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Which strategy is better for patients requiring dialysis, fistula creation or graft insertion first?

Submission date
17/11/2022

Recruitment status
No longer recruiting

Registration date
08/02/2023

Overall study status
Ongoing

Last Edited
08/02/2023

Condition category
Urological and Genital Diseases

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
The kidneys perform a vital function in regulating many chemicals and water in the blood. When the kidneys become diseased, these functions may be affected and if severe enough, can lead to a life-threatening buildup of chemicals and water in the body. A kidney transplant is the ideal treatment of this, but most patients with kidney failure need a period of dialysis – where blood is removed from the body, cleaned in a dialysis machine, then returned. The key to this process is the connection to the dialysis machine to allow blood removal and return, and this is called vascular access. Vascular access is vitally important and is often called a patients' lifeline.
There are three types of vascular access and each have differing plus and minus points. A tunnelled central venous catheter (TCVC) or 'line' is often used in emergencies, but has the highest rate of infections, lasts the least amount of time, and can lead to long-term problems with the main draining veins. Thus a long-term TCVC is best reserved for patients unable to obtain other types of access. An arteriovenous fistula (AVF) is the best form of vascular access with the longest lifespan and the least number of complications when they are working. However, the downside of an AVF is that they are the hardest to get working with up to half failing – and then a TCVC is needed. Because of this failure rate, patients often get operations a long time before they need dialysis to have a few chances to get the AVF up and running. But this means that many will get an operation that is not needed as their kidneys keep on going.
The third type of vascular access is called an early cannulation arterio-venous graft (ecAVG). ecAVG has some big advantages - they can be used immediately and have a high rate of immediate success, which means that this can just be put in when needed and avoid unnecessary operations. However, there is a downside - ecAVGs need higher maintenance and may not last as long.
Thus, there is uncertainty about what is best – an AVF which may be a better long-term option but have high initial failure rates, or ecAVGs which have high initial success but need more long-term maintenance. For some people, the veins and arteries may be a bit small and thus the chances of an AVF operation working are less than 50/50. This study tries to determine which is best for patients like this, who are needing to start dialysis within 6 months – trying to get an AVF to work or waiting and putting in an ecAVG when needed.

Who can participate?
Patients aged 18 years and over with end-stage kidney failure

What does the study involve?
Patients who enter the study will get either an AVF now or wait and get an ecAVG when needed. This decision will be made randomly – like tossing a coin. The operations are very standard and commonly done in the centres involved in the trial, each of which has very good outcomes. The researchers will keep a very close eye on any complications, treatments or admissions to the hospital that happen over the following 2 years, and every 3 months be asking questions about patients' vascular access and how they are finding it. From all this information they will be able not only to tell which option works best, but which option patients like best. This information will change how we provide this service not only in the UK, but throughout Europe and the world.

What are the possible benefits and risks of participating?
There is no direct benefit to taking part in this study, and patients would be receiving vascular access surgery and follow-up whether they took part or not. It is hope that in the future patients will benefit from the knowledge gained by doing this trial.
There are no additional risks over and above those experienced in standard of care for these procedures. For fistulas, about half of people will need additional surgery and around a third of fistulas will not be used in the next year. For grafts, the most common problem is that they require more maintenance, particularly in the area the graft joins the vein. This often narrows and is usually treated with a balloon stretch (angioplasty).

Where is the study run from?
NHS Greater Glasgow and Clyde (UK)

When is the study starting and how long is it expected to run for?
June 2020 to December 2027

Who is funding the study?
Kidney Research UK

Who is the main contact?
Miss Clare Dolan, clare.dolan3@ggc.scot.nhs.uk

Contact information

Type(s)
Public

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Additional identifiers

Integrated Research Application System (IRAS)
275310

Central Portfolio Management System (CPMS)
54766

Protocol serial number
GN19RE247

Study information

Scientific Title
A randomized trial of initial strategy of Acuseal versus fistula first in incident patients requiring haemodialysis with sub-optimal options for an arteriovenous fistula

