ACL RECONSTRUCTION WITH PRESS-FIT TECHNIQUE

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1- list of abbreviations :

ACL	Anterior cruciate ligament
AM	Anteriomedial
PL	Posteriolateral
PCL	Posterior cruciate ligament
IFS	Interference screws
FATCs	Femur ACL tibial complexes
TNF	Tumor necrosis factor
BPTB	Bone patellar tendon bone
IDKC	International knee documentation committee
BPLA	Bone-plug ligament angle
CKC	Closed kinetic chain
OKC	Open kinetic chain
ROM	Range of motion

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Introduction

ACL reconstruction has become a great challenge and many techniques has been evolved and created according to way of graft fixation such as metal and biodegradable interference screws, staples, buttons, press-fit. The success of the surgery depends on several factors including the timing of the surgery, graft choice, tunnel placement, graft tensioning, graft fixation methods, and postoperative rehabilitation protocol. Orthopedic surgeons use bone–patellar tendon–bone or hamstring tendon grafts most frequently. Secure graft fixation is an important factor, especially in the early postoperative period.

Nowadays, interference screw fixation is one of the most popular methods for the fixation of the graft. However, there are some known disadvantages of this technique. The graft may be damaged during the insertion of the screw, and in revision ACL reconstruction there will be obstacle of hardware removal if not absorbed yet . Furthermore, chronic synovitis may occur because the bioabsorbable screw is placed next to the joint line.

Therefore, press-fit fixation method can be a good alternative in ACL surgery. It is a simple technique and the biomechanical properties of this press-fit fixation have been tested.

Press-Fit technique is based on graft harvesting then by using an oscillating hollow saw cylindrical bone blocks from Femoral and tibial tunnels are used for graft fixation . Several biomechanical studies compared the press fit fixation with commonly used hardware fixations methods. The press fit fixation has been shown to have a similar pullout strength and stiffness compared to fixation with interference screws in animal models.

Aim of work

The aim of this study is to evaluate press fit technique in fixation of the graft in construction of ACL and outcome of this technique regarding stability and graft incoraporation within femoral and tibial tunnels. Evaluation of patients was done using tegner -lysholm knee scoring and knee stability testing as lachman , pivot shift and anterior drawer tests .

Anatomy of ACL

The ACL is a band of dense connective tissue that connects the femur and the tibia. It is enveloped into the synovial membrane of the human knee joint, which by definition places the ligament intra-articular but extra-synovial. [1] [2]

The ligament composed of fibres running from the anterior intercondylar region of the proximal tibia to the medial aspect of the lateral femoral Condyle within the intercondylar groove. The fibres of the ACL are arranged into two bundles known as the anteromedial (AM) and posterolateral (PL) bundle according to their tibial insertion . The anteromedial bundle inserts at a more medial and superior aspect of the lateral femoral condyle while the posterolateral bundle inserts at a more lateral and distal aspect of the lateral femoral condyle. Occasionally there is an additional intermediate bundle in between these two bundles . The whole ACL measures approximately 38 mm in length and 11 mm in width . The anteromedial bundle is 36.9 ± 2.9 mm in length, while the posterolateral bundle is 20.5 ± 2.5 mm in length. Both bundles are similar in size, with an average width of 5.0 ± 0.7 mm and 5.3 ± 0.7 mm in the mid-substance [3]. The ligament fans out toward its insertion at the tibia and the narrowest diameter can be found in the midsubstance area of the ACL. The axis of the long diameter of the ACL is tilted 26° forward from the vertical[4,5]. During its course in the joint, the ligament seems to turn itself in a lateral spiral. This external rotation is app. 90° as the fibers approach the tibial Surface. The twist of the fibers of the ACL is a result of the orientation of its bony attachments. The femoral attachment is oriented primarily in the longitudinal axis of the femur whereas the tibial attachment is in the anteroposterior axis of the tibia[6].The ACL tibial attachment fans out and forms a “foot”region. This allows