Scientific Session I

Branch vein ligation to aid maturation of arteriovenous fistulas: assessment of effectiveness

Authors: Sagar Mittal - Renal and Transplant Department Guy's and St Thomas' NHS Foundation Trust, Joseph Ewer - Renal and Transplant Department Guy's and St Thomas' NHS Foundation Trust,Nicholas Barnett - Renal and

Transplant Department Guy's and St Thomas' NHS Foundation Trust,
Category: Oral

Aims: The Renal Registry recommends an arteriovenous fistula (AVF) as the preferred form of access for haemodialysis. Approximately 30-50% of AVFs will not attain primary maturation. Ligation of AVF branch veins has been suggested as one strategy to improve maturation in low-flow or small diameter AVFs. Although performed frequently in many Centres, there is little published data regarding ligation of AVF branch veins. This study was designed to review outcomes from this procedure and add to the available evidence.

Materials and Methods: A retrospective study was performed in a single Centre. Clinical Coding and Schedule Development (CCSD) procedure codes were used to identify all patients who had undergone revision AVF operations between 01/01/2011 and 31/12/2019. Clinical notes were then reviewed to identify those who had had branch vein ligations (excluding those who had simultaneous proximalisation or revision of the arteriovenous anastomosis). Effectiveness was assessed both clinically (success in needling) and radiologically (review of ultrasonic angiology results and flow rate).

Results: 24 patients (18 M, 6 F) had branch vein ligations to aid AVF maturation (mean age 62.1 years; 15 left, 9 right; 18 radiocephalic, 6 brachiocephalic).

Flow rate increased in 13 patients after ligation and decreased in 7. Mean flow rate was 854.7mL/min pre-ligation and 998.6mL/min post-ligation.

In 15 patients (62.5%) ligation made no difference to clinical use (8 with usable AVFs and 7 with unusable AVFs pre- and post-ligation). There was a clinical improvement in 7 patients (29.2%) – previously immature AVFs were needled successfully. In 2 patients (8.3%) usable fistulas became unusable.

Conclusions: Branch vein ligation aided AVF maturation in 7/24 patients, had no clinical effect in 15/24 and worsened outcomes in 2/24.

The ligation strategy presumes that branch veins divert flow from, and that ligation will increase flow in, the main vein. However, it is possible that branch veins are a consequence of downstream stenosis rather than a primary cause of maturation failure.

Careful clinical and radiological assessment of immature AVFs is required. Branch vein ligation is an effective strategy for an appropriately selected subset of patients.

Validation of a Vascular Access Specific Quality of Life Measure (VASQoL)

Authors: Miss Karen Stevenson - Glasgow Renal and Transplant Unit Queen Elizabeth University Hospital , Glasgow,Miss Sabine Richarz - Dept of Vascular Surgery and Renal Transplantation, University Hospital Basel, Basel, Switzerland,Dr Sharon Greenwood - Graduate School, College of Medical, Veterinary & Life Sciences, University of Glasgow University of Glasgow,Dr Peter Thomson - Glasgow Renal and Transplant Unit QEUH, Glasgow,Dr Mark Dunlop - Department of Computer and Information Sciences University of Strathclyde,Dr Matt-Mouley Bouamrane - Centre for Medical Informatics, Usher Institute of Population Health Sciences and Informatics, University of Edinburgh,Ramsay Meiklem - Dept of Computer Science University of Strathclyde,Mr David Kingsmore - Dept of Vascular Surgery QEUH, Glasgow,
Category: Oral

Aims: A self-administered 11 item Vascular Access Specific Quality of Life Measure (VASQoL) was previously derived from detailed qualitative interviews with adult patients with kidney failure who have experienced vascular access using the Capabilities Approach as a theoretical base. This study reports the psychometric validation of the VASQoL measure including its reliability, content validity and responsiveness to change.

Materials and Methods: Cognitive interviews were conducted with 23 adult patients with kidney failure after completion of the VASQoL measure. Focus group discussion with a vascular access professional multidisciplinary team was undertaken (n=8) and subsequently a further 101 adult kidney failure patients with vascular access (TCVC, AVF or AVG) completed the digital VASQoL measure, EQ-5D and SF-36 questionnaires in a longitudinal study with prospectively recorded vascular access events.

Results: Cognitive interviews after VASQoL completion indicated comprehensive content that was well understood by participants. Internal reliability for the VASQoL measure was high (Cronbach's alpha 0.858). In those who experienced a vascular access event, significant differences were observed in paired analysis of VASQoL physical domain questions and vascular access function domain questions. In those with no vascular access event, variation was observed in VASQoL questions relating to worry about VA function and capability domains, whilst no variation was observed using EQ5D.

Conclusions: The VASQoL measure has good internal consistency, test-retest reliability, convergent validity and responsiveness to change for clinically relevant vascular access outcomes. This provides a validated, vascular access specific quality of life measure that can be used in future trials of vascular access, evaluation of new technologies and routine use as a patient reported outcome measure (PROM).

Vein Preservation Strategy: arteriovenous fistulae venepuncture after kidney transplantation

Authors: Damian McGrogan - Department of Transplantation and Vascular Access Belfast Health and Social Care Trust,Rebecca Higgins - Department of Transplantation and Vascular Access Belfast Health and Social Care Trust,Emma Tracey - Department of Transplantation and Vascular Access Belfast Health and Social Care Trust,Teresa Bigmore - Department of Transplantation and Vascular Access Belfast Health and Social Care Trust,Nicole Simpson - Department of Transplantation and Vascular Access Belfast Health and Social Care Trust,Cara Dougan - Department of Transplantation and Vascular Access Belfast Health and Social Care Trust,Agnes Masengu - Department of Transplantation and Vascular Access Belfast Health and Social Care Trust,Emma Borthwick - Department of Transplantation and Vascular Access Belfast Health and Social Care Trust,Jennifer Hanko - Department of Transplantation and Vascular Access Belfast Health and Social Care Trust,
Category: Oral

Aims: Some patients who have undergone successful kidney transplantation have a working arteriovenous fistula (AVF). There is reluctance amongst clinicians and patients alike to utilise these AVF as part of a vein preservation program; instead, other upper limb veins are used for venepuncture potentially impacting future AVF creation sites. The aim of this project was to incorporate AVF venepuncture into the vein preservation strategy at the kidney transplant clinic.

