The diagnosis and management of acute knee injuries – decision making and recent advances

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With the increasing demand from competitive athletes and the rising recreational aspirations from the public, there is a definite change in the paradigm for managing athletic knee injury. There is a global change to enhance diagnostic criteria for knee injuries, primarily to ensure that serious injuries are recognized, such as haemarthrosis with the predominance of anterior cruciate ligament (ACL injuries), discrete meniscal tear and chondral lesions.

ACL injury is still a prime concern of the orthopaedic sports medicine community, with an increasing prevalence worldwide because of increasing popularity of sports such as soccer and skiing. In the female, there is also interesting observation that both anatomical and hormonal factors, pose a risk for female athletes. In adolescents, there is also increasing recognition of the incidence because of the popularity of contact and organized sports among this age group.

The ACL has always been regarded as the “watch-dog ligament” of the knee, as it controls the stability of the knee, in particular pivoting and turning. A knee with a damaged ACL is one of the significant factors leading to early retirement in the athletic career. The main aim of ACL reconstruction is to restore stability and enhance functional capability. Studies have shown that ACL reconstruction and stabilization will help protect the meniscus, and even articular cartilage, against further injury because of uncontrolled pivoting and turning.

The key to success of ACL reconstruction surgery depends on 4 parameters:

1) the strength of the graft
2) the appropriate positioning of the tunnels
3) stable fixation of the graft
4) concomitant surgical repair for articular cartilage and meniscal injury

Minimally invasive techniques should be used in almost every case of ACL reconstruction without opening up the knee joint. There are a lot of varieties of graft fixation, both in the femoral and tibial tunnel, depending on the site and type of graft used.

ACL rehabilitation is very important to ensure good functional outcome. At the moment, relatively little scientific basis on the exact mode which will produce the best results. There are still controversial areas, for example, the range of weight bearing, the need for continuous passive motion and the use of protective braces. In the rehabilitation arena, there are also topics open to debate on the specific muscle training
regarding their strength and endurance, the combination of use of close and open chain, and the
modalities of muscle training, such as isometric, isotonic and isokinetics. One of the more recently
recognized parameter in rehabilitation is to introduce early proprioceptive training to enhance the
capability of the knee, but there are still problems in the quantitation of proprioceptive control which will
need further research in order to realize the practical implication.

For the meniscal injury, the current golden standard is to preserve as much meniscal tissue as possible,
hence there is an increasing trend to improve the surgical technique of meniscal repair, either through the
conventional training technique or new generation of meniscal implant. Similarly, isolated chondral
lesions are now useful to resurface the techniques with either mosaic party or chondrocyte transplant. It
is an exciting new development for the coming era. Timely surgical intervention for the reparable lesion
and also a comprehensive rehabilitation programme, this will enhance the functional recovery after
athletic knee injury. With this team effort, we will be able to meet the demands from the sporting
community.

References

   7(2):151-7, 1991
3. Shapiro F, Koide S, Glimcher M. Cell origin and differentiation in the repair of full thickness defects of
4. Outerbridge HK, Outerbridge AR, Outerbridge RE. The use of a lateral patella autologous graft for
   77-A:65-72, 1995
5. Latterman C, Jakob RP. High tibial osteotomy alone or combined with ligamentous reconstruction in
6. Shelbourne KD, Stube KC. Anterior cruciate ligament (ACL)-deficient knee with degenerative
   arthrosis: treatment with an isolated autogenous patella tendon ACL reconstruction. Knee Surgery,


They can exist in isolation or be accompanied by other injuries either to local structures of the knee or elsewhere on the patient. Identifying extension into the joint is vital as it affects the urgency and decision making process for treatment, as well as the prognosis. Neurovascular status is a key component in evaluation of the injury, as the common peroneal nerve. Acute kidney injury (AKI) is a common complication in critically ill patients and is associated with high morbidity and mortality. This paper provides a critical review of the etiologies of AKI and a systematic approach toward its diagnosis and management with emphasis on fluid volume assessment and the use of urine biochemical profile and microscopy in identifying the nature and the site of kidney injury. Acute kidney injury (AKI) is a common complication in critically ill patients and is associated with high morbidity and mortality. This paper provides a critical review of the etiologies of AKI and a systematic approach toward its diagnosis and management with emphasis on fluid volume assessment and the use of urine biochemical profile and microscopy in identifying the nature and the site of kidney injury. Materials and methods. Acute injuries can be immobilised in a long leg brace, which should be immediately available to anyone caring for players in a sport where knee injury is a possibility. The situation is then under control, and arrangements for clinical assessment can be made. Plain x ray examination is mandatory to exclude fractures and ligamentous avulsion fractures, which may alter management. Magnetic resonance imaging rarely changes clinical decisions and is not a substitute for a careful history and examination. It has been shown to be less sensitive and specific for anterior cruciate ligament (ACL) injury. Factors that influence the decision-making process include the following: whether the AT possesses a documented protocol that is supported by his or her supervising physician(s), employer documents, and respective state regulations; the AT’s qualifications and experience; the dislocated joint; whether the dislocation is first time or recurrent; the patient’s age and general health; and whether associated injuries. A series of 115 consecutive cases of acutely injured knee, occurring mainly as a result of rugby-football, is analysed. A scheme of diagnosis and early management is outlined. Acute subluxation of the patella is shown to be a definite entity in the differential diagnosis of an