Electron Microscopy

created partial thickness defects was not observed in either control or RF
to 12 weeks after RF treatment. Cartilage regeneration in the experimentally
dead by 2 weeks after surgery while the cartilage matrix was maintained at up

treatment at time 0, almost all of the chondrocytes in the treated area were

time 0 and remained smooth up to 12 weeks (Fig. 3).

histological appearance. Confocal laser microscopy was used to analyze

Materials and methods: This study was approved by the Institutional Animal

Cartilage Repair

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Result: Histological analysis revealed that RF treatment caused detrimental
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Discussion: This study revealed that RF energy caused significant alterations in
chondrocyte viability and cartilaginous matrix. When RF was used to ablate
the diseased cartilage and to smooth the defect surface, it caused immediate
chondrocyte death. Although some chondrocytes were viable after RF

treatment at time 0, almost all of the chondrocytes in the treated area were
dead by 2 weeks after surgery while the cartilage matrix was maintained at up
to 12 weeks after RF treatment. Cartilage regeneration in the experimentally
created partial thickness defects was not observed in either control or RF
treated regions. We hypothesize that RF treatment can smooth the surface
of cartilage defect, but also will kill chondrocytes and denature collagen.

Although cartilage matrix was still maintained in situ at 3 months after RF
treatment, we suspect that the cartilage will ultimately degrade because of its
acelluar structure. The results of this study indicate that monopolar RF energy
causes long term damage to cartilage in this sheep model and does not appear
to have the beneficial effects reported in a previous study (1).