This year the orthopedic hand microvascular service at Denver Health Medical Center inaugurated a new quarterly didactic course series targeting an advanced surgical audience. This series was designed to target a perceived deficiency in orthopedic surgical training: While traditional orthopedic fracture courses train residents in bone fixation techniques, there is a lack of specialized training in soft tissue handling. This includes reconstructive flap surgery, vascular and microvascular repair techniques as well as peripheral nerve surgery including nerve and tendon transfer techniques.

Soft tissue reconstruction and microsurgical techniques are an essential skill set to provide advanced limb salvage and limb replantation. As the primary regional level one trauma center offering around the clock, 24/7 replantation services, the orthopedic hand microvascular team at Denver Health can draw on a large patient experience and an advanced combined skill set to offer these courses.
With the assistance of the orthopedic hand faculty at the University of Colorado who collaborate in the hand microvascular call pool, we offered to date two courses starting with a cadaveric upper extremity flap course in January led by Dr. Banegas and a peripheral nerve course in April organized by Drs. Ipaktchi and Froehlich. Both courses utilized the resources of the microvascular laboratory at Denver Health and offered one on one surgical teaching in a life like surgical model using fresh cadaveric limbs. There was enthusiastic feedback from participants in both courses which were booked to maximum enrolment.

In going forward into the busy summer trauma season, which usually brings us a fair share of open lower extremity fractures, Dr. Livermore will direct the next course in July focusing on lower extremity flap reconstruction. This course will train participants the robust techniques of local rotational muscle and fascio-cutaneous flaps as well as the advanced skills needed to harvest microvascular flaps. For course enrolment please contact Dr. Ipaktchi at Kyros.

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One on one training of the hand fellows by course faculty

Clinical education, including surgical instruction, is a core mission of the orthopedic department at Denver Health. Students, residents and fellows benefit from the heavy and complex case load at Denver Health Medical Center, which is the only academic level one trauma center in the state of Colorado. In addition to traditional lectures, the Orthopedic core curriculum for residents training at the University of Colorado introduced surgical skill lab training which emphasizes techniques training and surgical approaches. Current skills labs include instructions on surgical approaches and plating techniques using cadaveric limb models. These laboratory hands on training courses have been extremely well received by residents and fellows and are being offered in various orthopedic disciplines. While these practical training sessions have offered a more clinical – “real life scenario” to trainees, there existed to date no cadaveric trauma model for these bioskills courses. In discussing with prior trainees on how to optimize their learning experience, the lack of training on how to fix real fractures in a human limb model was identified as an education improvement opportunity.

This year’s lower extremity trauma bioskills course was thus designed to offer an actual cadaveric fracture model of the tibia plateau. Fractures were created prior to the course through minimal incisions with osteotomes and bone tamps in order to mimic common patterns of tibia plateau joint depression fractures. The goals and objectives were to understand the fracture patterns using intraoperative fluoroscopy and to reduce and fix these fractures using either an open conventional plating technique or a minimal invasive percutaneous screw technique. Trainees were thus for the first time exposed to a close to real surgical model as opposed to prior training laboratories using intact, isolated plastic bones. This novel course format was enthusiastically received by participants and will be the model for future trauma bioskills labs at the University of Colorado.