

Scientific Session II

Long-term Outcomes of the 'Primary Extension Technique' for the prevention of Dialysis Access Steal Syndrome (DASS)

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Category: Oral

Aims: To report long term results of our experience with the 'Primary Extension Technique' (PET) fistula formation to prevent dialysis associated steal syndrome (DASS).

Materials and Methods: All diabetic patients undergoing upper arm autogenous elbow fistula formation using the PET between September 2001 and January 2021 at a single centre. At follow-up all patients were evaluated for patency, adequacy of needling, and the presence or absence of steal symptoms.

Technique: In PET the fistula is formed by anastomosing the median vein with the proximal radial or ulnar artery just below the brachial artery bifurcation.

Results: 73 fistulas in 73 patients. Follow-up 23- 84 months. All patients had diabetes. Nine patients (12.3%) developed cephalic vein thrombosis. In all these cases, the basilic vein was successfully transposed to the existing fistula. In 8 patients (10.9%) the cephalic vein was too deep to needle and required superficialisation. In 3 patients, the flow was preferentially into the basilic vein with poor maturation of cephalic vein. Of these 3 patients there was a small proximal cephalic vein in 1 patient and stenosis in the other 2. One patient who developed DASS is included in the results as they were

Conclusions: Our 20-year experience demonstrates that the PET is a safe and effective procedure for fistula formation with patency rates comparable to brachio-cephalic and brachio-basilic fistulas, as well as effective prevention of DASS. It also has the added benefit of maturation of both the basilic and cephalic veins. The study also shows that this is a high-risk group with a high mortality rate.

Long-term Outcomes of the 'Secondary Extension Technique' for the Treatment of Dialysis Access Steal Syndrome (DASS)

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Aims: The study describes an innovative technique used in clinical practice over a 19 year period for the treatment of DASS. The procedure and long term results are discussed.

Materials and Methods: 29 patients with DASS were recruited over 19 years and treated with the extension technique. All patients were evaluated for resolution of symptoms, patency and adequacy of needling.

Results: Complete symptomatic resolution was seen in 28 of the 29 patients (96.5%), with improvements in pain, sensori-motor disturbance and temperature. It was not possible to perform the procedure in one patient due to

heavy calcification of the brachial artery and its bifurcation. All 28 patients had a patent fistula at six-months follow up. 3 of 28 (10.7%) developed fistula thrombosis which could not be salvaged, and 2 of 28 (7.1%) developed thrombosis successfully salvaged by fistuloplasty at 12-months follow up.

Conclusions: The secondary Extension Technique is an effective treatment for Dialysis Access Associated Steal Syndrome and results have demonstrated a high level of fistula patency and a low rate of complications. It has several advantages when compared to other established treatment methods and has the versatility to be used as a method for DASS prevention as well as treatment.

What are patients' experiences of Cannulation for Haemodialysis?: A Qualitative Systematic Review

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Aims: Cannulation is an essential procedure to be able to use arteriovenous access for haemodialysis. The Chronic Kidney Disease Patient Reported Experience Measure survey identifies that renal patients' experiences of cannulation for haemodialysis is sub-optimal, negatively affecting experiences of renal care. However, this phenomenon is poorly understood. Qualitative studies examining experiences of renal care often illuminate cannulation as an issue, but there is no existing systematic review on this subject.

Materials and Methods: A protocol was developed using ENTREQ and PRISMA-P as guidance and registered on PROSPERO (CRD42019134583). Meta-aggregation was the synthesis methodology used, to allow a complete overview of current research findings and prevent reinterpretation of a poorly understood phenomenon. Two authors independently screened articles, assessed the quality of studies and extracted data. Non-English articles were translated. The meta-aggregation of findings were analysed at a group author meeting. The strength of synthesised findings were assessed using CERQual.

Results: 26 studies were included, producing 3 synthesised findings: 1) Cannulation for haemodialysis is unpleasant and abnormal, causing pain, abnormal appearance, dependency and vulnerability. 2) Necessity for haemodialysis meant success was about painless cannulation and having an unproblematic haemodialysis session. This necessity increased worry about whether cannulation would be successful. 3) Patients survive this unpleasant, necessary and repetitive procedure to enable a life-sustaining treatment. They learn to tolerate cannulation. Feeling safe and exerting control made cannulation easier.

Conclusions: Cannulation for haemodialysis is a difficult procedure for haemodialysis patients to experience. This difficulty is exacerbated by the need for success to receive haemodialysis. Patients' use various techniques to adapt and cope with this procedure, however it remains unpleasant and difficult. The frequency of cannulation, alongside the link with a necessary, life-sustaining treatment, makes cannulation for haemodialysis a unique procedure. This systematic review aims to illuminate patients' experiences of cannulation for haemodialysis, providing insight as to how to promote good cannulation.

What are Patients' Experiences of Cannulation? Developing and Piloting the Patients' Perspectives of Needling Questionnaire

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Aims: Patients' experiences of cannulation for haemodialysis are often poor, causing pain; anxiety about success and complications; and vulnerability. The Chronic Kidney Disease Patient Reported Experience Measure reported needling as the third lowest area of patient satisfaction over the last four years. No questionnaire exists to fully capture patients' perspectives of their cannulation. We aimed to develop a questionnaire, evaluate its validity and reliability and use the questionnaire to describe patients' experiences of cannulation for haemodialysis.

Materials and Methods: We developed the 'Patients' Perspective of Needling' questionnaire (PPN) in 3 phases: 1) Content was guided by a systematic review and meeting with 6 patients from 2 renal units 2) 12 patients assessed the PPN for understandability, relevance and comprehensiveness 3) 99 patients from 2 haemodialysis units completed the PPN on 2 occasions and the SF-VAQ. Data was assessed for internal consistency (IC), convergent validity (CV) and test-retest reliability (TRT). We compared PPN scores of demographic and clinical demographics (DCC) and used thematic analysis to analyse free text comments.

