

## INCIDENCE OF HETEROTOPIC OSSIFICATION AFTER HIP REPLACEMENT – PRELIMINARY STUDY

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**Introduction.** Heterotopic ossification represents bone formation in ectopic locations. Their importance in patients with hip arthroplasty due to repercussions that may have on: joint biomechanics, mobility and the quality of life. Unobserving and their corresponding untreatment can cause severe damage to affected hip up to ankylosis.

**Material and methods.** We have evaluated clinically and radiographically in the Department of Orthopedics and Traumatology of Brasov County Hospital, a group of 57 patients with heterotopic ossification occurred at an interval of 1-3 years after hip arthroplasty, 18 men and 39 women. 46 patients were treated with unilateral arthroplasty and 11 patients with bilateral arthroplasty. Etiological diagnosis was in 49 patients artrosis, 6 femoral neck fracture and one patient with acetabulum inflammation. Type of approach that was used to 47 patients was a lateral approach and 10 patients Watson-Jones approach. Examined patient age was between 40 and 80 years. HO appearance was analyzed according to the type of hip replacement used and radiological classified as Brooker grade on anterior-posterior hip radiograph.

**Results.** HO incidence was higher in age group 50-59 years, predominantly in womankind - 39 women, in patients with unilateral hip arthroplasty. The main etiologic diagnosis, before the prosthesis and the appearance of OH, was artrosis. HO occurred more frequently approached laterally and HO were predominantly classified as Brooker grade I and II - 52 patients.

**Conclusion.** Appearance of heterotopic ossification assessment should be required by the collaboration of clinical and radiological appearance of their pursuit to make medium and long term.

50-69 years age group is most represented in terms of appearance of HO.

Most common etiological diagnosis was artrosis (primary and secondary), followed by upper extremity fracture of the femur (head and neck).

Comparison of radiological results depending on the type of approach has shown a rate of occurrence higher to the patients operated with lateral approach then Watson - Jones approach.

Comparison of radiological results depending on the type of implant showed that the cemented and cementless arthroplasty have a total rate of appearance of OH, higher than Austin-Moore arthroplasty. Most heterotopic ossification occurred were classified as Brooker grade I and II.

**Key-words:** heterotopic ossification, hip replacement

### Introduction

Heterotopic ossification (HO) represents formation of mature lamellar bone in soft tissues. The incidence of HO after hip arthroplasty is 0.6 to 9%. Although most patients have no symptoms, 2-7% of hip arthroplasty patients are symptomatic and only 1% of patients require surgery for HO excision. [1]

There are necessary three conditions for the HO forming: Osteogenic progenitor cell, inducing agent and an environmental predisposition for osteogenesis. Mesenchymal cells, which have the ability to differentiate into osteogenic stem cells, are found in the soft tissues around joints. Substances are likely to induce osteogenesis, released after trauma and can cause a proliferation of mesenchymal cells.

Growth factors such as bone morphogenetic proteins (BMPS), can induce proliferation and differentiation of mesenchymal cells into cartilage and bone, with a possible role in the formation of HO. [6]

Establishing and recording risk factors for HO was difficult because the use of NSAIDs during treatment, which is known to prevent formation of HO. HO appearance after trauma from hip arthroplasty returned to their current study. [3] Therefore the risk factors listed below have been established for this circumstance in which HO have very high incidence.

Risk factors are: male sex, age over 60 years, history of heterotopic ossification in the counter-balance or to the same lateral hip,

excision of other heterotopic ossification to the same patient. [5]

The most common form of radiological classification is by far Brooker's classification, which is based on the distance of HO in mms, seen on anterior-posterior hip radiograph.[4] Although the radiological appearance is useful in determining the HO, Brooker classification does not meet all functional aspects. [6, 8]. A variant of the current classification which exists in literature is Hackenbroch Schmidt classification. [2, 7]

**Material and method**

We have studied a group of 57 patients with heterotopic ossification occurred at an interval of 1-3 years after hip arthroplasty, in Orthopedics and Traumatology Clinic of Brasov, 18 men and 39 women. 46 patients were treated with unilateral total arthroplasty and 11 patients with bilateral total arthroplasty. Etiological diagnosis was for 49 patients - coxarthrosis, 6 patients with femoral neck fracture and 1 patient with hipbone socket inflammation.

Type of approach used in 47 patients was lateral approach (Hardinge) and 10 patients Watson-Jones approach.

		Number of patients
Age	<50	1
	50-69	38
	70-80	27
	>80	0
Sex	Men	18
	Women	39
Implant type	Cemented hip arthroplasty	34
	Cementedless hip arthroplasty	13
	Austin-Moore hemiarthroplasty	10
Type of hip arthroplasty	Unilateral	46
	Bilateral	11
Ossification grade	GR I	35
	GR II	17
	GR III	5
	GR IV	0
Approach type	Lateral	47
	Anterolateral	10
Etiologic diagnosis	Coxarthrosis	49
	Femur neck fracture	6
	Hipbone socket	1

	inflammation	
Articular damage grade	Grad I	56
	Grad II	1
	Grad III	0

**Results and discussion**

Appearance of heterotopic ossification assessment should be required by the collaboration of clinical and radiological appearance of their pursuit to achieve medium and long term results.

50-69 years age group is most represented in terms of appearance of HO, probably because of the incidence of arthroplasty to this age group.

Most common etiologic diagnosis was coxarthrosis (primary and secondary), followed by upper extremity fracture of the femur (head and neck) and hipbone socket inflammation secondary Austin-Moore hemiarthroplasty.

Comparing the results depending on the type of approach has shown a rate of occurrence higher to the patients operated with lateral approach then Watson - Jones approach.

Comparing the radiological results depending on the type of implant showed that the cemented and cementedless arthroplasty have a total rate of appearance of OH, higher than Austin-Moore arthroplasty.

Most of heterotopic ossification according to Brooker radiological classification was classified as grade I - 35 patients and grade II - 17 patients.

Clinical classification according to Brooker was classified as grade I without no clinically affected mobility.

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