



MINI-SYMPOSIUM: SOFT TISSUE KNEE PROBLEMS

(iii) The dislocated knee

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KEYWORDS

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Dislocations

Summary

Knee dislocation is a rare injury usually resulting from high-energy trauma. Immediate complications can arise from injury to the popliteal artery or the common peroneal nerve. Early surgical reconstruction gives better results than delayed reconstruction, but this is a challenging procedure. The prognosis for knee function should be guarded, as there is a significant risk of long-term secondary degenerative change.

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Introduction

Knee dislocation is a serious injury with potential significant long-term implications for return to physical employment and recreational activity (Fig. 1a and b). The clinical presentation of knee dislocation may be either acute—under 3 weeks—or chronic—after 3 weeks. Late presentation with multiple knee ligament injuries is not uncommon, as spontaneous relocation of the dislocated knee may lead to an initial underestimation of the severity of the ligamentous disruption. This is particularly likely when the knee dislocation was part of multiple trauma and initial treatment priorities were focused on long bone fractures, etc. rather than on the stability of the knee.

Epidemiology

Knee dislocation is uncommon representing less than 0.2% of all orthopaedic injuries.¹ It predominantly occurs in younger

patients, with a male to female ratio of 4:1. Knee dislocation is reported to be a component of multiple trauma in between 14% and 44% of cases.^{2–7} Half are the result of motor vehicle accidents, sports injuries account for around one-third of cases and simple falls for approximately 10%. Bilateral dislocation is rare occurring in only 5% of patients^{2–7} (Table 1).

Classification

In 1963 Kennedy proposed an anatomical classification based on the direction of tibial dislocation in relation to the femur.⁸ Five types of knee dislocation are described:

- anterior,
- posterior,
- lateral,
- medial,
- rotatory.

Rotatory is further subdivided into anteromedial, posteromedial, anterolateral and posterolateral types.

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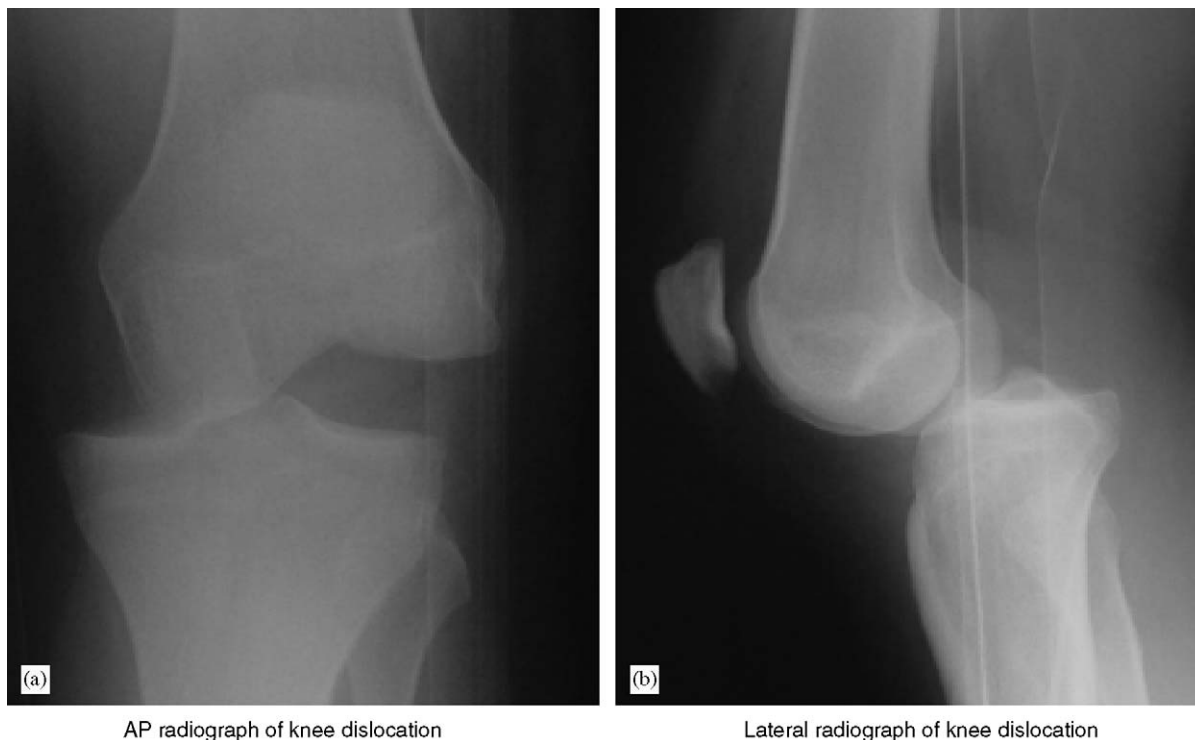


Figure 1 (a,b) Radiograph of postero-medial knee dislocation.

Table 1 The epidemiology of knee dislocation.

Study	No. of patients	Mean age	M:F ratio	MVA (%)	Sports (%)	Falls (%)	Multiple trauma (%)	Bilateral (%)
Harner et al. (2004) ⁵	31	28	—	26	23	6	Excluded	—
Liow et al. (2003) ⁴	21	28	16:5	43	43	14	14	5
Twaddle et al. (2003) ³	60	28	48:12	57	38	5	—	5
Werier et al. (1998) ²	36	32	28:8	69	11	17	16	6
Wascher et al. (1997) ⁶	47	28	36:11	79	21	6	44	6
Almekinders, (1992) ⁷	31	32	26:5	52	—	20	—	0
Pooled estimate	226	29	4:1	56	32	10	29	5

Although attractive in terms of simplicity, this direction-based classification system is an unreliable guide to specific patterns of ligament injury.

An alternative classification system, which addresses the specific pattern of ligament disruption and the presence or absence of associated intra-articular fractures was described by Schenk⁹ and modified by others (Table 2). This gives a clearer guide to patterns of knee ligament injury and can thus be used to plan treatment.

Patterns of ligament injury

Using the Kennedy classification, hyperextension of the knee resulting in anterior dislocation of the tibia on the femur is the commonest mechanism of injury accounting for approximately 40% of reported cases. Posterior dislocation (33%) usually occurs as a result of an anteroposterior force, as in the 'dashboard' type of injury. Varus or valgus loads may produce medial (4%) or lateral (18%) dislocations, which are

associated with tibial plateau fractures (Fig. 2). A combination of force vectors results in rotatory dislocations.

Under the Schenk classification, the most common injury pattern is a bi-cruciate disruption with an associated medial (MCL) or lateral (LCL) collateral tear depending on the direction of the deforming force^{2,4-6} (Table 3).

The acutely dislocated knee

Clinical assessment

After initial patient assessment and management under ATLS protocols, (particularly if multiply injured), the vascular and neurological status of the injured limb must be carefully and repeatedly assessed for evidence of injury to the popliteal artery and common peroneal nerve. The clinical findings must be clearly recorded. The clinical diagnosis should be confirmed by X-ray and the dislocation should be reduced under sedation as soon as possible and congruent reduction confirmed radiologically.

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