Results: Results demonstrate the PPN was valid and reliable (Understandable 7/7; Relevance 7/7; Comprehensive 6/7; IC 0.934 (95% CI 0.913-0.952); CV with SF-VAQ 0.640 (0.483-0.757), TRT 0.856 (0.787-0.903)). The pain section had the worst median PPN score (3.67 (IQR 3.38-3.96)), then worry (2.84 (2.51-3.17)) and problems with cannulation (2.75 (1.88-3.38)). There were small difference in PPN scores for differing DCCs, with only ethnicity showing significance. The thematic analysis generated three themes: Difficulties with cannulation; Variation in experience; How participants coped with cannulation.

Conclusions: We have developed a questionnaire to measure patients' perspectives of cannulation for haemodialysis. Analyses provide reassurance of validity and reliability of the PPN questionnaire. We found little significant differences between the DCCs that we compared, which is likely due to a small sample size. Thus, we cannot assume an absence of differences in PPN scores between sub-groups. Free text comments provided context to patients' experiences of cannulation, emphasising the unpleasantness of the procedure and adding the variability of cannulation and how participants coped with this.

Implementing MAGIC and Improving Cannulation Practice

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Aims: Arteriovenous (AV) access is the optimal form of vascular access for most haemodialysis patients. Cannulation is a challenging but necessary procedure to be able to use AV access for haemodialysis. However, cannulation practice continues to be sub-optimal, with large variations between renal units. In 2018, the BRS and VASBI launched a national set of cannulation recommendations. Managing Access by Generating Improvements in Cannulation (MAGIC) is a quality improvement project designed to facilitate units implementing these recommendations, aiming to improve cannulation practice across the UK.

Materials and Methods: MAGIC includes four phases: baseline measures, staff education, patient awareness and a region designed phase. It includes materials to assist units in improving cannulation, including a measurement strategy, an eLearning package and awareness materials designed for patients. These materials are implemented in Plan-Do-Study-Act cycles in the four phases, alongside local initiatives. The Kidney Quality Improvement Partnership

(KQuIP) assists regions in implementing MAGIC. Data has been collected and amalgamated from the first 2 regions completing MAGIC, to identify the impact of MAGIC to date.

Results: Data collection spanned 11 months (M1-M11), with 3,480 cannulation events audited from 18 different main and satellite units. Yorkshire and Humber implemented the staff education phase at Month 5 (M5) and North West at Month 7 (M7). Use of rope ladder and buttonhole cannulation increased (M1=53.0%; M5=64.9%; M7=63.3%; M11=78.9%). Missed cannulation was identified on 226 occasions (6.5%) with an increase (M1=5.2%; M5=8.7%, M7=7.0%; M11=13.5%). There was a small increase in AV access rates (M1=74.4%; M5=73.8%; M7=74.1%; M11=77.6%).

Conclusions: MAGIC is leading to an improvement in cannulation technique used for haemodialysis, with increased use of rope ladder and/or buttonhole cannulation, with a corresponding reduction in area puncture. There has been an increase in missed cannulation. We anticipate that as expertise in new practices becomes embedded, missed cannulation should reduce. MAGIC is being implemented in 6 further regions (North East, North Wales, South West, Northern Ireland, Scotland and London). It is anticipated that improved cannulation practice associated with MAGIC will result in better longevity of AV access.

To determine predictors for re stenosis after PTA for native AVF dysfunction, and evaluate its safety and efficacy.

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Aims: PTA is now first line procedure for the management of AVF stenosis. Post PTA recurrent AVF stenosis is a significant challenge, however, literature available on predictors for post PTA recurrent dysfunction is scarce. Aim of our study is to determine any significant clinical predictors for restenosis after PTA and to determine safety and efficacy of PTA in the management of AVF dysfunction.

Materials and Methods: Data collected on 103 patients with ESRD on HD. Only those patients (83) included in our study who had at least 12 months of follow up. All clinically suspected cases were confirmed with US doppler by IR. Data on demographics, type of AVF, clinical indicators of stenosis, type of stenosis, outcomes of intervention and post intervention recurrence during follow-up of 12 months was collected. Patients with recurrent stenosis & repeated interventions (>1) was compared with patients who had only 1 intervention. Data analysed using cross tabulation & binary logistic regression analysis in SPSS.

Results: Post intervention primary patency rates at 3, 6, 12 months were 98%, 82% & 65% respectively. Restenosis rate was 35%. Commonest clinical predictor for stenosis was reduced flow by transonic (44%) followed by difficulty in cannulation (27%). In comparing patients with vs without recurrent stenosis, higher occurrence of restenosis in patients with DM(69%), age ≥ 50 yrs (100%), male gender (59%), HTN (55%) and AVF ≤ 12 months old (55%). Presence of DM was the most significant predictor for restenosis (sig 0.05 [$p=0.05$]). PTA clinical success rate was 99%. 3 (4%) patients had complications.

Conclusions: Our study showed that older age, male gender, diabetes, hypertension and age of AVF increases the risk of recurrence of stenosis after fistuloplasty. Presence of diabetes was the most significant predictor for restenosis post fistuloplasty. Our study emphasised favourable safety and efficacy of PTA in the management of AVF dysfunction with a reasonable success rate and low complications rate. Improving knowledge on the clinical predictors for re-stenosis after PTA will enable us to devise surveillance programs to help maintain AVF patency.