Extensor Mechanism Rupture
Repair or Augmentation

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Primary repair remains the treatment of choice for acute, patellar & quadriceps tendon ruptures...

- Non-absorbable, locking whip stitches
- Trans-osseous drill holes
- Suture anchors

Bi-directional fixation

Complex Extensor Mechanism Disruption

Patellar Tendon Augmentation Reconstruction

Patellar Tendon Augmentation Reconstruction Quadriceps Tendon Augmentation Reconstruction
Patellar Tendon Augmentation

Patellar tendon repair & semitendinosus autograft augmentation utilizing a distal patellar socket

- Selected cases of failed primary patellar tendon repair
- Chronic patellar tendinopathy with rupture & poor tissue quality

8 cadaveric knees used to analyze two methods of repair: hamstring autograft augmentation vs. standard repair

- All knees cycled on actuator for 250 total cycles
- Gap formation measured at repair site @ 250 cycles (standard active rehab protocol)
  - Augmented = 7.2mm
  - Standard = 13.2 mm

40 yo recreational volleyball player

- rehabilitating her right knee infrapatellar tendinopathy
- landed from a jump & her left knee gave way
- immediate pain & loss of knee extension
Patellar Tendon Reconstruction

Achilles Tendon Allograft

- tibial tubercle bone trough
- bi-directional fixation to the distal pole
- incorporation into the quad tendon
- high strength, doubled Achilles allograft

37 year male police officer

- Fell 20 feet from a deck
- Left knee patellar tendon rupture
- Repair (primary suture) failed at 2 months
- Reconstruction (semitendinosis) failed
- Knee gives way, unable to climb stairs
1. Create a trapezoidal trough in the tibial tubercle.

2. Drill 3 parallel, longitudinal holes in the patella.
3. Inset the calcaneus bone block into the tubercle.

4. Fix the bone with a countersunk lag screw & secure the tendon with 2 suture anchors.

5. Place two #2 nonabsorbable, locking whip stitches in the Achilles tendon (match the length of the contralateral patellar tendon).
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6. Pass the 4 suture ends through the 3 drill holes.

7. Place 2 suture anchors in the distal pole of the patella (bi-directional graft fixation).

8. Pull the patella distally & tension the sutures.
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9. Sequentially tie the drill hole sutures at the proximal pole & the anchor sutures at the distal pole.

10. Bring the graft up to the quad tendon then flip distally.

11. Suture the graft circumferentially to the quad tendon, retinaculum, native patellar tendon & distal allograft.
Rehabilitation

0 - 4 Weeks
- Partial weightbearing, rehabilitation brace locked in full extension
- Active flexion to 30 degrees, passive extension
- Quadriceps isometric exercises & straight leg lifts - brace locked

4 - 8 Weeks
- Full weightbearing, rehabilitation brace locked in full extension
- Active flexion to 60 degrees, passive extension

8 - 12 Weeks
- Active flexion to 90 degrees, passive extension
- Quadriceps isometric exercises & straight leg lifts - brace unlocked

12 - 16 Weeks
- Discontinue brace
- Full, active range of motion
- Closed-chain resistance exercises

16 Weeks - 12 Months
- Progressive resistance quad strengthening
Semitendinosus Augmentation

Patellar & quadriceps tendon repair & augmentation utilizing a patellar socket & suture anchors for bi-directional fixation:
• allows for accelerated rehabilitation
• avoids risk of fracture from transverse or longitudinal patellar tunnels
• no hardware complications

Achilles Reconstruction

Patellar & quadriceps tendon reconstruction with bone incorporation, longitudinal patellar drill holes & suture anchors for bi-directional fixation:
• allows for early, controlled knee motion
• restores collagen with a biologic graft
• bridges defect with a doubled, Achilles tendon

Thank You