significantly decreased quadriceps strength in the operative leg 6 weeks postoperatively ($p < .05$). By 12 weeks, quadriceps strength in both legs was similar in both patient groups.

Dr. Magnussen then addressed the association between FNB and KOOS values of ADL, pain, and symptoms. Both groups improved during the 12-week follow-up. The improvement was, however, more pronounced at 6 weeks in the absence of FNB. The change in KOOS ADL score at 6 weeks in the absence of block (6.5 ± 9.1) was greater than in the presence of block (.1 ± 11.3), but it was not significantly different ($p = .12$). Changes in KOOS pain and symptom values at 6 weeks postoperatively with no block (7.5 ± 9.0 and 10.1 ± 12.4, respectively) and with block (–1.1 ± 14.1 and –3.0 ± 21.3, respectively) were not significant ($p = .069$ and $p = .059$). Values of all assessed parameters at 12 weeks postoperatively were similar between groups.

FNB was associated with decreased quadriceps strength and an absence of patient-reported improvements at 6 weeks postoperatively. By 12 weeks, these deficits were not apparent. The long-term effects, if any, of quadriceps weakness in the early weeks following ACLR in patients receiving perioperative FNB remain unclear.

Tissue-Engineered Meniscus Scaffold Prevents Post-Meniscectomy Degenerative Changes

Written by Maria Vinall

Tissue-engineered load-sharing scaffolds offer the potential to preserve articular cartilage and prevent degenerative changes that occur after meniscectomy. Although meniscectomy can provide pain relief, total removal of the meniscus leads to articular cartilage damage and eventually osteoarthritis. Even so, each year an estimated 1.7 million meniscectomies are performed.

Charles J. Gatt, Jr, MD, Robert Wood Johnson Medical School, Rutgers, New Jersey, USA, described a C-shaped implant device that is being developed in his laboratory that mimics meniscal mechanics, serves as a scaffold for neomeniscus formation, and offers chondroprotection against degenerative arthritis. The hybrid device is composed of a fiber-reinforced collagen-proteoglycan sponge and resorbable, synthetic polymer fibers that are oriented in a similar design to the native meniscus and responds to both the compressive and tensile loads normally seen in the native meniscus (Figure 1).

Unlike allografts, with their many complications (age criteria, issues matching donor size, the length and high cost of the procedure, possibility of foreign body reaction, risk for disease transmission, and density of the graft leading to poor cellular infiltration and thus poor long-term results), tissue-engineered devices, although not approved by the US Food and Drug Administration, are not rejected by the body, demonstrate organized tissue ingrowth, and show long-term restoration of mechanical function.

Figure 1. Tissue-Engineered Meniscus Implant

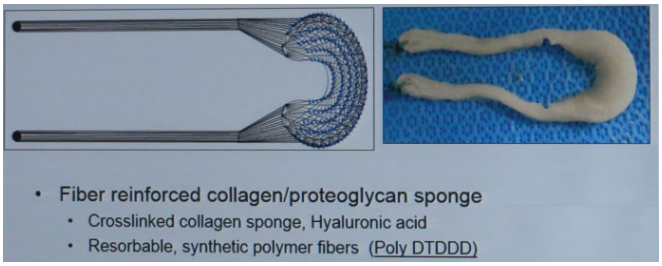

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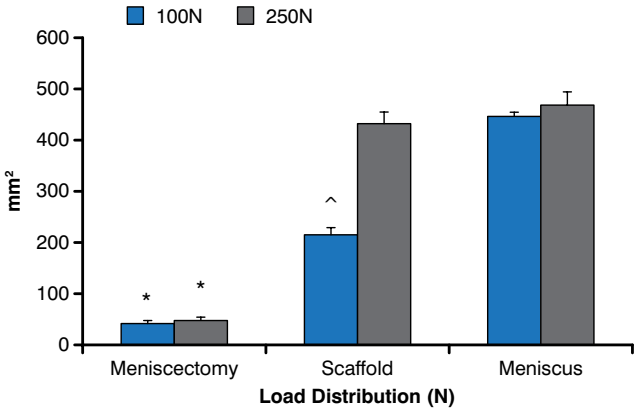
Figure 2. Load Distribution Without Meniscus, Scaffold, and Normal Meniscus