Materials and Methods: Data was collected prospectively for all patients having blood tests taken at a Tuesday morning transplant follow up clinic. Data collected included site of venesection, number of attempts, presence and use of an AVF for venesection, refusal to have venepuncture from anywhere except the antecubital fossa and complaints / complications relating to the use of AVF. As part of the project, staff education and upskilling in the use of AVF for venesection was under taken.

Results: 330 patients were assessed over the course of 13 weeks with an average of 27 patients per clinic. Of those assessed 147 (45%), 47 (14%) and 122 (37%) had bloods taken from their hand, forearm and antecubital fossa respectively. 26 (8%) of patients required more than one attempt at venepuncture. Of those assessed, 20 (6%) had a patent AVF and 14 (4%) agreed for this to be used. All venepuncture from AVF was successful and required a single attempt. One patient reported excessive bruising after venepuncture.

Conclusions: AVF are an excellent access point for venepuncture and improve vein preservation in patients who have a working kidney transplant. Using AVF for blood tests at the outpatient clinic requires staff and patient education including upskilling of staff who have not previously used an AVF for access.

Access surgery for dialysis patients during COVID-19

Authors: Kaifeng Liang - Renal Royal London Hospital,
Category: Oral

Aims: To describe the organisation of a triage system and COVID-19-free surgical pathway, and to assess the outcomes after its implementation for planned dialysis access surgery for patients during the first wave of the COVID-19 pandemic in the UK.

Materials and Methods: In response to the suspension of elective access procedures due to SARS-CoV-2 outbreak, we devised a COVID-19 safe pathway and performed in NHS and an independent hospital. We reviewed the impact of this pragmatic pathway in patients requiring access surgery between 17 April and 15 September 2020. The data was collated from a prospectively collected database and analysed patient safety, access and patient outcomes at day 7, 30 and 3 & 6 months.

Results: A total of 461 procedures were performed, of which 258 cases were done under interventional radiology and 203 were done in theatres or by the bedside. Of the procedures carried out, 160 were tunnel haemolysis line related, 98 were arteriovenous fistula formation, 84 were peritoneal catheter procedures, 23 were arteriovenous grafts, 16 were fistulogram, and 80 others. The postoperative complication rates at day- 7 and 30 and access outcomes at 3 & 6 months were similar to pre-COVID outcomes. No patients acquired COVID-19 or died from its related illnesses in 30 days.

Conclusions: Our results confirmed that our pathway was effective in delivering dialysis access in a timely manner and COVID safe. Our model is safe, easy to replicate COVID-19-free pathway and can be used during similar challenges in the future.

Fistula formation in a 'cupboard' - do we really need theatres?

Authors: Dilan Dabare - Renal Transplant Surgery Royal London Hospital,Christopher Seet - Renal Transplant Surgery Royal London Hospital,Laura - Renal Transplant Surgery Clementoni,Muhammad Khurram - Renal Transplant Surgery Royal London,Ismail Mohammed - Renal transplant surgery Royal London hospital,Rajesh Sivaprakasm - Renal transplant surgery Royal London Hospital,Ben Lindsey - Renal transplant surgery Royal London Hospital,
Category: Oral

Aims: Vascular access formation for an expanding dialysis population remains a logistical challenge. Delays in access formation results in catheter-based dialysis, with an increased risk of bloodstream infections. Simple upper-limb fistula formation is routinely done in conventional theatres using a full theatre team. We sought to challenge this dogma and set up a procedure room service, using only a surgeon and a runner. We compared outcomes - surgical site infections (SSI) rates and primary patency rates at 2 weeks and 3 months - between fistulas formed in the procedures-room vs. theatre.

Materials and Methods: We identified a procedure room on the renal ward (Fig. 1), which was approved by the Infection Prevention and Control (IPC) committee as it met essential criteria - presence of 10 air exchanges per hour, proximity to resuscitation trolley and drug storage facility, wall-mounted oxygen, and water supply for scrubbing.

A standard operating procedure, in line with the National Safety Standard for Invasive Procedures was setup and registered on Risk Register. Radio-cephalic, brachio-cephalic and 1st stage brachio-basilic arterio-venous fistula were formed under local anaesthesia.

Results: Between May 2020 and December 2021, 75 procedure room-based and 50 theatre-based fistulas were performed. Of these 75, 25 'crash-landers' were done acutely before discharge, whilst the rest were elective. Baseline demographics were similar. There were a higher number of radio-cephalic fistulas formed in the procedure room (55% vs 31%) and the operating times were longer (90 vs 74 mins; $p<0.001$). There was similar SSI rates (n=2 vs n=1). 2-week and 3-month primary patency were similar (80% vs 82%; $p=0.78$ and 72% vs 72%; $p=1.00$ respectively)

Conclusions: Procedure-room based AV fistula formation is feasible and produces similar primary patency rates, without any difference in infection rates. Availability of such a programme provides the necessary flexibility to ensure continuity of patient care, regardless of theatre availability. In addition, crash-landers could have fistula assessment and formation done expeditiously, without the need to return for multiple further visits. In the last 12 months, we have performed 250 cases in the procedure room in total and a full cost-benefit analysis is being undertaken.