between the distal radial artery and the elbow vein, or transposition of the radial artery (Bourquelet et al. J Vasc Surg 2009) avoid the risks of secondary stenosis of the venous anastomosis of grafts. A similar algorithm applies for distal AVF which are less frequently complicated by distal ischaemia. Low flow non-matured AVF must be ligated. Normal flow AVF should be treated by distal radial artery ligation. High flow AVF-related ischaemia (above 800 ml/min) is best treated by juxta-anastomosis proximal radial artery ligation (PRAI) which is an easy and effective technique for resection of distal AVF (Bourquelet et al. Eur J Vasc Endovasc Surg in press).

**10 CEPHALIC ARCH STENOSIS. CONSERVATIVE SURGERY OR CREATION OF A NEW VASCULAR ACCESS?**

Bourquelet P
Clinique Jouvenet, Paris - France

Cephalic arch stenosis (CAS) is the major reason why brachial cephalic AVFs so frequently malfunction (up to 39%). The stenosis may be partly due to compression of the dilated vein as it passes through the clavicular fascia, just before its junction with the axillary vein. Turbulent high flow, frequently associated with elbow AVF, may reinforce the stenosis by inducing hyperplasia of the intima and valves in the upper part of the vein. In view of the rather disappointing results of percutaneous angioplasty for CAS (early recurrence after PTA, risk of subclavian vein stenosis after stenting) surgery must be considered for certain patients.

Re-routing the vein is a surgical option. The upper part of the cephalic vein is freed as proximally as possible to ensure adequate length. A second incision just before its junction with the axillary vein. Turbulent high flow, frequently associated with elbow AVF, may reinforce the stenosis by inducing hyperplasia of the intima and valves in the upper part of the vein.

In conclusion, besides percutaneous treatments, surgical re-routing and creation of a new access must be considered when treating CAS.

**11 SUPERFICIALIZATION OF FOREARM VEINS: LIPECTOMY**

Bourquelet P
Department of Angioaccess, Clinique Jouvenet, Paris - France

**Background:** Tunnelled transposition is the traditional technique for superficialization of the distal cephalic vein in obese patients. Lipectomy is a new technique (J Vasc Surg 2009) that removes subcutaneous fat without mobilization of the vein.

**Methods:** This single-centre prospective study included 49 consecutive patients (17 men, 32 women) who underwent second-stage lipectomy after creation of a radial-cephalic fistula. Mean patient age was 54 years, 36% had diabetes, and mean body mass index was 31 ± 5.6 kg/m². Subcutaneous fatty tissues were removed after two transverse skin incisions under regional anaesthesia and preventive hemostasis. Cannulation was first allowed 1 month later, after clinical and colour duplex ultrasound evaluation. Technical success was defined as the ability to remove the fat and to palpate the patent vein immediately under the skin at the end of the operation. Clinical success was defined as the ability to perform at least three consecutive dialysis sessions with two needles. All patients were checked systematically every 6 months by the surgeon.

**Results:** Technical and clinical success rates were 96% (47 of 49) and 94% (46 of 49), respectively. Mean vein depth decreased from 8 ± 2 to 3 ± 1 mm according to duplex ultrasound imaging. The mean vein diameter increased from 6 ± 1 to 8 ± 2 mm. In one patient, vein tortuosity that was overlooked required conventional repeat tunnelling. One extensive haematoma resulted in loss of the fistula. One patient died before the fistula could be used. Primary patency rates were 71% ± 7% and 63% ± 8% at 1 and 3 years, respectively, and secondary patency rates were 98% ± 2% and 88% ± 7%. Delayed complications were treated by surgery (N = 7) or by endovascular procedures (N = 10).

**Conclusion:** Lipectomy is a safe, effective, and durable approach to make deep arterialized forearm cephalic veins accessible for routine cannulation for hemodialysis in obese patients who often have distal veins that have been preserved by their fat from previous attempts at cannulation for blood sampling or infusion.

**12 TOPICAL ELASTASE INCREASES AVG OUTFLOW VEIN DIAMETER AND LUMEN AREA IN A SWINE MODEL**

Burke S 1, Blair A 1, Mendenhall H 1, Stanley J 1, Groothuis A 1
1Protein Therapeutics, Waltham, MA - USA
2Protein, Waltham, MA - USA
3Wake Forest University, Winston-Salem, NC - USA
4CBSET, Lexington, MA - USA

**Aims/Introduction:** PRT-201 is a recombinant human pancreatic elastase under development as a treatment to improve AVF maturation and prolong AVG patency. The objectives of this study were to determine the effect of PRT-201 on AVG outflow vein diameter, blood flow, patency, venous neointimal hyperplasia, and wound healing.

**Methods:** Twenty-three 6 mm x 10 cm ePTFE grafts were interposed between the femoral arteries and veins of 12 juvenile Yorkshire swine. The outflow vein was treated topically with either saline (n=6) or saline containing PRT-201 (1.0 mg (n=4), 1.5 mg (n=5), 3.0 mg (n=5) or 4.5 mg (n=3)) over 10 minutes. Digital photographic images and blood flow (Transonic) were obtained before and after treatment. Twenty-one days later, angiography was performed to determine graft and vein patency and vein lumen diameter then the AVG was exposed and graft blood flow was measured. Finally, the animals were euthanized and the AVFs and veins were fixed for formalin.

**Results:** Similar responses for several vein measurements were noted among the PRT-201 dose groups and thus the PRT-201 groups were combined for analysis. PRT-201 resulted in an acute non-dose dependent increase in the outer vein diameter compared with saline (19±13% vs. 6±8%, p<0.05). At 21 days, PRT-201 was associated with greater vein patency (76% vs. 33%), graft blood flow, and vein lumen diameter. Histomorphometric outer vein and lumen diameter and area were greater with PRT-201 whereas neointima area, medial area, neointima thickness, and neointima/lumen area ratio were similar. PRT-201 at all doses caused notable dissolution of the external elastic lamina that was limited to the application site. Other histopathological measures of vein tissue response were not affected by PRT-201. PRT-201 had no adverse effect on wound healing grossly or microscopically.

**Conclusion:** PRT-201 treatment of the AVG outflow vein immediately following placement was both safe and effective at increasing outer vein and vein lumen diameter and area in swine. An ongoing clinical trial is evaluating the effect of PRT-201 on outflow vein diameter and blood flow in CKD patients undergoing AVG placement.

---

**References:**

- **Cao Hau T, Criddle J, Dekeyser M, Peters N, Duchesne L, Lam Cham Kee H, Frimat L. Nephrology, CHU Nancy, Vandoeuvre-lès-Nancy - France**
- **The authors reported observations of deadlock in hemodialysis angiogenesis (DHDAA) of 15 patients (9 F & 6 M) with mean age at 59±18 years,**