Journal of Orthopaedic Surgery 2005:13(1):76-78

Knee dislocation of a morbidly obese patient: A case report

RR Shetty, SB Mostofi, PL Housden
Department of Trauma and Orthopaedics, Kent and Canterbury Hospital, Canterbury, Kent, United Kingdom

ABSTRACT

Knee dislocations of morbidly obese patients after a trivial fall are not uncommon. We report a case of closed reduction for a dislocated right knee of a 26-year-old obese woman. After closed reduction under general anaesthesia, her knee was supported by pillows in 30 degrees flexion. No external splint was used because of the enormous size of the leg. At day 4 after reduction, the patient had numbness over the dorsum of the right foot and was unable to dorsiflex. She was diagnosed as having peroneal nerve palsy and was fitted with a foot drop splint. One week after reduction, she started active, assisted knee mobilisation and tip-toe weight bearing. At 24 months after reduction, the patient was able to walk unaided and had 100 degrees of knee flexion. She had a good foot function and a grade II in the Lachman's test, with no varus or valgus instability. This case highlights the importance of early mobilisation, which can result in good outcome even without operative treatment.

Key words: *knee dislocation; obesity*

INTRODUCTION

Knee dislocations of morbidly obese patients after a trivial fall are not uncommon. Although some earlier reports have recommended non-operative treatment for multiple ligamentous ruptures, most authors at present advocate primary repair of all or some of the structures followed by cast immobilisation.[1] Unfortunately, many patients in these studies had severe limitations of knee motion postoperatively, which made the results of the follow-up assessment

Address correspondence and reprint requests to: Mr Rohit R Shetty, 40 Hornbeam Close, Larkfield, Aylesford, Kent ME20 6LZ, United Kingdom. E-mail: rohitrshetty@yahoo.com

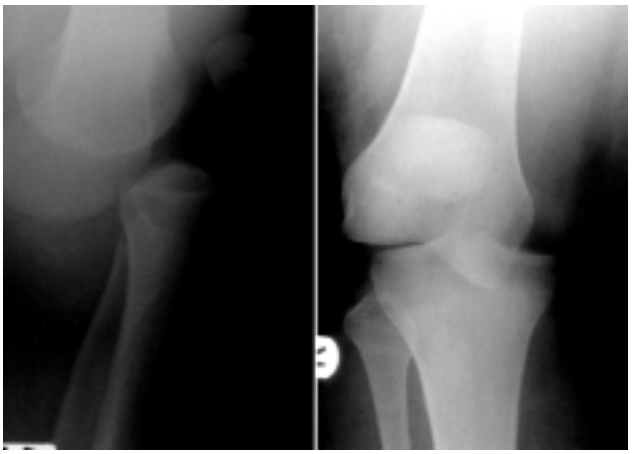

Figure 1 Radiographs showing anterior dislocation of the knee.

Figure 2 Radiographs showing the reduced knee without external splint.

of knee stability unreliable.[1] Particularly in morbidly obese patients, the operative management is technically challenging and fraught with postoperative complications. With increase of the obese population, these kinds of injuries will be seen more frequently. This paper highlights the importance of early mobilisation, which can result in good outcome even without operative treatment.

CASE REPORT

A 26-year-old obese woman weighing 150 kg, 168 cm in height, tripped over a kerb and admitted to the Kent and Canterbury Hospital in May 2000. The fall resulted in a hyperextension of the right knee. She had an immediate, severe pain in the knee and was unable to bear weight.

On clinical examination, no gross deformity of the knee was noted because of the enormous size of the limb. She was unable to raise her leg straight. No distal neurovascular deficit was found. Radiographs showed an anterior dislocation of the knee (Fig. 1).

She was placed on 2 operating tables side-by-side, and a closed reduction of the knee was performed under general anaesthesia. The knee was reduced and appeared stable with a passive flexion of 100 degrees. There was no distal neurovascular deficit following the reduction (Fig. 2).

Because of the large dimension of her leg, no external splint was used. The knee was supported by pillows in 30 degrees flexion. Follow-up radiographs did not show any sign of subluxation. Four days after reduction, she started complaining of numbness over the dorsum of her right foot and was unable to dorsiflex. She was diagnosed as having peroneal nerve palsy and was fitted with a foot drop splint.

One week after reduction, active, assisted knee mobilisation and tip-toe weight bearing was started under close supervision. These were done without external splint because no splint could support this size of knee.

