterior (Smith-Petersen), abordaje anterolateral (Watson-Jones) y abordaje lateral directo (Hardinge). Un total de 20 pacientes fueron seleccionados al azar de aquellos ingresados en el Hospital Yasuj Shahid Beheshti, Irán, con un diagnóstico de fractura de cuello femoral entre 2012 y 2014 y se inscribieron en este estudio de cohorte. Los pacientes fueron sometidos a hemiartroplastia bipolar de cadera a través del abordaje anterior. Además, 40 pacientes con fractura de cadera se sometieron a hemiartroplastia bipolar de cadera a través del abordaje posterior y se combinaron con los que se sometieron al abordaje anterior en términos de edad, género y enfermedades subyacentes. En cuanto al estado funcional de los pacientes después de la cirugía, la puntuación media de la cadera de Harris (HHS) de los pacientes tratados con el abordaje anterior fue de 74,41 en el sexto mes y 83,31 en el 12º mes. En los pacientes tratados con el abordaje anterior, la puntuación más baja fue 55 en los primeros 6 meses y 68 en los primeros 12 meses, y la puntuación más alta fue 90 en los primeros 6 meses y 100 en los primeros 12 meses. La puntuación media de los pacientes tratados con el abordaje posterior fue 68,61 en el sexto mes y 74,31 en el 12º mes. En los pacientes tratados mediante el abordaje posterior, la puntuación más baja fue 34 en los primeros 6 meses y 45 en los primeros 12 meses, y la puntuación más alta fue 84 en los primeros 6 meses y 96 en los primeros 12 meses. Los resultados de este estudio mostraron la ventaja relativa del abordaje anterior sobre el abordaje posterior; pero se recomiendan estudios similares en poblaciones más grandes para una mejor evaluación.

Palabras clave: Abordaje anterior, Abordaje posterior, Hospital Shahid Beheshti.

Introduction:

Femoral neck fracture is considered one of the most prevalent orthopaedic problems that impose heavy costs on the public health system annually. This disease may result in high mortality and morbidity rates if the necessary care is not provided. Numerous patients with femoral neck fracture annually refer to Shahid Beheshti Hospital and undergo arthroplasty. There are several surgical procedures for this purpose including Anterior Approach (Smith-Petersen), Anterolateral Approach (Watson-Jones), and Direct Lateral Approach (Hardinge).

The Anterior Approach is not routinely used for treatment [1], although various studies have emphasized its superiority over other approaches [2,3]. No coherent study has been conducted on advantages and disadvantages of this surgical approach for treatment of femoral neck fractures. Thus, conducting such a study seems necessary for possible changes in the treatment attitude.

Hip fractures comprise about 20% of workload in orthopaedic trauma centres, of which intra-articular femoral neck fractures account for about 50%. Epidemiological studies have identified many risk factors for femoral neck fractures including a BMI of less than 18.5, insufficient sunlight exposure, low activity, and previous history of osteopenic fractures, smoking and treatment with corticosteroids [1,4]. As the main risk factor, bone mass loss doubles the risk of hip fracture. The lifetime risk of hip fracture is about 40-50% in women and 13-22% in men. With increasing life expectancy, the number of hip fractures is expected to increase from about 1.66 million in 1990 to about 6.26 million by 2050, imposing a heavy burden on the public health system [1].

The hospital mortality and one year mortality rates in all cases of femoral neck fractures are 15% and 30%, respectively. The mortality risk is over 50% in those with cognitive impairment. The mortality rate in women is lower than in men. In addition, the mortality rate is lower in those underwent surgery within the first 48 hours than those underwent surgery after 48 hours [1,5].

Materials and Methods

A total of 20 patients were randomly selected from those admitted to Yasuj Shahid Beheshti Hospital, Iran, with a diagnosis of femoral neck fracture from 2012 to 2014 and enrolled in this cohort study. The patients underwent hip bipolar hemiarthroplasty through the anterior approach. Another group of 40 patients with

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hip fracture underwent hip bipolar hemiarthroplasty through the posterior approach in this hospital and matched with the anterior approach patients in terms of age, gender and underlying diseases were enrolled in the study. All patients were examined in regular clinic follow-ups after 1.5 and 3 months, and then every 6 months. The patients' data were recorded in separate forms and analysed statistically. The forms included patients' characteristics and studied variables. The functional status of patients after surgery was evaluated using the Harris Hip Score (HHS).

The quantitative data were expressed as mean and standard deviation (mean ± SD) and the qualitative data as frequency and percentage. Statistical analyses were performed with the help of SPSS through .-test and Chi-square test at a significance level of less than 0.05.

