

## **Use of Point of Care Ultrasound in the pre-op evaluation of dialysis patients needing creation of permanent arteriovenous access – preliminary study**

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**Background:** Non-invasive ultrasound evaluation is part of the preoperative evaluation of patients needing creation of arteriovenous access. The performance of this outpatient studies requires in majority of the cases for patients to return for an additional visit for imaging or go to an outpatient imaging facility. The additional visits produce delays in surgery and increase costs in healthcare. Point of care ultrasound examination at the same time of initial physician visit with concomitant history and physical exam, allows to decrease cost, improvement of anatomical surgical planning, and decrease timing of surgery.

**Methods:** We reviewed the UTRGV Vascular Surgery Database from January to December 2020, for patient to underwent creation of arteriovenous access for hemodialysis. Identified patients who has elective outpatient arteriovenous access creation, which has pre-operative evaluation with rapid ultrasound evaluation performed by surgeon. The evaluations were performed in the non-dominant extremity, the superficial veins were evaluated for compressibility, diameter of 3.0 mm or larger, the upper extremity arteries were evaluated to identify a triphasic waveform and a diameter of 2.0 mm or larger. If no suitable vessels were identified for arteriovenous access in the non-dominant vessel, examination of the contralateral dominant extremity was performed. Patients with suspicious central stenosis, morbid obesity, were excluded for the performance of POCUS examination. After office visit with ultrasound patients were schedule for surgery within 2 weeks after visit. Data was obtained for demographics, type of surgery, successful creation of arteriovenous access with presence of thrill and bruit at office evaluation, Maturation of arteriovenous access and successful use of arteriovenous access for dialysis. This study and patient follow-up is affected by COVID-19 pandemic, which creates delays in surgery and follow-up visits.

**Results:** Fifteen patients underwent POCUS examination at vascular surgery visit and underwent creation of arteriovenous access, 9 males and 7 females, average age of 51.1 years. All patients have creation of arteriovenous fistulas, 7 brachiocephalic AV fistulas, 4 radiocephalic av fistulas and 4 brachiobasilic AV fistulas who were plan for creation in two stages. An AV fistula was successfully performed in 14 out 15 patients (93.3%) with presence of thrill and bruit at outpatient visit follow-up. Four of the 15 AV fistulas successfully mature and were able to establish as a successful access for dialysis; 5 additional patients have been clear to be use for dialysis, with 60% of all access being currently use in dialysis or clear to use for dialysis. One patient with left brachiobasilic AV fistula did not return for stage II creation, despite creation of stage I. No development of steal syndrome or infections at AV access.. The total savings calculated for performance of POCUS examination was 9,480 dollars as unilateral testing is nation average of 632 dollars per study. Average time after office visit to surgery performance is 12.2 days.

**Conclusions:** This preliminary study demonstrates that performance of POCUS examination by surgeon in office, is a suitable technique which allows for creation for an excellent rate of success for arteriovenous access creation, a short period for surgery scheduling performance, and with significant savings in healthcare costs of the patient. This is a continuous study, we present preliminary results; there patients who are still in early period post-surgery which have not accomplished timing for maturation or use; COVID-19 pandemic has affected patients follow-up visits and delay in patients surgery