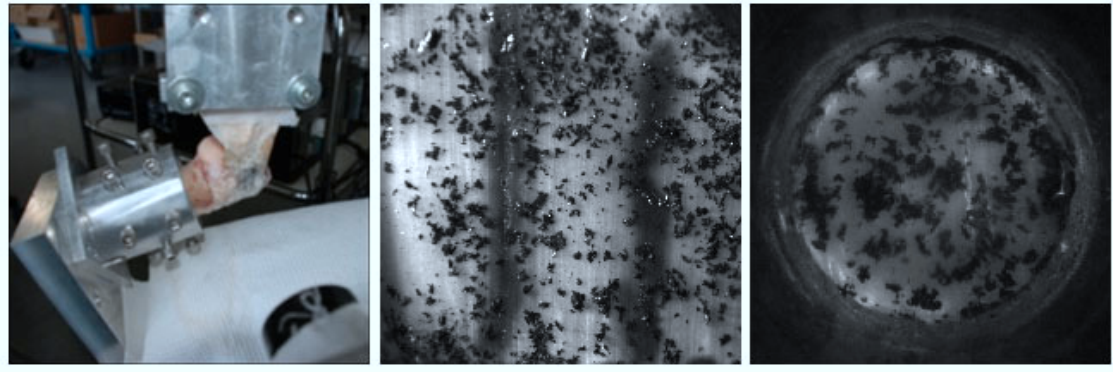


STUDENT RESEARCH PROJECT



Left: Sheep infraspinatus tendon under uniaxial load. Middle: Image obtained using high resolution bench-top optics. Right: Image obtained using endoscope.

Endoscopic functional imaging to quantify load distribution in injured rotator cuff tendon

Master Project

Rotator cuff injury remains a huge societal and clinical problem. It is often difficult for the surgeon to determine the extent of an injury, and how best to treat it. Non-destructive, intra-operative biomechanical characterization of tendon would open possibilities to gain essential functional information immediately prior to and following surgery, as well as over the time course of healing. Previous studies have shown the feasibility of using endoscopic functional imaging method to assess tendon mechanical properties in small animal models of rotator cuff injury. This study aims to extend this method toward humans using a large animal model (the sheep).

Sheep shoulder tendons will be loaded into a universal material testing machine for tensile loading. The tissue strains will be measured from the tendon surface images using custom algorithms.

Project Tasks:

1. Review of literature.
2. Further refinement of previous developed injured model in vitro.
3. Strain measurement using high resolution bench-top optics for healthy and injured models.
4. Apply functional endoscopic imaging methods on the healthy and injury models developed.
5. Submission of a final report.

20% Theoretical work 40% Experiments, 30% image processing and 10% statistical analysis.

No specific prerequisites are required.

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