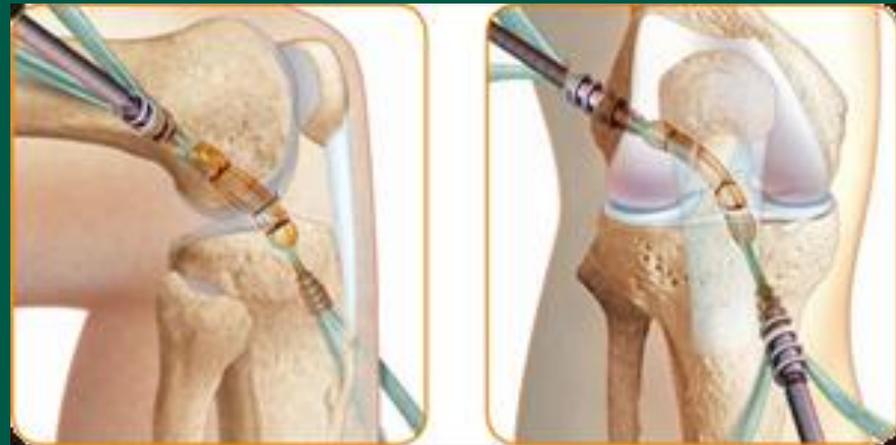


Tape Locking Screw (TLS)

Patrick Birmingham, MD



Common Grafts Used in USA

- Patellar Tendon (Gold Standard)
- Quadrupled Hamstring
- Allograft

Patellar Tendon

- Benefits:
 - Strongest Fixation to Bone
 - Quickest rehab: Return to sport 6-9months
 - Best results in literature
 - KT-1000
 - Laxity
- Trade Off:
 - More anterior knee pain

Hamstring

- Benefits:
 - Strongest tendon graft
 - Little to no post operative knee pain from graft donor site
- Trade Off:
 - Slower rehab: Return to sport 9-12 months
 - Fixation to bone less rigid than Patellar tendon with traditional fixation devices

Allograft

- Patellar Tendon
- Hamstring
- Achilles Tendon
- Benefits:
 - All patients own tendons are preserved
- Trade Off:
 - Potential for Graft transmitted infection
 - Slower healing and rehab: return to sport 12 months+
 - Success dependent on how graft is sterilized by tissue bank (graft may be weakened)

TLS versus Endobutton Hamstring

TLS

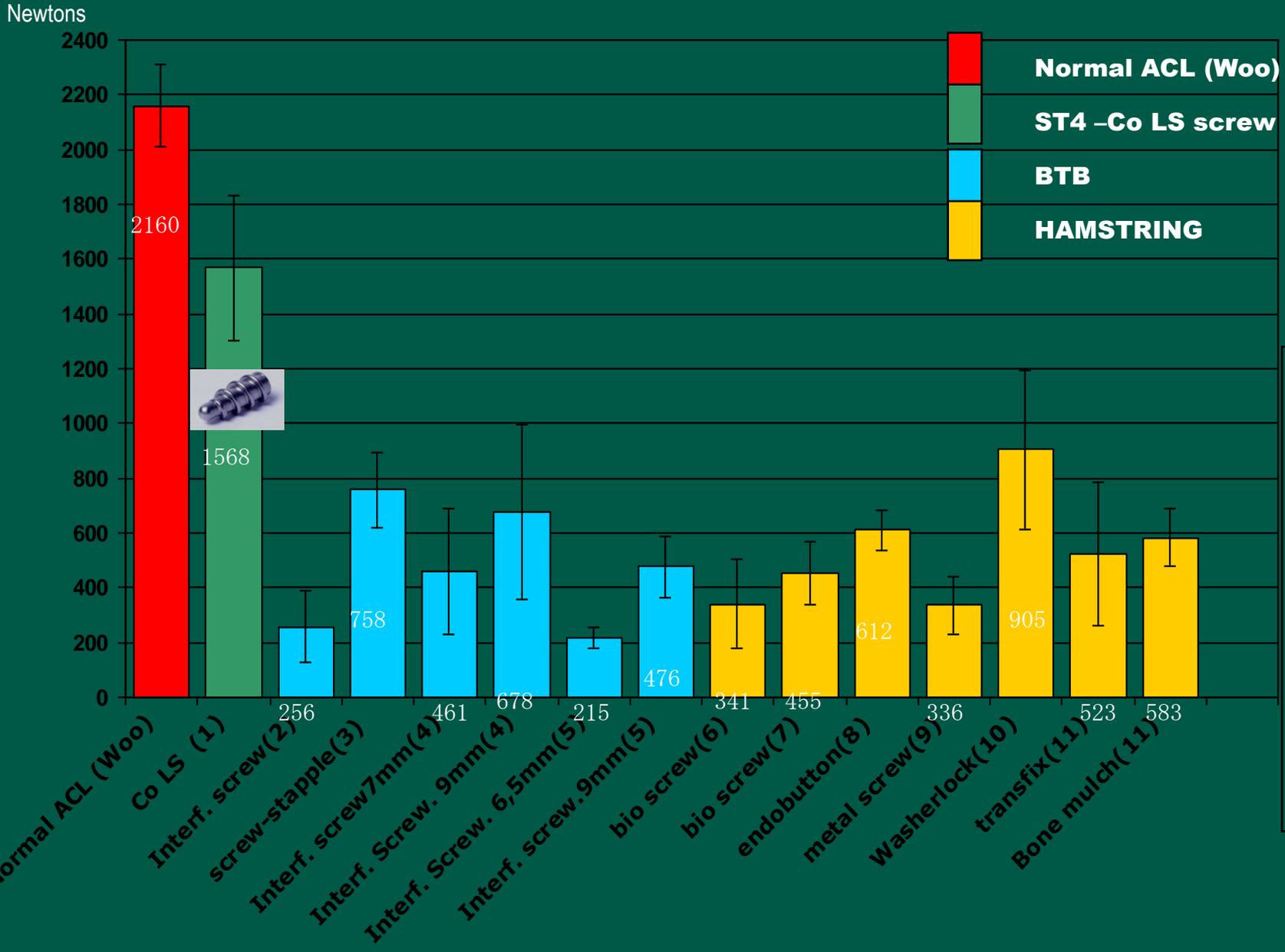
- One Hamstring Tendon Used (one left for stability)
- Fixation As strong as Patellar Tendon
- Short/ Partial Bone tunnel (Bone preserved)
- Rehab similar to Patellar tendon
- Little to No anterior knee pain
- Can be used in Pediatric

