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Salvage of immature brachiocephalic fistula with extrinsic compression

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Case Study:

Maintaining proper vascular access is essential in hemodialysis patients. Arteriovenous fistula is regarded as favorable vascular access than arteriovenous graft or dialysis catheter because of lower access failure rate and mortality. Therefore, as many as a possible case, AVF has been attempted as a first choice vascular access. However, maturation of AVF is still a major problem in a large population and salvage of immature AVF is an important part of successful access creation.

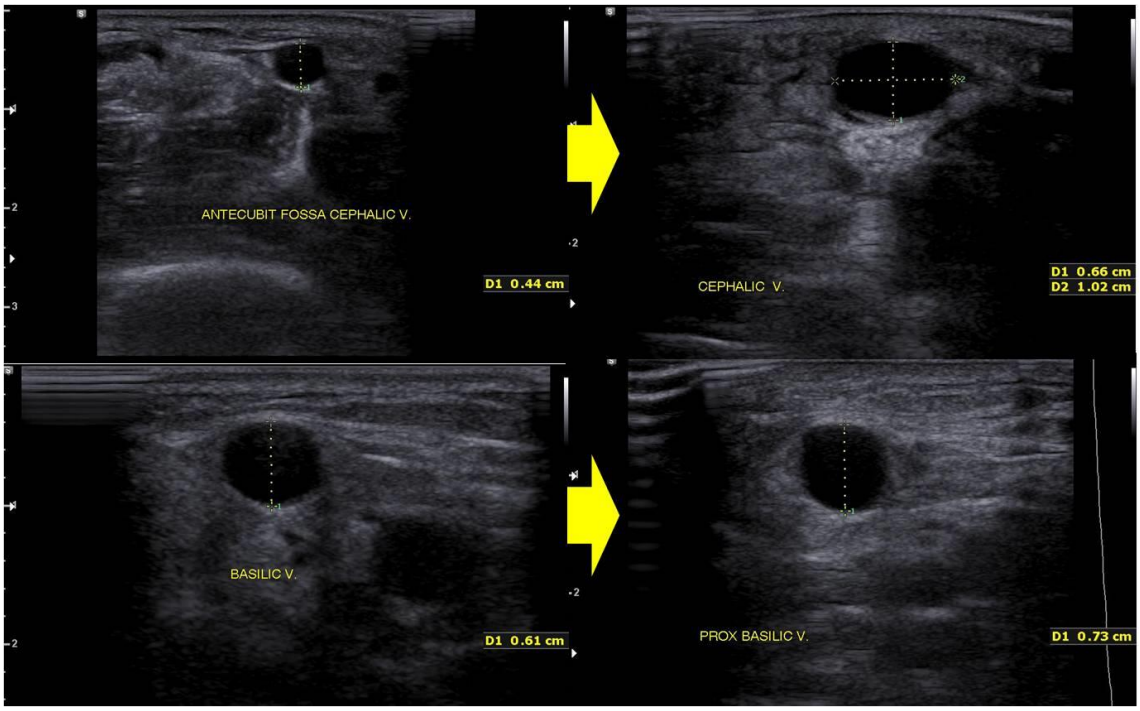
In long-term patency of vascular access, dual drainage is better than single. Therefore, some surgeons try to make brachiocephalic fistula using cephalic vein before bifurcating to median cubital vein when radiocephalic fistula creation is difficult. However, if the blood flow to basilic vein is greater than that to cephalic vein, it may lead to immaturity of cephalic vein.

In 2018, two patients of our center underwent brachiocephalic fistula creation surgery, using cephalic vein before bifurcation. Thirty days after surgery, their cephalic veins were not matured properly and difficult to puncture. To make these AVFs available, endovascular management, mostly percutaneous transluminal angioplasty has been regarded as an effective technique. Balloon assisted maturation may increase cephalic flow, but cannot reduce basilic flow, so it is expected to take a long time for maturation. So we increased the cephalic flow with PTA and pressed the basilic vein out of the skin with a hemostatic cotton ball to reduce the basilic flow. After applying cotton ball, bandage was performed to confirm that thrill of cephalic vein was augmented. One week later, ultrasonography confirmed the maturation of cephalic vein and successfully performed puncture for hemodialysis.

As far as we know, this is the world's first case series using extrinsic compression for the maturation of dialysis access. This not only effectively gave help in the maturation of access, it is minimally invasive.

Figure1. Extrinsic compression of basilic vein with cotton balls

Figure2. Ultrasound comparison before and 1 month after the procedure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