High Torsional Strength of TIGHTFix™ vPEEK Interference Screw System for ACL Reconstruction

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Objective:

The purpose of this study was to evaluate the quality of fixation along with analyzing strength, stiffness, utility and complications associated with use of TIGHTFix™ vPEEK interefernce screw system.

Methods:

The TIGHTFix™ vPEEK interefernce screws (Dunamis Medical, Greenville, AL) are a new generation of bone-patella tendon-bone (BTB) and soft-tissue graft fixation system. Both male and female patients (N:27, Age:15-46 years) who underwent ACL reconstruction from February to April 2018 were studied at the time of implantation. The surgeons' standard preferred operative technique was used for soft tissue graft fixation at the tibial metaphysis shown below in Fig.1

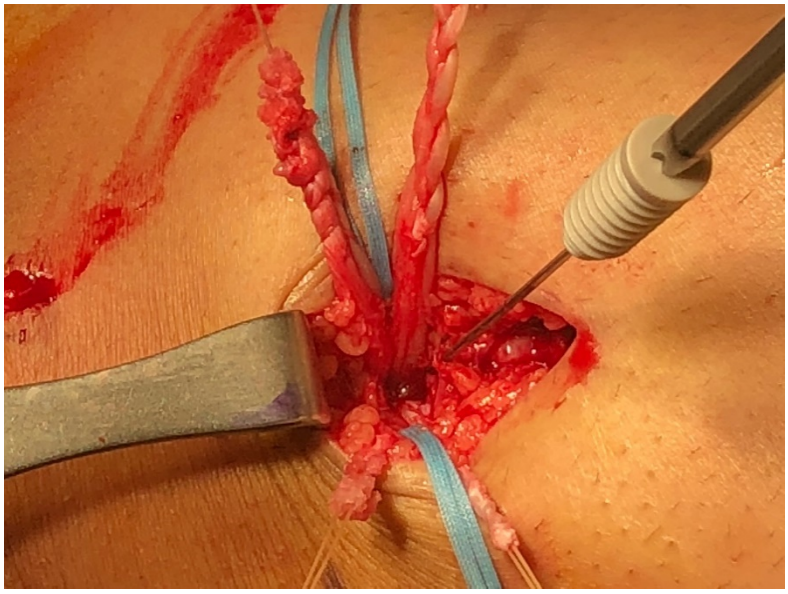

Fig.1 9mm TIGHTFix™ vPEEK interefernce screw over guidewire. A hamstring tendon autograft with Dunamis 2mm tape augmentation as internal brace.

A pre-designed surgeons' evaluation questionnaire was collected which rated various intraoperative features including various design features, strength, stiffness, utility and complications. The reporting was performed by the surgeon retrospectively post-surgery on the same day.

Results:

Excellent fixation was observed in all patients with no screw replacements due to fracture or failure. All screws with sizes 8, 9 and 10 X 25mm were successfully placed line to line without using a tapping device. No incidence of graft laceration or cutout was observed. The insertion was effortless with good end-point fixation. In addition, immediate post-fixation arthroscopy and clinical testing showed no slippage of the graft after insertion.

Conclusion:

We report that TIGHTFix^{TM} vPEEK interference screws offer a viable option with improved strength and stiffness of the construct. The novel design features of the screw aids in easy insertion and avoids graft slippage at the time of implantation. It also offers benefits of less tissue reaction, tunnel widened as standard PEEK screws, and less damage to graft due to enhanced pitch design. However, further studies are required to determine long-term outcomes.