

Dislocation after total knee arthroplasty

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ABSTRACT

Two cases of dislocation of total knee arthroplasty presented to us within the same week. The first patient is a 71-year-old woman who underwent bilateral primary total knee arthroplasty. The left knee dislocated three weeks after the surgery. Due to failure of conservative measures, she underwent revision total knee arthroplasty. The other patient is a 72-year-old woman presenting ten years after primary total knee arthroplasty, with a traumatic dislocation of the knee joint. She was treated as an outpatient with closed manipulative reduction.

Keywords: arthroplasty complications, knee dislocation, total knee arthroplasty

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INTRODUCTION

Dislocation is a very rare complication of total knee arthroplasty. It is not usually described in textbooks and very few reports have been published. We present two cases of dislocation of total knee arthroplasty seen at our institution within the same week. Different approaches were undertaken due to the different nature of each case.

CASE REPORTS

Case 1

A 71-year-old woman with primary osteoarthritis of both knees had bilateral deformed knees with fixed flexion of 40° and varus of about 20°. Her body mass index (BMI) was 31.4. She underwent sequential bilateral total knee arthroplasty, with a cruciate-retaining mobile-bearing tibial component on the left side and a fixed-bearing tibial component on the right side. The patella was not resurfaced. Intraoperatively, since the medial collateral ligament was tight, it was lifted subperiosteally off the antero-medial aspect of the left tibia before the knee was balanced in extension. At the end of the operation, the left knee demonstrated a fixed flexion deformity of 10° and was stable at the end of closure.

The patient was discharged home on the second postoperative day, and she was walking with the help



Fig. 1 Case 1. (a) Frontal and (b) lateral radiographs show post-total knee arthroplasty dislocation.

of a walking frame. On the 11th day, the patient fell in the toilet and was brought in with a fracture of her right patella. Open reduction and tension band wiring was done for the right patella. Postoperatively, both knees were kept in braces in extension, and ambulation was resumed with support. The left knee was noted to have a fixed flexion deformity that was increasing slowly and progressively. Hence, passive extension was included in the physiotherapy, in order to stretch

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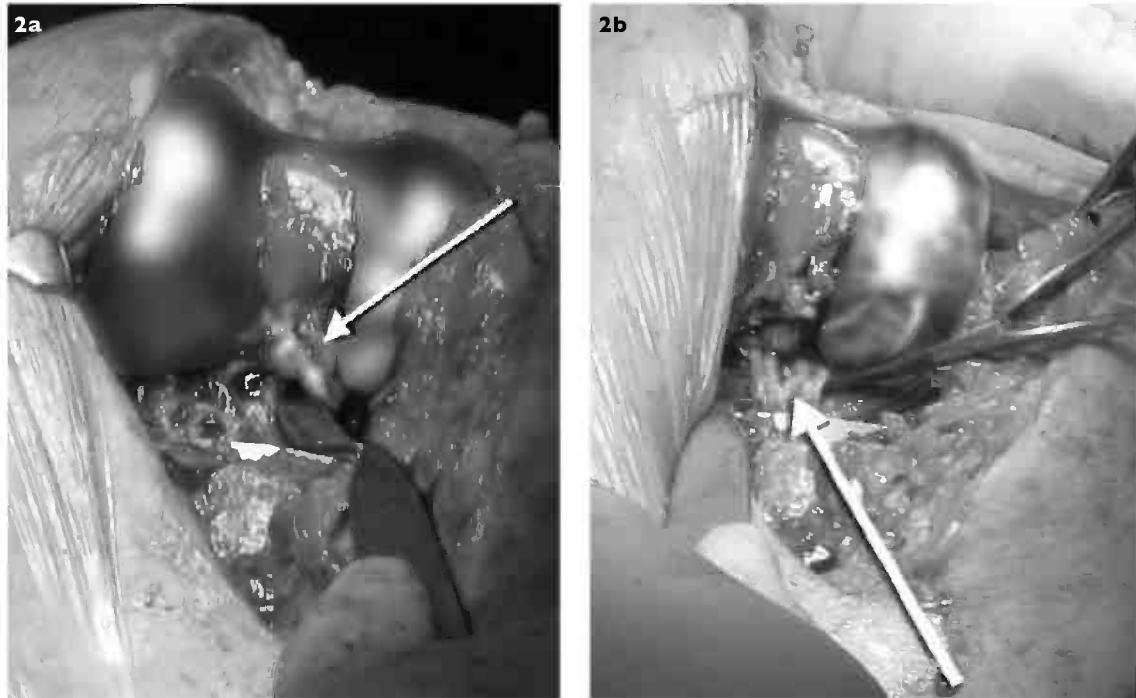


Fig. 2 Case 1. Operative photographs show the posterior releases (arrows).



