

Celt ACD[®], A Novel Stainless Steel Femoral Artery Closure Device, Reduces Time to Hemostasis, Patient Discomfort and Late Bruising Compared with Angio-seal[™]

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Abstract

INTRODUCTION The Celt ACD[®] (Vasorum, Dublin, Ireland.) is a novel stainless steel vascular closure device (VCD). We conducted a prospective, non-randomised study to assess time to hemostasis, patient discomfort and vascular complications when using the Celt ACD[®] compared with both manual compression and Angio-Seal[™] VIP (St Jude Medical, Minnesota, USA), the most commonly used VCD in the U.K.

METHODS: 150 patients undergoing elective diagnostic coronary angiography via the femoral route in our centre underwent closure of the arteriotomy using either the Celt ACD (50 patients), Angio-Seal (50 patients), or manual compression (MC, 50 patients). The choice of closure method was at the discretion of the operator. The time to deployment, time to hemostasis (total cessation of bleeding) and patient-rated discomfort were recorded. At one week following the procedure patients were contacted to assess the incidence and severity of bruising (recorded if size > 10 pence coin), and vascular complications, (pseudo-aneurysm, vascular occlusion).

RESULTS: The mean age (62, 59, 64 years), weight (83, 85, 85 kg) and number taking antiplatelets (27, 30, 31) or anticoagulants (7, 2, 5) was not significantly different between groups (Celt, Angio-Seal and MC respectively). In the Celt and Angio-Seal groups, VCD deployment was technically successful in all patients, and hemostasis was achieved immediately after release of the VCD in 47/50 (94%) patients in both groups. The remaining three patients in each group had minor oozing of blood requiring additional manual compression for up to 5 min (Celt) and 15 min (Angio-Seal). The mean time to deploy the device was significantly shorter for Celt compared with Angio-Seal (58 ± 6 vs 70 ± 3 seconds, $p < 0.01$). In the MC group, 43/50 (86%) patients had complete hemostasis after 10 min' compression, the remainder having ongoing ooze requiring further pressure for 0.75–35 min.

Patient-rated discomfort (from 0 to 10, 10 being the most intense pain) was 1.7 ± 0.3 for MC, 2.0 ± 0.3 for Celt, and 3.3 ± 0.4 for Angio-Seal. 142/150 (95%) of patients were contactable at one week post-procedure: of these significantly fewer reported minor bruising in the Celt group (12/48; 25%) compared with 30/48 (63%) for Angio-Seal and 30/46 (65%) for MC. In the VCD groups, no patient had a major vascular complication and or required medical review or further vascular imaging. In the MC group, one patient required a Doppler ultrasound for suspected pseudo-aneurysm (that proved to be normal) and another two sought medical advice due to major bruising.

CONCLUSIONS: The Celt ACD[®] is associated with significantly reduced time to hemostasis, reduced patient discomfort and a lower incidence of late minor bruising compared with Angio-Seal[™] VIP. A registry data on a much larger population is required to compare the incidence of major vascular complications and cost effectiveness of these two VCDs.