A case report – short term result for THA for the racehorse trainer: aiming for no limitation after THA, using a CT-based navigation system and four-dimensional motion analysis

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Introduction: Various kinds of sports activities after total hip arthroplasty (THA) have been accepted by the patients and surgeons because of the improvements in design and materials of the bearing couples such as highly crosslinked polyethylene and large diameter femoral heads. However there is little literature mentioned about hip motion during horse riding after THA. Moreover there is no literature mentioned about horse training or horse racing by patients after THA.

We had a chance to observe a patient with unilateral hip osteoarthritis who was working as a racehorse trainer. We underwent THA using a CT based navigation system with resulting good functional recovery. Before full return to his work we performed a motion analysis to check if he can make any posture and hip motions during various horse riding activities safely.

Patient: The patient was a 53 y.o. man. He had worked as a jockey for 20 years and after retired it he has been working as a racing horse trainer for 7 years. He suffered from left hip pain for three years, and became difficult to work gradually. He consulted to our hospital. X-rays showed KL stage 4 osteoarthritis of the hip and he decided to undergo THA after informed consent about possibility of early failure and dislocation if he returned to his job. We performed THA through a modified Watson Jones approach with a Trident multi-hole cup, X3 polyethylene liner, a 40 mm CoCr head, and a CentPillar cementless Japanese anatomic short stem under Stryker CT based navigation. The cup was placed in 40 degrees of anatomical inclination and 17 degrees of anatomical anteversion. The stem was placed in 43 degrees of anteversion. The patient could walk with no assist 2 days after surgery, started squatting 7 days after surgery and started to ride the horse 30 days after surgery. After 6 month postoperatively, we performed a motion analysis using the four-dimensional motion analysis system.

Results: The motion analysis revealed that there was no impingement of the femoral component on the cup during deep hip bending activities or at the horse riding training position. The patient returned to racehorse trainer 6 months after surgery, means that shortly after motion analysis was finished. Now 14 months passed after surgery, no trouble such as dislocation or evidence of early polyethylene wear.

Discussion: Generally horse trainers ride on a racehorse in a so-called “monkey style” and needs deep hip bending. Thus, it is reasonable to consider the use of navigation for precise placement of the cup to avoid complications for such a highly active patient as a horse riding trainer. We successfully performed accurate surgery and he recovered his hip function in a short period. The concern was his job because there was no report on professional horse riding trainers after THA. Our four-dimensional motion analysis revealed that no impingement was observed when he performed various horse riding activities.

Of course longer term observation is needed for this case, but our study suggests that accurate surgery allows racehorse trainers or jockey to return their jobs without precaution after THA.