She achieved 60 degrees of knee flexion at 6 weeks after reduction, 80 degrees at 3 months, but still had no improvement in peroneal nerve palsy. Nerve conduction was performed and showed signs of axontmesis. She was advised to continue mobilising her knee with a foot drop splint. She underwent a tibialis posterior transfer at 18 months after reduction because her knee did not regain any power.

At 24 months after reduction, she was able to walk unaided and achieved 100 degrees of knee flexion, with no incidence of giving way of the knee. On clinical examination, she had a grade II in the Lachman's test with no varus or valgus instability. She achieved good foot function (Fig. 3).

DISCUSSION

Knee dislocation is conventionally defined as a complete loss of the tibiofemoral articulation that can be confirmed radiographically.[2] It is considered rare and as a result of high-energy trauma. Traditionally, knee dislocations were classified based on the direction of the tibial displacement with respect to the femur. Unfortunately, this traditional classification can result in missed diagnosis when dislocations are reduced before getting radiographic evidence. Recently, the definition has been expanded to include bicruciate

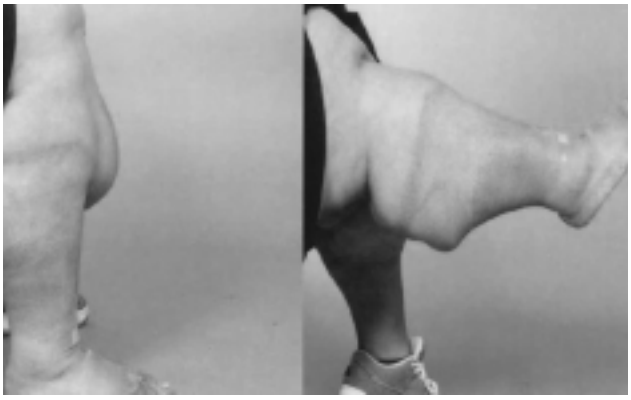

Figure 3 At 24 months after reduction, the patient shows good foot and knee function.

knee injuries, even when the knee is reduced in initial presentation.

More than 2 times the ideal weight is considered obesity. Obese patients have a higher perioperative morbidity and lower life expectancy. Caution should be taken before operating on such patients so as to reduce the risk of reoperation should complications develop after surgical intervention.

Considerable force equivalent to 650 to 800 pounds per square inch is required to dislocate a knee.[3] The propensity for spontaneous knee dislocation is probably related to the body mass of such obese patients.

Morrison[4] has shown in kinetic studies that the joint reaction force on the knee varies from 2 to 4 times of the body weight during level walking. This substantial strain on the joint is largely dependent on the weight of the patient. In the absence of significant external forces, knee dislocation of obese patients is likely resulted from extreme load of massive body weight placed on the knee joint from shifting body mass.

Henshaw et al.[5] reported that the deformity associated with knee dislocation readily led to an appropriate diagnosis and hence early diagnosis was crucial in the management. We do agree that early diagnosis is crucial in minimising both vascular and neurological complications. However, knee dislocation can be easily missed in morbidly obese patients because it can occur in low-energy trauma and the deformity is usually not obvious. Hence, a prompt radiological examination is needed in such patients for an accurate diagnosis.

Twaddle et al.[6] recommended early reconstruction or repair of injured structures as it allows early protected mobilisation and is beneficial to stability and motion, both of which have been achieved in our patient without surgical treatment.

REFERENCES

1. Noyes FR, Barber-Westin SD. Reconstruction of the anterior and posterior cruciate ligaments after knee dislocation. Use of early protected postoperative motion to decrease arthrofibrosis. Am J Sports Med 1997;25:769–78.
2. Wascher DC, Dvirnak PC, DeCoster TA. Knee dislocation: initial assessment and implications for treatment. J Orthop Trauma 1997;11:525–9.
3. Hagino RT, DeCaprio JD, Valentine RJ, Clagett GP. Spontaneous popliteal vascular injury in the morbidly obese. J Vasc Surg 1998;28:458–63.
4. Morrison JB. The mechanics of the knee joint in relation to normal walking. J Biomech 1970;3:51–61.
5. Henshaw RM, Shapiro MS, Oppenheim WL. Delayed reduction of traumatic knee dislocations. A case report and literature review. Clin Orthop 1996;330:152–6.
6. Twaddle BC, Hunter JC, Chapman JR, Simonian PT, Escobedo EM. MRI in acute knee dislocation. A prospective study of clinical, MRI, and surgical findings. J Bone Joint Surg Br 1996;78:573–9.