Femoral Fixation of a Soft Tissue ACL Graft

Advantages of Using the EZLoc™ Femoral Fixation Device

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Femoral fixation of a soft tissue graft to repair a torn anterior cruciate ligament (ACL) has been shown to provide a reliable surgical option in the restoration of anterior knee laxity. Metal cross-pin devices have become standard techniques, but require a lateral incision through the iliotibial band, which may damage the lateral collateral ligament. Furthermore, surgical techniques with these devices are often challenging, requiring multiple steps.

In contrast, an alternative femoral fixation device is available that replicates the superior fixation properties of other devices, but utilizes a simplified technique and requires no lateral incision. The following provides an overview of several significant advantages found with the EZLoc™ Femoral Fixation Device, one that provides easy, quick, and reliable femoral fixation.

Design Rationale

The EZLoc™ Femoral Fixation Device is composed of a slotted body through which the ACL graft is looped and a deployable lever arm that rigidly fixes the graft on the anterolateral cortex of the femur (Figure 1). The body of the device is designed to prevent anterior posterior micro-motion and the lever arm to prevent mediolateral micro-motion. The EZLoc™ Femoral Fixation Device is sterile packaged with a sharp-tip passing pin that is secured in the slotted body with a suture tied under tension.

The EZLoc™ Femoral Fixation Device is available in three diameters and three lengths (Figure 2), providing variable sizing to promote rapid, stiff, and strong tunnel healing. Further, the titanium body eliminates potential implant “creep” and promotes rapid bone-in growth.

Figure 1

Figure 2
Fixation Properties
For successful ACL reconstruction utilizing a soft tissue graft, femoral fixation must demonstrate superior fixation properties and enhance biologic healing of the tendon to the tunnel wall. It is therefore beneficial to consider the following advantages of the EZLoc™ Femoral Fixation Device.

Fixation Properties
Because a soft tissue graft takes longer to heal when compared to a bone plug, the femoral fixation device should provide the following advantages:2,3,4,5

- Increased Strength
- High Stiffness
- Resist Slippage

The strength of the EZLoc™ Femoral Fixation Device is 1427N, which is considerably stronger than other fixation devices.6 The high stiffness of the deployable lever arm results in lowered tension applied to the graft and decreases the risk of developing anterior laxity during early motion.7 Stiffness of the fixation device is a significant predictor of the restoration of anterior knee laxity during early motion.7 Stiffness of the fixation device is a significant predictor of the restoration of anterior knee laxity during early motion.7

It is equally important to maintain the length of the graft construct after initial fixation, requiring the use of fixation devices that resist slippage during cyclical loading. The lever arm of the EZLoc™ Femoral Fixation Device sits on the anterior lateral cortex of the femur (Figure 3), capturing the cortical bone for optimal strength. Cortical bone is significantly stronger than cancellous bone8 and will not experience the resulting softening after fixation.

Biologic Healing
Cortical fixation allows all sides of the tendon to heal with bone, resulting in circumferential healing. In contrast, intratunnel fixation with screw blocks may interfere and result in one-sided healing, promoting a reduction of graft stiffness, slippage, and strength.6

Reliable Surgical Technique
Current surgical techniques with cross-pin devices are challenging, requiring multiple steps and disruption of the iliotibial band. The EZLoc™ Femoral Fixation Device provides a simple and quick technique for ACL reconstruction with the following advantages:

- Reliable Insertion
- Consistent Fixation
- Minimal Instrumentation
- Simple technique for all surgeon skill levels

Passage and fixation of the ACL graft is accomplished in one, simple step. After the ACL graft is passed into the femoral tunnel, the suture is cut, the passing pin is removed, and the suture is tensioned, which deploys the lever arm and fixes the EZLoc™ Femoral Fixation Device onto cortical bone. The device is neither prominent nor countersunk to the bone, thus accommodating a simplified revision surgery.

The EZLoc™ Femoral Fixation Device can also be utilized on patients suffering from a variety of bone conditions. For example, because it is seated on cortical bone, those patients with softening cancellous bone can be adequately treated. This device may likewise be utilized on skeletally immature patients as it is designed to function without interfering with the growth plate (Figure 4). In contrast, other devices, such as the interference screw and cross-pin devices, may interfere with the growth plate and resulting valgus angulation.7

Summary
The EZLoc™ Femoral Fixation Device is an ideal option for soft tissue ACL reconstruction, providing superior fixation properties and allowing circumferential healing. The device uses a simple and reliable surgical technique with minimal steps that address all surgeon skill levels. When utilized in combination with the WasherLoc™ Tibial Fixation Device and bone dowel tibial fixation device, the graft construct provides superior fixation properties that allow for early, aggressive, brace-free rehabilitation.6 Patients regained function and maintained activity level four months after surgery.6

References