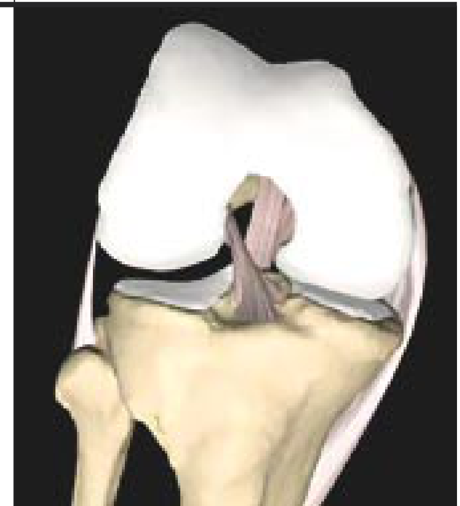
Orthopaedic surgery

ANTERIOR CRUCIATE LIGAMENT (ACL)

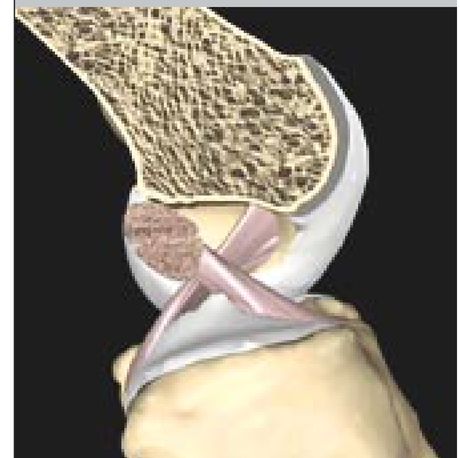
The incidence of ligamentous lesions of the knee joint is still increasing. Sports injuries in soccer and alpine skiing are the main cause for ACL ruptures. The typical injury pattern is caused by mechanical overload of the knee joint in f exion, external rotation and valgus position. The external rotational forces may lead to lesions of the medial collateral ligament and to strain or even rupture of the ACL. Quite frequently there are associated lesions of the menisci. The ACL is a very important stabilizer of the knee joint. Patients with a torn ACL feel some laxity and suffer from "giving way" episodes, mainly during their sports activities. Even well developed muscles can only partially compensate for the mechanical instability of the joint. Many patients can continue their previous sport but have to accept a lower activity level. Particularly sports like soccer, handball, tennis, basketball or alpine skiing ("rotational sports") are very demanding to the knee joint and diff cult to continue. The laxity and the disturbed joint mechanics (increased friction, pathological changes of the centre of rotation and higher peak forces) are the reason for subsequent damages to the menisci and cartilage on the long run, which is the onset of osteoarthritis. Therefore especially patients with higher sports activity level need early operative treatment. The primary goal of the operation is to stabilize the joint and to avoid late posttraumatic degenerations of the joint after ACL rupture. Since the suture of a ruptured ACL does not give good results for biological reasons, the ACL should be augmented or replaced with autologus tendon material. Today ACL reconstruction with autologus material has reached a very high technical level and is based on a vast experience over decades. Artif cial ACL implants have shown poor long term results and are given up almost completely.

Operative technique

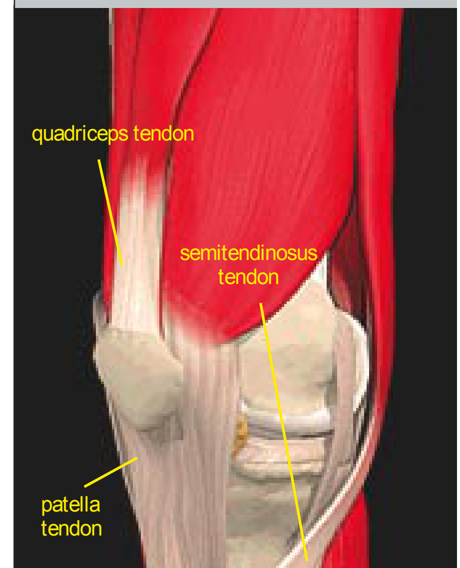
Today the graft material of choice are tendons from the f exor muscles (hamstrings) like semitendinosus tendon and gracilis tendon or patella tendon (BPTB) and quadriceps tendon also. These tendons have proven their value as graft material over many years. Their tensile strength and elasticity is similar to the natural ACL. In numerous studies from different authors excellent results are documented. The tendon of the semitendinosus muscle is becoming the graft material mostly used. The harves-ting of the tendon is very well tolerated without losses of muscular strength or range of movement. The excision of the tendon is done by the help of a stripper through a small skin incision which leaves a barely visible scar. The ACL reconstruction is done completely endoscopically and causes much less surgical trauma than the former conventional operations. There is much less pain and early functional treatment makes rehabilitation rather easy. The crucial part of the operation is the exact placement of the bony tunnels which are the insertion points of the transplant. These points have to be placed exactly where the natural ligament originates. By the help of very precise aiming devices the drill holes are made under arthroscopic control. In order to increase tensile strength the original semitendinosus tendon is folded three to four times (tripled or quadrupled



medial and lateral collateral ligament right knee



anatomical course of ACL an PCL



graft material for cruciate ligament reconstruction