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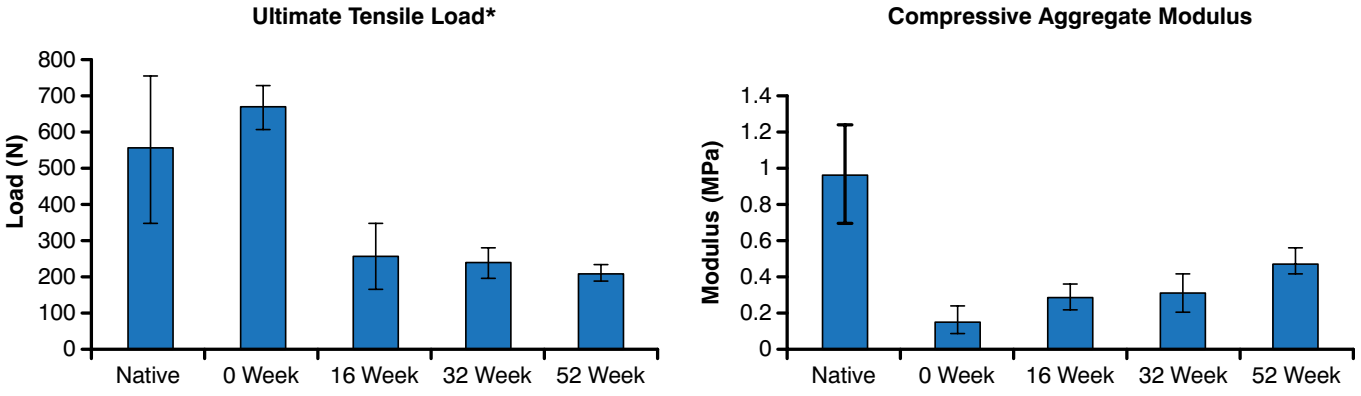
When tested in a simulated ovine knee, the meniscectomy control has a very small contact area with relatively high pressures, while the scaffold looks very similar to the native meniscus (Figure 2).

After implantation into the joint space of a rabbit knee for 4 to 8 weeks, the excised scaffold showed a good amount of firm tissue ingrowth with little change to size or shape of the device. There was no evidence of swelling, redness, or signs of infection. Positive-cell infiltration and tissue deposition, the absence of excessive foreign body response, and no adverse joint effects suggest signs of good biocompatibility.

Figure 3. Mechanical Evaluation of Meniscus Scaffold in Sheep[a]



[a]Function tensile load is ~40 to 50 N.

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*On November 12, 2014, this was changed from Ultimade Tensile Load to Ultimate Tensile Load.

After total medial meniscectomy replacement with meniscus scaffold in 30 sheep, there was improvement in tensile load and compressive aggregate modulus out to 52 weeks (Figure 3).

Gross and histologic evaluation noted that all implants were intact at 1 year. There was good articular cartilage preservation, robust and organized tissue ingrowth, maintenance of meniscus shape, and no gross adverse joint reactions or significant foreign body rejection.

Unlike partial meniscal replacement, which is not designed for hoop stress, provides only symptom relief, and may not prevent degenerative changes, the total meniscal replacement load-sharing scaffold offers the potential for long-term restoration of mechanical joint function and may prevent degenerative changes in addition to providing symptom relief. Longer-term studies will be necessary to confirm the true chondroprotective capabilities of this device.

Injury to the IBSN During ACL Surgery Clarified

Written by Brian Hoyle

Steven B. Cohen, MD, Thomas Jefferson University, Philadelphia, Pennsylvania, USA, discussed the findings of a prospective study of patients who underwent reconstructive surgery of the anterior cruciate ligament (ACL) to understand the incidence of and characterize injury to the infrapatellar branch of the saphenous nerve (IBSN), as measured by numbness.

ACL reconstruction is a common procedure in sports medicine. While surgery is typically effective in restoring the degree of knee function needed for the rigors of athletic activity, numbness of the lateral portion of the knee is a complication regardless of the type of graft used. This complication arises because of injury to the IBSN, which is susceptible to surgery-related damage because of its transverse or oblique passage between the lower portion of the patella and the tibial tubercle. The outcome of the ACL reconstructive surgery, however, is generally not affected.

Despite the frequency of IBSN injury, the incidence is unclear. Estimates range widely from very low (.5% of cases) to very high (88% of cases) [Kjaergaard J et al. *Int J Sports Med* 2008; Mistry D, O'Meeghan C. *ANZ J Surg* 2005]. Injury can occur during harvesting of the hamstring [Sabat D, Kumar V. *Knee Surg Sports Traumatol Arthrosc* 2013] or during routine knee arthroscopy, and can occur irrespective of whether the incision is vertical, oblique, or horizontal [Kerver ALA, et al. *J Bone Joint Surg Am* 2013].

The current study sought to determine the incidence of numbness around the knee after ACL reconstructive surgery in 218 patients. Secondary aims were to subjectively assess if postoperative knee numbness persisted at 6 weeks and if the total area of numbness changed at 6 months or after 1 year. Patients completed a questionnaire at 6 weeks, 6 months, and 1 year after surgery and the numbness score was determined. Patient satisfaction with the outcome despite numbness was also queried. Table 1 summarizes the surgical variables in the patient population.

At 6 weeks, numbness in the inferolateral knee and along the distal midline was evident in 34% and 30% of patients, respectively. The use of an autograft was