



Case report

Spontaneous dislocation of the polyethylene component following knee revision arthroplasty: case report[☆]



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ABSTRACT

Dislocation of the polyethylene component in knee arthroplasty is a rare complication. The main triggering factor is failure of the locking mechanism, which may result from technical errors of insertion, trauma or even implant failure. Here, a case of dislocation of the polyethylene component from the tibial base, nine years after revision arthroplasty, is reported. It is believed that this is the first such case reported in the Brazilian literature.

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Luxação espontânea do polietileno após artroplastia de revisão de joelho: relato de caso

RESUMO

A luxação do polietileno em artroplastia do joelho é uma complicação rara. O principal fator desencadeante é a falha no mecanismo de travamento, que pode ser decorrente de erros técnicos na inserção, do trauma ou ainda de falha do implante. Os autores relatam caso de luxação do polietileno a partir da base tibial, nove anos após artroplastia de revisão. Acredita-se que seja o primeiro caso relatado na literatura nacional.

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Introduction

Total knee arthroplasty has been reported to be one of the most successful orthopedic procedures, with implant longevity greater than 15 years in around 90% of the cases.^{1,2} Among the complications most commonly reported, problems relating to healing of the operative wound, infection, thromboembolic disorders, postoperative stiffness, periprosthetic fractures, alterations to patellar tracking, osteolysis, aseptic loosening, instability and polyethylene wear can be highlighted.^{3,4} Although the polyethylene component is subjected to cyclical stress with the possibility of failure secondary to fatigue, dislocation of this component is a very rare event.^{4,5} Here, we report a case of this, which we believe to be the first one described in the Brazilian literature.

Case report

The patient was a 68-year-old woman with a history of arthroplasty of the left knee performed in 2002. Eight months after the first procedure, she started to present a condition of local pain and persistent effusion. After six months of follow-up, with persistently positive inflammation tests and indicative scintigraphy tests with technetium and gallium, but with three arthrocentesis samples that did not produce bacterial growth in cultures, the prosthesis was removed and a cement spacer was inserted. The germ *Streptococcus viridians* was isolated and antibiotic therapy was instituted, guided by deep tissue that had been collected during the surgical procedure.

In October 2003, the arthroplasty was revised using nails and wedges, cement containing antibiotic and a posterostabilized polyethylene component. There was no recurrence of infection after this operation.

In 2012, the patient sought the emergency service of our hospital, with a complaint of sudden pain and instability in the knee that had been operated, after abrupt physical effort.

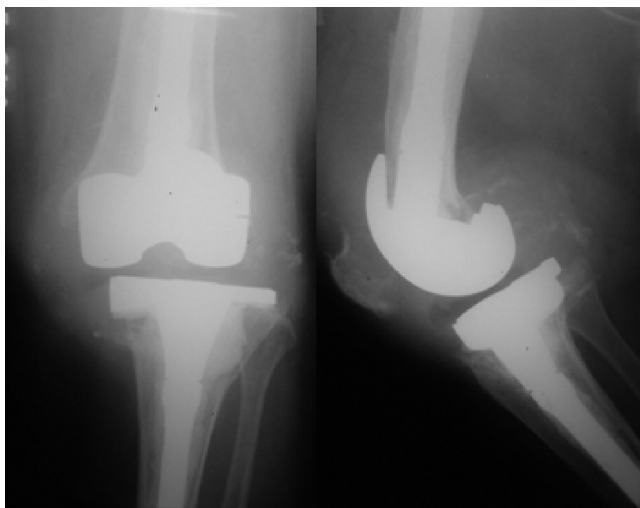


Fig. 1 – Radiographs in anteroposterior and lateral views of the left knee, demonstrating the revision prosthesis without signs of loosening or dislocation of the tibial polyethylene.



Fig. 2 – Transoperative clinical image of revision of the arthroplasty of the left knee, demonstrating osteolysis in the medial tibial metaphysis.

On examination, coarse instability of the knee was observed, with joint effusion and diffuse pain. Although the initial diagnostic hypothesis suggested the possibility of periprosthetic fracturing, radiographs demonstrated displacement of the tibial polyethylene (Fig. 1).

The patient therefore underwent a new revision procedure. During the operation, an area of osteolysis in the proximal medial tibial metaphysis was shown, in addition to dislocation of the polyethylene (Fig. 2). Nevertheless, the tibial nail presented adequate stability. Thus, the polyethylene piece was exchanged and a larger medial metal wedge was inserted (Figs. 3 and 4).

Currently, one year after this operation, the patient presents excellent postoperative evolution: no pain, no effusion, complete extension, flexion of 115°, varus and valgus stability and adequate patellar tracking.



Fig. 3 – Transoperative clinical image (final result) of revision of the arthroplasty of the left knee.

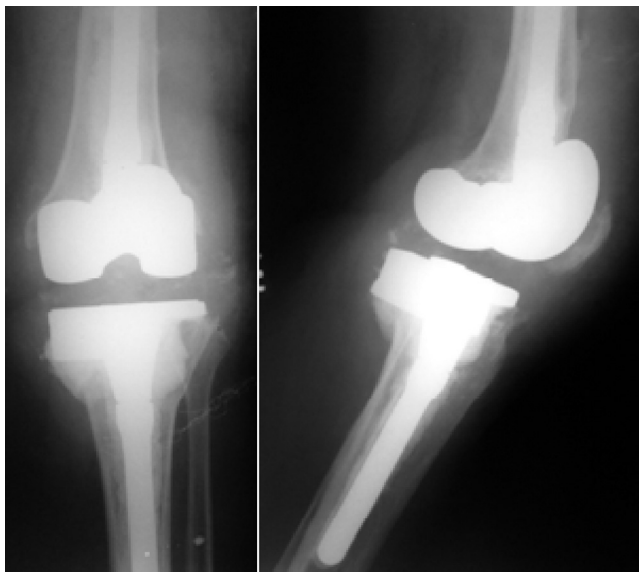


Fig. 4 – Radiographs in anteroposterior and lateral views of the left knee, demonstrating postoperative control of revision of the arthroplasty, with exchange of the polyethylene and the medial tibial metal wedge.

Discussion

The real incidence of dislocation of the polyethylene piece from its tibial base is unknown. Only a few cases have been reported in the literature. Up to 2007, only four papers published in English described this phenomenon.⁵ Most of the reports related to cases of implants in which the cruciate ligaments were preserved.

The causes have not been well determined. Technical errors in inserting the polyethylene during the surgery, such as incomplete seating, and also occurrences of trauma, may cause damage and failure of the locking system.⁴ Forced flexion movements starting from extension, which generate greater posterior load concentration, may contribute toward anterior loosening. Polyethylene dislocation may also be caused by the implant design, in situations of a shallow tibial base or an excessively narrow track for the polyethylene piece to be fitted into.⁴⁻⁸

In relation to the treatment, surgery for suspected cases is recommended in the literature. There are reports of good results achieved by exchanging only the polyethylene piece. However, an *in vitro* trial demonstrated that the force needed to displace the polyethylene became progressively lower with increasing numbers of exchanges, which suggests that the locking system becomes weakened.⁴ Therefore, during revision surgery, in cases in which there is movement between the preexisting tibial base and the new polyethylene piece, revision of the tibial component will also be indicated.^{4,5,7,8}

Conflicts of interest

The authors declare no conflicts of interest.

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