Acta Orthopaedica et Traumatologica Turcica xxx (2017) 1–5

Contents lists available at ScienceDirect

Acta Orthopaedica et Traumatologica Turcica

journal homepage: https://www.elsevier.com/locate/aott

Total joint replacement for neglected posterior knee dislocation following septic arthritis after arthroscopy

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ARTICLE INFO

Article history:
Received 15 February 2015
Received in revised form
29 April 2015
Accepted 28 May 2015
Available online xxx

Keywords:
Knee dislocation
Septic arthritis
Arthroscopy
Total knee arthroplasty

ABSTRACT

This report presents the first case of a knee dislocation following septic arthritis after arthroscopy. A 65-year-old woman had an arthroscopy with irrigation and debridement (I&D) of the joint and microfracture for the chondral lesions. She had complaints of postarthroscopic infection but non-steroidal anti-inflammatory medication and local ice compression was recommended. She revisited her physician twice and at the last visit she had a large purulent effusion in her knee. The gram stain of the joint fluid aspirate demonstrated gram-positive cocci and the cultures grew methicilline-sensitive *Staphylococcus aureus*. She underwent arthroscopic assisted I&D and received intravenous antibiotics. I&D was repeated after two weeks. Intravenous antibiotherapy was continued for one more week and was changed to oral antibiotherapy for six weeks. At the third month visit's physical examination, a deformity at the knee was noticed and was referred to us for further treatment. A posterior knee dislocation with no neurovascular deficit was detected. The patient had a history of knee sprain but did not seek medical advice immediately. The blood samples showed no abnormality. The patient underwent a surgery with a cemented hinged revision total knee prosthesis following the exclusion of the active knee joint infection. Intraoperative frozen sections were also taken to exclude the active infection. The patient's knee is pain-free with full range of motion after 3 years. The objective of this report was to highlight the importance of early diagnosis, prompt appropriate treatment of septic arthritis following arthroscopy and the awareness of the knee dislocation as a rare dreadful complication of postarthroscopic infection particularly in elderly patients.

Introduction

Knee arthroscopy is the most common orthopaedic procedure and recognized worldwide as a minimally invasive procedure with less complication risks. Postoperative complications of arthroscopy of the knee consist of hemarthrosis, thromboembolism, effusion, synovitis, synovial fistula, pain, complex regional pain syndrome and infection. Postarthroscopic infection is uncommon and septic arthritis rate is normally under 0.2%.[1–6] Infection is more common among patients with longer operating times, an increased number of procedures during surgery, prior procedures and in those having chondroplasty or soft-tissue debridement. Although it is a very rare complication, the knee is the largest synovial cavity in the body therefore septic arthritis can have serious and significant consequences when it occurs. *Staphylococcus aureus* is a very destructive infecting organism which may create a fragile condition of the soft tissues and ligaments of the knee joint. Knee dislocation may proceed this injurious condition as a dreadful complication after a subsequent minor trauma. We report the first case of the knee dislocation following septic arthritis after arthroscopy. The objective of this report was to highlight the importance of early diagnosis, prompt appropriate treatment of septic arthritis following arthroscopy and the awareness of the knee dislocation as a very rare but dreadful complication. We also aimed to remark the safety of prosthesis implantation to manage a non-stiff knee dislocation after the confirmation of the joint infection eradication.

Case report

A 65-year-old woman attended to a private institution with complaints of osteoarthritis in the left knee. An arthroscopy was performed with irrigation and debridement(I&D) of the joint and microfracture for the chondral lesions. On the third postoperative day, she had complaints of swelling and increase of temperature in

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Peer review under responsibility of Turkish Association of Orthopaedics and Traumatology.

http://dx.doi.org/10.1016/j.aott.2017.03.013

her knee. Non-steroidal anti-inflammatory medication and local ice compression were recommended but then she revisited her physician twice. At the last visit she had a large effusion in her knee. The fluid from joint aspiration was purulent and revealed a white blood cell count of 30,000/mm^3 with 88% neutrophils. The gram stain demonstrated gram-positive cocci. With the diagnosis of septic arthritis, the patient underwent arthroscopic-assisted I&D. Cultures ultimately grew methicillin-sensitive *S. aureus* and she was treated with intravenous third-generation cephalosporin antibiotics for ten days. Based on the continued pain and physical examination findings, one more arthroscopic I&D was performed after two weeks. Intravenous antibiotherapy was continued for one more week and was changed to oral ciprofloxacin antibiotherapy based on the sensitivity of microorganism in the culture. Her infection had been successfully treated with lowerization of erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) levels. Oral antibiotherapy was continued for six weeks and then stopped. Two weeks later, her infection had been eradicated and she was noted to walk with antalgic gait by using crutches and was discharged from the hospital. However, at the third month visit's physical examination a deformity at the knee was noticed and the x-rays revealed a posterior knee dislocation (Figs. 1 and 2). Thus, she was referred to us for further treatment without a history of iatrogenic injury to the cruciate ligaments during previous arthroscopies. At our hospital's emergency, no neurovascular deficit was detected at the deformed lower extremity and muscle strength was assessed as grade 4. MRI and computerized tomography (CT) revealed posterior dislocation of the knee joint, ruptures in both anterior and posterior cruciate ligaments (Fig. 3). The patient had a history of knee sprain one month ago. She had sustained an acute internal rotation of the femoral bone in a semi-flexion position of the knee while climbing down the stairs. But the patient did not seek medical advice immediately and her condition worsened with

