

Cement Plug Embedded in the Patella: A Rare Complication of Total Knee Arthroplasty

Case Report

R.G. Kakwani, MS (Ortho), DNB (Ortho), MRCS (Ed)
N. Hulse, MS (Ortho), DNB (Ortho), MRCS (Ed)

ABSTRACT: An unusual delayed complication of total knee arthroplasty involving the unresurfaced patella is described. The complication is due to the impaction of a loose cement plug used to seal the defect left by the femoral intramedullary alignment rod. The origin, presentation, and management are discussed.

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INTRODUCTION

The defect left by the femoral intramedullary alignment rod during total knee arthroplasty (TKA) may be plugged with cement or autologous bone to reduce bleeding and transfusion requirements.¹⁻³ We describe a delayed complication due to the impaction of a cement plug used to fill the femoral hole in the medial patellar facet of the unresurfaced patella following TKA. To the best of our knowledge, this complication has not been previously described in the literature.

CASE REPORT

A 57-year-old man underwent a routine left TKA (Insall-Burstein II, Cremascoli, NY) in October 2002 for primary osteoarthritis. The components were cemented with Palacos R40G (Schering-Plough, Welwyn Garden City, United Kingdom), and a cement plug was used to seal the femoral medullary canal. The patella was not resurfaced. The operative procedure and the postoperative recovery were uneventful. The clinical review and a radiograph at 6 weeks were satisfactory. The range of motion in the knee at 6 weeks postoperatively was 0° to 110°. At the

6-month follow-up, the patient had developed anterior knee pain and a grating sensation under the patella. There was no history of any trauma. Radiographs revealed a cement plug embedded under the articular surface of the patella (Figure).

The loose body was deeply embedded in the medial articular facet of the patella and thus was difficult to access in the initial arthroscopic attempt. A formal arthrotomy was performed to retrieve the 15×9-mm cement loose body. At the time of the arthrotomy, except for the defect left by the loose body, the rest of the patellar articular surface was found to be normal. One year after the removal of the loose body, the patient was asymptomatic and the knee range of motion was 0° to 100°.

DISCUSSION

The defect left by the femoral intramedullary jig may be occluded by either a cement plug or an autologous bone plug. There are no studies in the literature suggesting the superiority of one method over the other. Raut et al,³ in a prospective study of 8 press-fit condylar knee arthroplasties performed with cement, compared occluding the defect with leaving it open and unoccluded. The study concluded that total postoperative blood loss was significantly greater in the open-defect group than in the closed-defect group.³ These authors used a cement plug to close the medullary defect. Kumar et al² concluded in a prospective, randomized trial comparing postoperative drainage in 120 consecutive TKAs that the femoral intramedullary guide hole should be plugged to reduce a small but significant amount of early blood loss without countervailing disadvantages. These authors used autologous bone plug, which always united, and no loose bodies were seen 6 months postoperatively.

The Insall-Burstein II TKA is an open-box kind of posterior cruciate-substituting knee arthroplasty; thus, the femoral medullary defect is exposed during knee flexion and lies in close proximity to the patellar articular sur-

The authors are from Trauma and Orthopaedics, Good Hope Hospital NHS Trust, Birmingham, B75 7RR, United Kingdom.

Correspondence: R.G. Kakwani, MS (Ortho), DNB (Ortho), MRCS (Ed), 26 Cheswick Drive, Newcastle-Upon-Tyne, NE3 5DT, United Kingdom.



Figure. Radiograph obtained at the 6-month follow-up showing the cement plug embedded under the articular surface of the patella.

face. In the case presented in this article, the cement plug, instead of freely escaping into the joint cavity, remained trapped between the femoral and the patellar articular surfaces. This is probably because of the relatively larger size of the loose body and because 1 end of the loose body was partially fixed in the medullary canal. It seems that the loose body had slowly eroded the articular surface of the patella and ultimately became embedded in the medial facet. The compressive forces associated with knee flexion may have assisted this process. Although the patient

became asymptomatic after removal of the cement loose body, he was never able to achieve the same range of motion as achieved after the primary arthroplasty procedure.

The defect left by the femoral intramedullary jig should be closed carefully. The cement plug should fit snugly and should be long enough to be securely fixed in the medullary canal. The medullary canal should be closed early during cementation to avoid placing the cement plug in the last phase of setting. The closed-box kind of posterior cruciate-substituting knee arthroplasty may help in retaining the femoral medullary plug. Alternatively, this complication can be prevented by using the autologous bone graft to plug the medullary canal whenever possible.

CONCLUSION

Surgeons must be vigilant in the application of a cement plug to fill the defect resulting from the femoral intramedullary alignment rod to prevent blood loss, as this may become a loose body.

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