Results:

The population consisted of 27 men (45%) and 33 women (55%) with a mean age of 79.27 years, ranging from 60 years to 94 years, both of whom were women. The majority of patients (n= 37, 61.7%, 21 men and 16 women) were in the age group of 65 to 85 years; 20 patients (33.3%, 6 men and 14 women) were over 85 years; and 3 patients (5%, 3 men) were under 65 years.

The frequency of underlying diseases among the treated patients was as follows:

Thirty patients (50%, 8 men and 22 women) had no underlying disease; 12 patients (20%, 9 men and 3 women) had cardiovascular disease; 9 patients (15%, 3 men and 6 women) had diabetes; 3 patients (5%, 3 men) had neurological diseases; 3 patients (5%, 3 men) had rheumatoid arthritis and 3 patients (5%, 1 man and 2 women) had malignancies.

Of 20 patients treated with the anterior approach, 19 and 1 had Grade 4 and Grade 3 femoral neck fracture, respectively. Of 40 patients treated through the posterior approach, 38 and 2 had Grade 4 and Grade 3 femoral neck fracture, respectively.

In patients treated with the anterior approach, the cause of femoral neck fracture was falls on the same level in 19 cases and pathologic fracture in 1 case. The cause of femoral neck fracture in patients treated through the posterior approach was falls on the same level in 38 cases and pathologic fracture in 1 case.

The length of stay before surgery in the anterior approach group was 1 day in 15 patients, 2 days in 4 patients (due to waiting list) and 10 days in only 1 patient (due to preoperative measures). The length of stay before surgery in the posterior approach group was 1 day in 32 patients, 2 days in 5 patients (due to waiting list) and more than 2 days in 3 patients (due to preoperative measures).

The mean surgery duration in the anterior approach patients was 48.25 min, ranging from 45 min to 55 min. The mean surgery duration in the posterior approach patients was 78.68 min, ranging from 65 min to 95 min.

Postoperative complications evaluated in this study include the need for intraoperative blood transfusion, intraoperative periprosthetic fracture and intraoperative mortality. None of these complications occurred in patients treated through the anterior approach. In the posterior approach group, 12 patients (30%) required intraoperative blood transfusions (8 patients received 2 units of blood and 4 patients received more than 2 units of blood). No intraoperative periprosthetic fracture and mortality occurred in patients treated with the posterior approach.

In the anterior approach group, the length of stay after surgery was less than 3 days in 18 patients (90%) and more than 3 days in 2 patients (10%), with the shortest and longest duration of 1 day and 5 days, respectively. In the posterior approach group, all patients were hospitalized for more than 3 days with the shortest and longest duration of 4 days and 20 days, respectively.

None of the patients treated with the anterior approach had postoperative superficial or deep infection, hip dislocation, deep vein thrombosis or pulmonary embolism, systemic infection, sciatica nerve injury, bed

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sore, heterotopic ossification and periprosthetc fracture. In the anterior approach group, 3 patients (15%) died after surgery, 2 patients in the first month and 1 patient one year after surgery.

In the posterior approach group, 33 patients had no postoperative complications. Hip dislocation, deep vein thrombosis or pulmonary embolism, bed sore, heterotopic ossification and periprosthetc fracture respectively occurred in 1, 3, 1, 1, and 1 patient. In the posterior approach group, 3 patients died in the first month after surgery.

Regarding the functional status of patients after surgery, the mean Harris Hip Score (HHS) of patients treated with the anterior approach was 74.41 in the 6th month and 83.31 in the 12th month. In the anterior approach patients, the lowest score was 55 in the first 6 months and 68 in the first 12 months, and the highest score was 90 in the first 6 months and 100 in the first 12 months. The mean score of patients treated with the posterior approach was 68.61 in the 6th month and 74.31 in the 12th month. In the posterior approach group, the lowest score was 34 in the first 6 months and 45 in the first 12 months, and the highest score was 84 in the first 6 months and 96 in the first 12 months.

Discussion and Conclusion:

No significant difference was found between the patients treated through anterior and posterior approaches in terms of type of femoral neck fracture.

There was no significant difference in the mechanism of femoral neck fracture between the patients treated with the anterior and posterior approaches.

No significant difference was observed between the anterior and posterior groups in terms of preoperative length of stay.

There was a significant difference between the anterior and posterior groups in terms of surgery duration (.=0.001).

A significant difference was found between the anterior and posterior groups in terms of perioperative complications (.=0.004).

There was a significant difference between the anterior and posterior approach in terms of postoperative length of stay (.=0.001).

No significant difference was found between the anterior and posterior groups in terms of postoperative complications.

A significant difference was found between the anterior and posterior groups in terms of functional status according to HHS 6 months after surgery.

The results of this study showed the relative advantage of the anterior approach surgery over the posterior approach, but similar studies in larger populations are recommended for better evaluation.

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