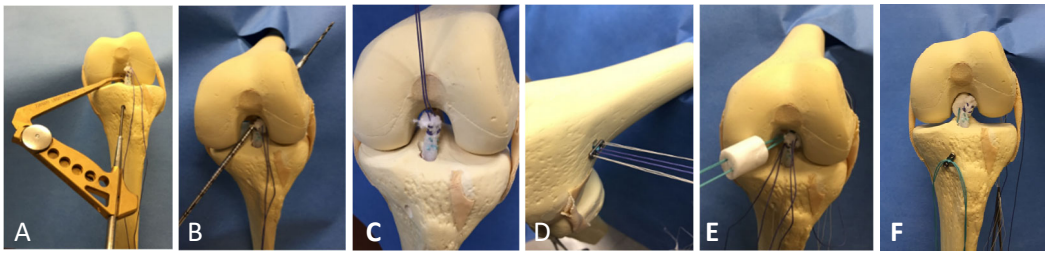

Figure A1. The Bridge-Enhanced ACL Repair (BEAR) technique. **Panel A:** A 4.5mm tibial tunnel is drilled using an aiming device. **Panel B**: a 4.5 mm femoral tunnel is drilled via an anteromedial portal. **Panel C**: A whip stitch is placed in the tibial stump. **Panel D**: Two non-absorbable sutures are looped through the central holes of a cortical button and the ends of the whip stitch are placed through the central holes. The cortical button construct is then passed through the femoral tunnel and the button engaged on the femoral cortex. **Panel E**: The free ends of the nonabsorbable suture are passed through the extracellular matrix scaffold. Autologous blood is then added to the scaffold. **Panel F**: The nonabsorbable sutures and passed through the tibial tunnel. The knee is extended and the nonabsorbable suture cinch tied in maximum manual tension. The whip stitch ends of the suture are then pulled proximally to seat the ACL stump in the scaffold.

