In this report we describe a case of LD following THA with a preassembled large femoral head CoC cup design.

**CASE PRESENTATION**

A 41-year-old male patient had received a bilateral THA for degenerative arthritis due to hip dysplasia. A posterolateral approach was used bilaterally and the following components were implanted: CoC Maxera™ cup with a BIOLOX® OPTION HD/ADPT head and 12/14 GTS Standard Stem size -1 (Zimmer Biomet, Warsaw, IN, USA). The left and right cup had a diameter of 60 mm and 58 mm, respectively. Although post-operative rehabilitation was uncomplicated, groin pain remained, which was possibly related to the m. iliopsoas.

Seven years following THA, the patient reported to the emergency room. He had felt a sudden “snap” in the left groin during walking, which was immediately followed by pain radiating to his left leg making weight bearing impossible. No preceding trauma had occurred which could be associated with these complaints. Given the patient’s history of longstanding groin problems related to the iliopsoas, an MRI scan was obtained but no acute muscle tears, periprosthetic fluid collections or other soft tissue abnormalities were visible. The...
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DISCUSSION

In this report, we present a rare case of LD in a CoC pre-assembled implant (Maxera™, Zimmer Biomet, Warsaw, IN, USA). This is a serious mechanical failure following THA which often requires revision surgery. To our knowledge, only one case report, consisting of five cases, reported on LD in CoC pre-assembled acetabular components. Revision surgery was performed in four of the five patients while one patient was treated conservatively.

Our case suffered from an atraumatic LD seven years after the THA. The LD was preceded by a sudden “snap” and followed by immediate pain and discomfort. Although complaints of pain and discomfort decreased, revision surgery was deemed necessary due to the risks of liner fracture. The changed pressures could cause the shifted liner to break into many little pieces of debris which could end up in the surrounding tissues or in the space between the head and the liner and cause additional damage. Alternatively, the liner could shift further, causing more pain and damage. At best, the liner would stay status quo, but in this case the above-mentioned risks were considered too high.

It is unclear what caused the LD in this CoC pre-assembled prosthesis. In hip prostheses with modular systems, LD have been attributed to a malfunction in the locking mechanism. This was the case after...
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several cases of polyethylene LD with the Pinnacle component (Depuy Synthes, Warsaw, IN, USA) were reported5,7,11,12. Early LD within the first two years, on the other hand, has been associated with acetabular malposition4,13. Some authors have also proposed that the surgical approach could be linked with the occurrence of LD. Singleton et al. described six cases of LD, all of which received THA through a lateral approach14. However, in a recent systematic review similar rates of LD among the surgical approaches were reported, showing no association between LD and surgical approach15.

Similar to a previous case report10, we also observed pneumarthrosis in the first weeks following LD. A small space between the acetabular shell and the ceramic liner exists in the pre-assembled prosthesis to allow better taper interference10. The air in this space could escape during dissociation, causing pneumarthrosis. Similar to other cases10, the pneumarthrosis disappeared again in the weeks following the dissociation. When the liner shifts, it does not connect appropriately with the acetabular shell. We assume that this caused the crescent-shaped radiolucency line visible on the radiographs.

CONCLUSION

In this case report, we discussed a case of LD in a CoC pre-assembled prosthesis. This is a mechanical failure of the liner characterized by a shift of the liner in the acetabular shell and pneumarthrosis on X-ray. Due to the risk of further dissociation or fracture of the ceramic liner following LD, revision surgery is required. Although LD is a rare complication, it is important for orthopedic surgeons to be aware of the symptoms of LD.