Fig. 3 Case 2. (a) Frontal and (b) lateral radiographs show post-total knee arthroplasty dislocation.

the posterior structures. On both her knees, the surgical wounds healed without any complication. On the 25th day post-total knee arthroplasty, deformity and pain of the left knee prompted us to have radiographs taken. Radiographs showed a posterior dislocation of the left knee. Reduction was done under image intensifier

guidance on the same day. Reduction was easy but not stable and vascularity was compromised with full extension. Hence, the knee was immobilised in 10° flexion.

Radiograph taken the next day (Fig. 1) showed that the dislocation had recurred. The cylinder cast

was removed and on the 27th day post-primary surgery, the patient was taken to the operation theatre for exploration and if necessary, revision. The posterior cruciate ligament was lax and the posterior capsule was tight. The posterior capsule was released (Fig. 2) along with other posterior structures (including the semitendinosus and popliteus tendons). Medial and lateral releases were also done before the knee was balanced, without dislocating in full extension. Since the posterior cruciate ligament was sacrificed, the implant was revised by changing the femoral component and the tibial insert to the cruciate substituting type. Postoperatively, the patient was ambulating with the knee fixed at full extension until the soft tissue healed.

Case 2

During the same week, we saw a 72-year-old woman who had a total knee replacement done ten years ago at a private hospital for severe osteoarthritis of her right knee. Her BMI was 27.1. Post-total knee arthroplasty, her recovery was good. Before presenting to us, she was able to do brisk walking and cycling. Unfortunately, she had a fall in the bathroom with the knee in full extension, was in severe pain and was unable to move the right knee. Radiographs (Fig. 3) showed anterior dislocation of the knee. Under sedation, the joint clicked back into place with minimal traction. Post-reduction, the stability was good in both the coronal and axial planes. The patient was walking when discharged, after keeping her for observation of the distal limb. When reviewed in the clinic a month post-reduction, the patient had painless 0°–120° range of movement, and the knee was stable.

DISCUSSION

The similarities in the two cases are striking. But each case is unique and hence, the approach had to be different. Conservative treatment includes passive extension, cast wedging and traction, and is the first line of treatment in a dislocation. It failed in the first case because the brace and cast were ineffective due to the patient's thick thighs. Dislocations of the tibio-femoral joint have been rarely described after total knee arthroplasty. Lombardi et al reported 15 cases of dislocation (all of which were posterior) out of 3,032 cases of total knee arthroplasty using the Insall-Burstein posterior stabilised condylar prosthesis.⁽¹⁾ 11 cases were successfully treated conservatively and three had to be revised. The various aetiological factors were compared with the control group and

the only factor they found of significance was postoperative flexion which occurred more in the study group. Our first patient had residual flexion deformity at the end of the surgery in the left knee, which after her fall, was progressively increasing, as reported by her physiotherapist. This dynamic increase in fixed flexion possibly led to posterior knee dislocation.

Ridgeway and Moskal described early instability as a potential complication of the mobile-bearing knee (meniscal bearing or rotating platform), referring to 25 cases, although the incidence is not mentioned.⁽²⁾ Majority of them were "spin-outs", that is, subluxation with one compartment in order and the other compartment dislocated. Our first patient had a rotating platform type knee with complete femorotibial dislocation, which is rather unusual. In our first patient, as we understand, the dislocation occurred due to an imbalance between a lax posterior cruciate ligament and other dynamic tight posterior structures. Most probably, the paradoxical roll-back and the pull by the hamstring tight posterior capsule led to the recurrent dislocation. Sansone and da Gama Malcher reported one traumatic dislocation of the tibial insert out of 110 knees which underwent total knee arthroplasty using the mobile-bearing knee.⁽³⁾ Ng and Chiu reported a recurrent dislocation of the total knee arthroplasty 21 months post-surgery, due to fracture of the tibial inserts.⁽⁴⁾

In our second patient, the trauma was not that severe, as indicated by the lack of soft tissue swelling, and a fracture of the tibial insert was unlikely. The most probable cause of the dislocation in this case would be posterior polyethylene wear, facilitating an anterior dislocation of the tibia. The authors plan to investigate into polyethylene wear in this patient. In conclusion, this rare complication of total knee arthroplasty has to be managed according to each specific case, after analysing the possible reasons for the dislocation.

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