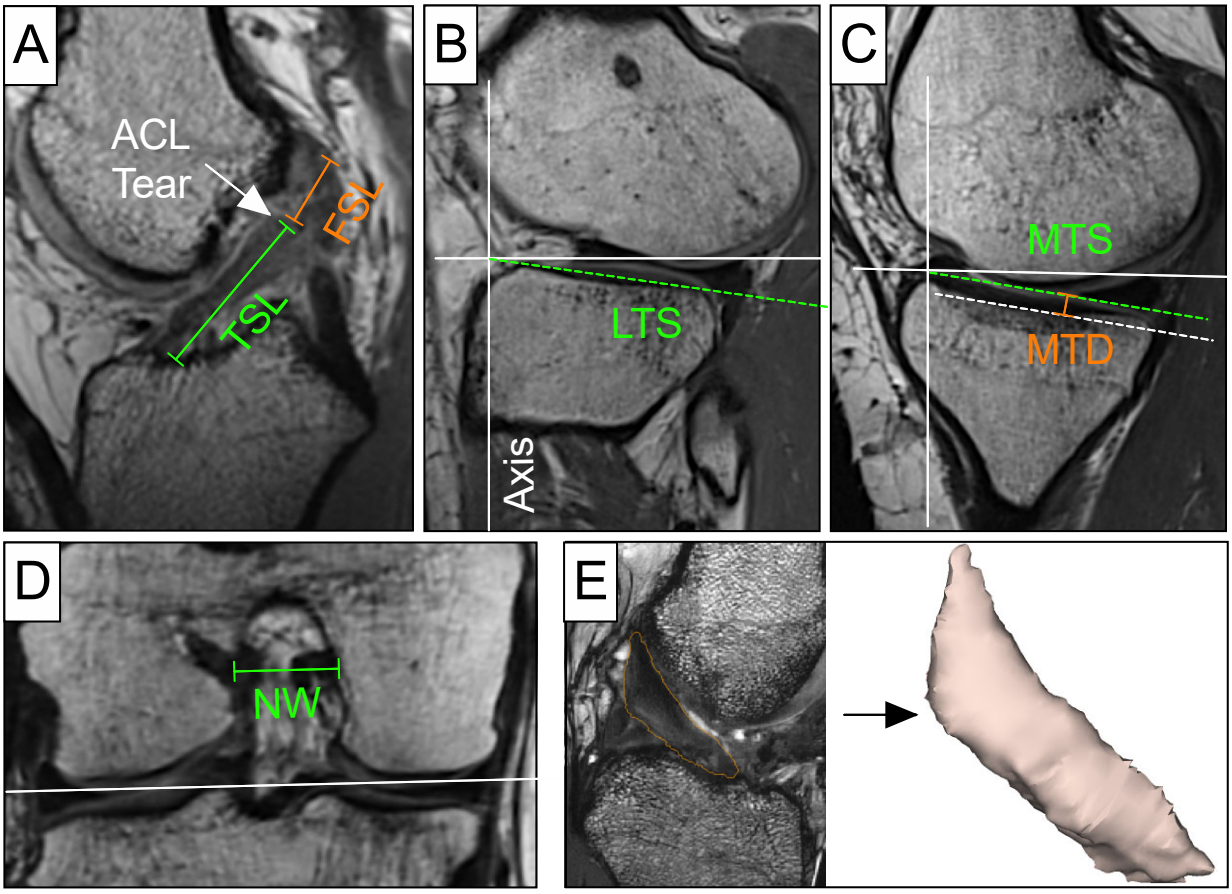

Figure A2. (A-D) Measurement methods used to quantify femoral stump length (FSL), tibial stump length (TSL, lateral tibial slope (LTS), medial tibial slope (MTS), medial tibial depth (MTD), and notch width (NW). (E) 3D reconstruction of ACL to calculate average signal intensity and cross-sectional area.

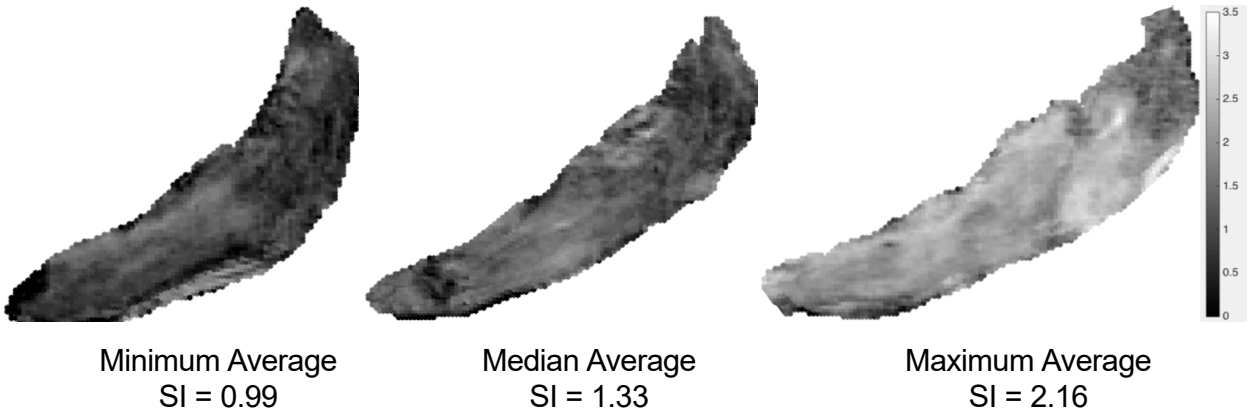

Figure A3. Two-dimensional maps of normalized signal intensity of the repaired ACL 6 months after surgery.

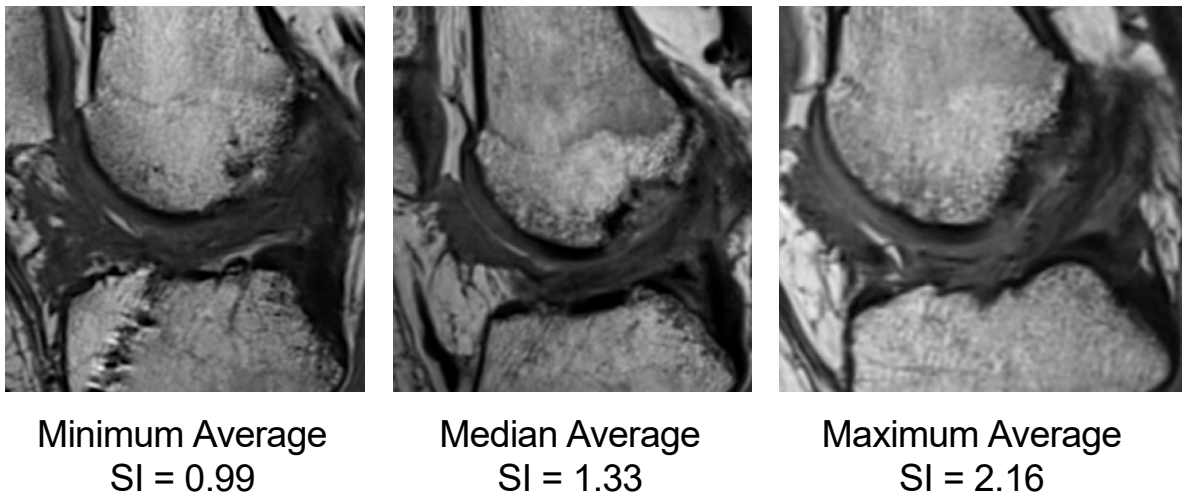

Figure A4. MR images of repaired ACLs with minimum, median and maximum normalized signal intensity 6 months after bridge-enhanced ACL repair.