

# MOST PROGNOSTIC FACTOR RELATED TO DEVELOPMENT OF TRAUMATIC OSTEONECROSIS OF FEMORAL HEAD FOLLOWING HIP DISLOCATION. TIME TO RELOCATION OR SEVERITY OF INJURY?

**Mohd Ariff S.**, Johaimy J.\*, Surianty S.\*\*

Department of Orthopaedics, Traumatology and Rehabilitaion, International Islamic University MALAYSIA (IIUM)

\* Department of Orthopaedics, Hospital Raja Perempuan Zainab II (HRPZII), MALAYSIA

\*\* Department of Orthopaedics, Universiti Sains MALAYSIA (USM)

## BACKGROUND

**Acute traumatic posterior hip dislocation** is most of the time adequately treated with closed reduction. Femoral head osteonecrosis following hip dislocations has been reported to be directly related to the timing of reduction. Hence, the principles of treatment early reduction and restoration of hip stability. The reported rate of avascular necrosis (AVN) of the femoral head is between 0 to 22% of cases. **Reduction within six hours of injury was reported to lower the risk down to 10%.**

AVN occurs more frequently after posterior hip dislocations than anterior. Plain radiographs usually show changes within 2 years, but may present as late as 5 years after the dislocation.

The mechanism of injury producing a posterior dislocation is a force directed along the femur with the hip flexed and adducted. The posterior capsule is torn along with rupture of ligamentum teres. The femoral head departs from the acetabulum socket and migrates through the rent to enlarge it. As a result, the short lateral rotators of the hip are completely or partially torn.

AVN is the commonest complication following posterior hip dislocation **Most previous reports concluded no good results were achieved if reduction is delayed beyond twenty-four hours.**

## THE STUDY

**We study the prevalence of posterior hip dislocations and avascular necrosis of the femoral head following the injury, in a single tertiary centre.**

## METHODOLOGY

Thirty-eight patients with simple posterior hip dislocation admitted to Hospital Raja Perempuan Zainab II (HRPZII) from January 2002 until December 2009 were evaluated. All patients were treated with closed manual reduction.

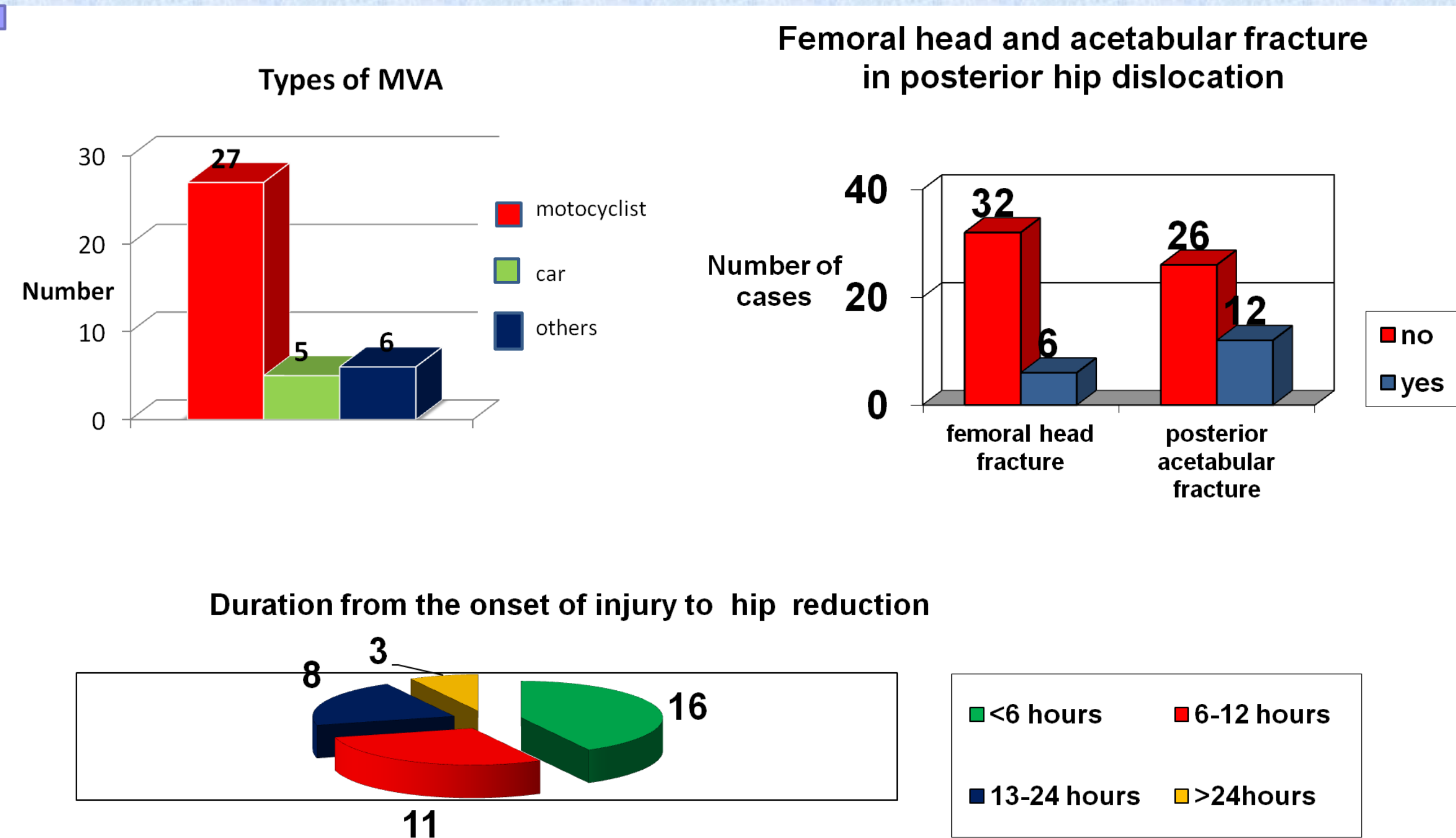
Plain radiograph of the hip was done to screen for occurrence of osteonecrosis of the femoral head. The duration of injury until the last x-ray done must be more than four months post injury. Patients were evaluated clinically and radiologically for clinical features of AVN. They were also asked to answer a questionnaire related to their health and quality-of-life.