Endobutton

- Two (both) Hamstring Tendons Used
- Fixation Weaker than Patellar Tendon
- Bone tunnel drilled all the way through bone
- Rehab slower
- Little to No anterior knee pain
- cannot be used with open growth plates

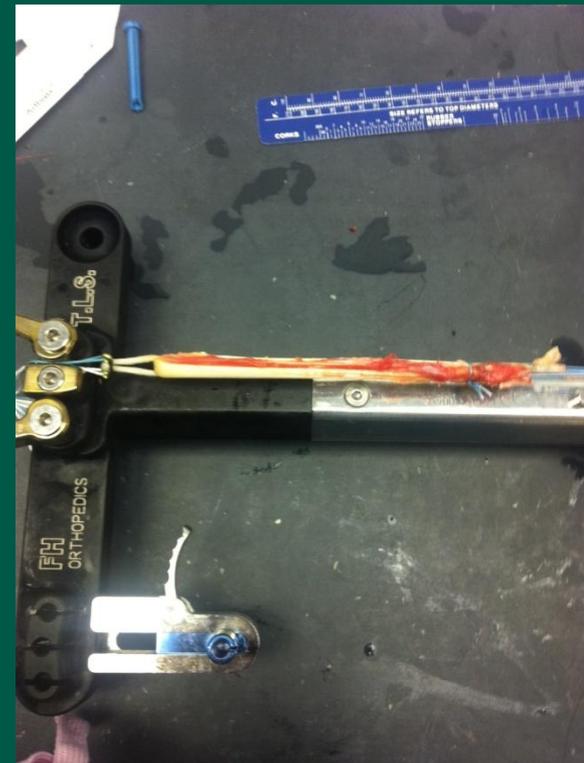
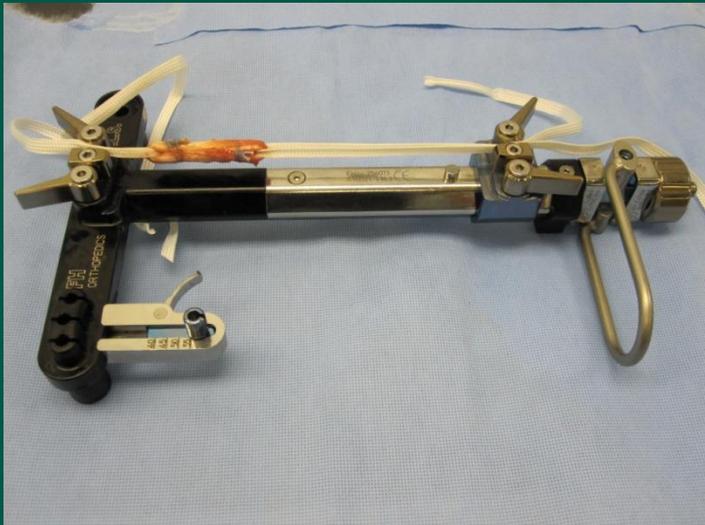
ULTIMATE STRENGTH RESISTANCE (os Humain)

Results (BRAND et al AM J. Sports Med sept-oct 2000)



Current Study

- Compare TLS to endobutton
- Matched pair cadaver Human Knees



Methods

- Anterior tibial displacement; MTS at 80 degrees and 60 degrees of flexion and with 100N of anterior directed load
- Stiffness was then calculated for each position using the slope of the hysteresis curve
- Graft tunnel motion was measured by taking lateral x-rays with knee at 60 degrees of flexion with anterior loads of 0N and 100N.
 - radio-opaque glass beads sewn into each hamstring graft
 - measured between the two anterior loads

Results

TLS

- Graft Diameter Size
 - 9mm
- anterior displacement
 - 80 degrees: 2.13mm
 - 60 degrees : 2.21mm
- Stiffness
 - at both 80 degrees : 48.7N/mm
 - 60 degrees :53.1N/mm
- Tunnel Motion
 - tibia :0.012mm
 - Femur: -0.077mm

Endobutton

- Graft Diameter Size
 - 7mm
- anterior displacement
 - 4.45mm
 - 8.47mm
- Stiffness
 - 30.8N/mm
 - 33.1N/mm)
- Tunnel Motion
 - Tibia: 0.76mm
 - Femur: 0.195mm