Late Disassembly of Femoral Head and Neck of A Modular Primary Total Hip Arthroplasty

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Abstract

**What to Learn from this Article?**
Complications related to the modularity of total hip arthroplasty components.

**Introduction**: Modular total hip arthroplasty system are now widely used, as these components increase the flexibility during primary and revision total hip arthroplasty. But this modularity itself associated with some risk of intraoperative and postoperative complications.

**Case Report**: We report a case of late disassembly of a primary total arthroplasty in a 42 years old patient five years after the replacement surgery where the femoral head remained in the acetabular socket.

**Conclusion**: Femoral head should be solidly impacted onto the stem and confirm that it has been assembled correctly before reduction.

**Keywords**: Total hip arthroplasty, Head neck disassembly, modular femoral components complications.

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**Introduction**

Modular total hip arthroplasty system now widely employed, that offer the advantage of increase flexibility in components selection during the surgery, but it introduce the risk of intraoperative errors in matching and disassembly of the components postoperatively¹ ². We report a unusually late separation of a modular femoral head from the neck of a primary total hip arthroplasty.

**Case Report**

A 42 years old man, who had osteoarthritis of right hip (Fig 1), had an uncemented total hip replacement done through posterolateral approach. A porus coated, metal backed acetabular component with metal liner and a taper-locked modular femoral head with hydroxyapatite coated femoral stem were used. The femoral head was firmly impacted onto the neck. Stability was confirmed in both flexion and extension and the wound was closed. Initial results was excellent, the patient had no pain and could walk without supportive aids. The patient was regularly followed up to about five years and all the x-rays of those period were normal and had no abnormalities (Fig. 2,3). Five years after postoperatively, while the patient was rising from a chair, the patient experience a sudden click and followed by complete functional disability and impossibility to bear the
weight. Standard radiograph showed disassembly of femoral neck and head while the head of prosthesis remained inside the acetabular socket. All the femoral and acetabular components visible in the x-ray are normal in appearance. There are no fracture lines in any components or complete fracture of any components or any other extra, abnormal sized or shaped metal piece visible in the x-ray (Fig. 4). No subsidence could be observed. Open reduction was performed, same head was assembled onto the neck and the head was reduced into the acetabular socket. There was no evidence of visible corrosion of the interface between modular head and neck of femoral components. Intra-operative images are not available as that were not taken during the surgical procedure.

Postoperative period was uneventful and a quick functional recovery was achieved.

Discussion
Modularity in total hip arthroplasty has been a benefit in term of allowing inventory reduction, while provide surgeon versatility intraoperatively and thus allowing optimal joint reconstruction \cite{1,2,3}, but it also introduce the risk of failure at the interfaces. Modular femoral head may disassemble during close reduction of a dislocated prosthesis or during normal activity such as in case report of current study. We suspect that the mechanism of this disassembly of femoral head was the sealed air that pushes back the stem neck and unlocks the taper lock. It is also possible that the head was not impacted adequately onto the stem intraoperatively.

Conclusion
As a result of this experience, certain recommendation can be made to prevent this type of complication. The taper should be neatly clean and completely dry before the implantation of femoral head onto it. Blood, fluids or tissue fat layers should be completely removed from the taper. The femoral head should be solidly impacted with blow using a mallet. It is advised to use second blow as it may disengage the head if it was not placed centrically onto the taper, otherwise this second blow solidly lock the taper lock mechanism in a centrially placed head. Always confirm that, the head has been assembled correctly by applying manual distraction forces to femoral head.

Clinical Message
Disassembly of modular total hip arthroplasty system after surgery is rare, but it can occur in any case. Therefore, whenever using such type of arthroplasty system, all the precautionary measures should be taken during surgery which are necessary to prevent such type of complication.
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Conflict of Interest: Nil
Source of Support: None

How to Cite this Article
Ahmed P, Kumar D. Late Disassembly of Femoral Head and Neck of A Modular Primary Total Hip Arthroplasty. Journal of Orthopaedic Case Reports 2015 Jan-March;5(1): 8-10