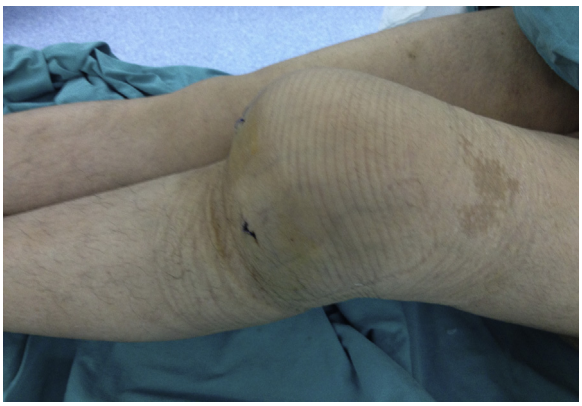

Fig. 2. Preoperative picture of the deformed knee at initial presentation.

inability to bear any weight till the last visit. The blood samples for ESR were normal, less than 20 mm/h (normal, 0–20/h) and for CRP were also normal, less than 0.8 mg/dl (normal, 0–0.8 mg/dl) and leukocyte count was 8100/ml (normal, 4000–10.800/ml).

Arthroscopy was performed to establish the treatment strategy. A joint aspiration and synovial biopsy were taken under sterile conditions in the operating room. The knee joint was mobile and the arthroscopy revealed no chronic joint empyema. The microbiological culture, gram and acid-resistant bacteria (ARB) staining for the joint aspirate were negative and synovial biopsy showed no infection. Exclusion of the active infection was based on the proposed criteria of Parvizi et al[7] The patient underwent surgery with a cemented hinged revision total knee prosthesis. Following wide debridement of the soft tissue, specimens for pathological and microbiological screenings were also taken during the surgery. Granulation tissue was analyzed in intraoperative frozen sections

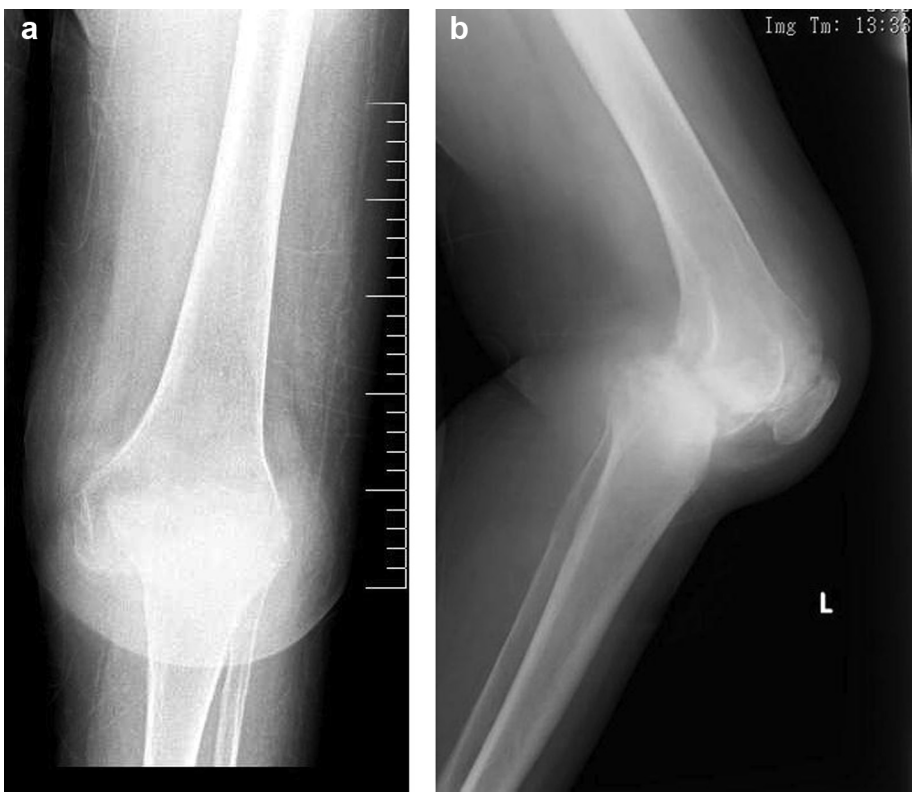

Fig. 1. (a) Anteroposterior and (b) lateral radiographs demonstrate posterior dislocation of the knee.

Please cite this article in press as: Öztürkmen Y, et al., Total joint replacement for neglected posterior knee dislocation following septic arthritis after arthroscopy, Acta Orthop Traumatol Turc (2017), http://dx.doi.org/10.1016/j.aott.2017.03.013