## RESULT

The mean age was 25 years (range 14 to 48). Majorities were males (92.1%) and motorcyclists (71.0%). 15.7% had associated femoral head fracture, while 31.6% had posterior acetabular fracture.

Time to relocation for 42.1% of cases was less than six hours, with 28.9% of cases were reduced after twelve hours. Mean duration from the onset of injury until last x-ray done was 41 months (range 4 to 99).

No case of AVN of the femoral head was reported. All of the hips had good to excellent functional and radiographic outcome.



## DISCUSSIONS

Hougaard and Thomsen reported a 6% incidence of AVN in dislocations reduced within 6 hours after injury and this incidence markedly increased to 58% in hips reduced more than 6 hours after injury. In contrast, other reports showed that delay in reduction did not affect the occurrence of AVN.

The most prognostic factor appears to be the time to reduction, and the longer the time to reduction, the worse the result. Brav found that the rate of unsatisfactory results increased from 22% to 52% if the hip was reduced after 12 hours. Morton had excellent results only if the hip had been reduced within 2 hours. Hougaard and Thompson had a higher rate of avascular necrosis and arthritis if it required more than 6 hours to reduce the hip.

Reigstad did not find a single case of avascular necrosis or arthritis when uncomplicated dislocations were reduced within 6 hours.

In our case series, no avascular necrosis of the head of the femur encountered even when there was a delay in reduction of more than 6 hours. All of the hips treated using the protocol presented had good to excellent functional and radiographic outcome.

## CONCLUSION

**The findings were not consistent with previous reports concluding no good results achieved if reduction is delayed beyond 24 hours. This supports the claim that the severity of injury sustained rather than delay in treatment is the more important factor influencing the occurrence of femoral head osteonecrosis.**

### CORRESPONDENCE

Dr Mohd Ariff Sharifudin. Department of Ortopaedics, Traumatology and Rehabilitation, Kulliyyah of Medicine, International Islamic University MALAYSIA.  
Email : [ariffs@iium.edu.my](mailto:ariffs@iium.edu.my), [mdariffs@hotmail.com](mailto:mdariffs@hotmail.com)

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