

**#6 HISTOLOGIC AND DUPLEX COMPARISON OF THE PERCLOSE AND ANGIO-SEAL PERCUTANEOUS CLOSURE DEVICES**

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**Objectives:** Complications associated with hemostatic closure devices have been reported. However, the intravascular and extravascular effects of these devices have not been well studied. We assessed the performance and healing characteristics of 2 FDA approved devices in a canine model.

**Methods:** Twelve adult male dogs were anesthetized prior to percutaneous access of both femoral arteries with a 6 Fr sheath. All dogs were systemically heparinized to an ACT > 350sec. Duplex sonography (DS) was performed preoperatively to measure vessel diameter and flow velocity. In each dog, one of 2 devices (Perclose or Angio-Seal) was randomly deployed into one of the two femoral arteries. The other device was deployed on the opposite side. DS was repeated immediately after deployment and 28 days later to measure changes in vessel diameter and flow velocity. At 28 days, angiography was performed on both femoral arteries before they were removed for histological evaluation. The time required to excise each vessel reflected the degree of scarring.

**Results:** There were no statistically significant changes in vessel diameter or flow velocity immediately after deployment for both devices. Vessel narrowing was observed at 28 days after deployment of the Angio-Seal device. Extensive extravascular scarring was observed with the Angio-Seal device which resulted in a longer femoral artery dissection time and greater periadventitial scar thickness compared to the Perclose device.

**Conclusions:** When compared to the Perclose suture closure device, the Angio-Seal collagen plug closure device produced greater vessel narrowing and periadventitial inflammation (extravascular scarring). Use of the Angio-Seal closure device might complicate future femoral artery dissection for open vascular procedures.