Acronym
StAFF

Study objectives
This study aims to change the strategy of initial vascular access in incident patients with a sub-optimal option for an arteriovenous fistula (AVF) by determining if an immediately usable arteriovenous graft (Acuseal) when dialysis is required would be a better option (procedure, costs, and quality of life) than a strategy of pursuing a native AVF pre-emptively.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 27/01/2023, West of Scotland REC 3 (West of Scotland Research Ethics Service, Ground Floor Ward 11, Dykebar Hospital, Grahamston Road, Paisley PA2 7DE, UK; +44 (0)141 314 0212; WoSREC3@ggc.scot.nhs.uk), ref: 22/WS/0177

Primary study design
Interventional

Study design
Multi-centre multi-national randomized trial

Study type(s)
Treatment

Health condition(s) or problem(s) studied
End-stage renal failure

Interventions
Participants will be randomized during the screening visit using a central randomization facility accessed online via an interactive web-based randomization system (IWRS) hosted by the Robertson Centre for Biostatistics, University of Glasgow. Patients will be randomized to either

creation of an AVF or Acuseal in a 1:1 ratio, using a minimization algorithm with a small random element to ensure balance across recruitment sites and key baseline measures.

Intervention Type
Procedure/Surgery

Primary outcome(s)
Time to vascular access abandonment as measured by the time from procedure to loss of patency of vascular access. This will be measured at 6 weeks post procedure (visit 3) and thereafter 3 monthly at month 3, month 9, month 12, month 15, month 18, month 21 and month 24.

Key secondary outcome(s)
1. Cost of patient care in each arm will be analysed by a health economist. Healthcare resource use data will be collected by electronic case report form (eCRF) from the trial and supplemented from external routine sources, including Hospital Episode Statistics (England) and equivalent databases for other UK nations where feasible. This will be classified into intervention-related resource use (e.g. medical consumables and medicines utilised, the time required to perform the procedure, intervention medical team composition including relevant NHS bands, length of stay etc.) and access-related/follow-up resource use (e.g. access-related complications and hospitalisations, re-interventions, creation of alternative access, GP/nurse/Allied Health Professional/outpatient visits, ambulance attendance, A&E attendance, inpatient admissions, critical care stay). Adverse events related to the intervention that result in resource utilisation will also be recorded and included in the analysis. This will be calculated for the duration the patient is in the trial.
2. Quality of life will be measured by VAS-QoL and EQ-5D. EQ-5D only will be assessed at visit 1 screening and visit 2 procedure. EQ-5D and VAS-QoL will be assessed at Visit 3 Post Operative visit and 3 monthly during visits 4-11.
3. Primary-assisted patency, defined as the interval from the time of access placement until access thrombosis, or the time of measurement of patency, measured by the medical opinion of the staff attempting to use the vascular access for dialysis treatment. This will be measured once access has been established for the duration the patient is in the trial.
4. Functional (secondary) patency, defined as the interval from the time of access placement until access abandonment, thrombosis, or the time of measurement of patency including preceding successful interventional or surgical procedures to maintain or re-establish patency. This will be measured for the duration of the trial.

Completion date
31/12/2027

Eligibility

Key inclusion criteria
1. Age ≥18 years at the time of informed consent
2. Capable of complying with Protocol requirements, including follow-up
3. Incident patient with end-stage renal failure (ESRF)
4. The time of estimated renal replacement therapy (RRT) or haemodialysis is anticipated within the subsequent 6 months, or have already started within the previous 21 days prior to recruitment (urgent vascular access to provide life-sustaining haemodialysis will not be an exclusion)
5. Sufficiently fit to withstand initial surgery and maintenance procedures

6. Have contemporary vein and arterial mapping with ultrasound (US)
7. No scheduled immediate transplant within the next 60 days
8. No previous vascular access procedures other than central venous catheter for urgent haemodialysis of duration <3 weeks
9. One or more adverse factors to the successful creation of an AVF in the opinion of the surgeon, such as:
9.1. Anatomical factors:
9.1.1. Wrist: artery <2.5 mm, vein <3 mm
9.1.2. Elbow: artery <4 mm, vein <4 mm
9.1.3. Poor arterial quality due to calcification, occlusion
9.1.4. Aberrant anatomy
9.2. Technical factors:
9.2.1. Distance to skin surface >5 mm
9.2.2. Length of vein for cannulation <6 cm
9.2.3. Need for transposition or superficialisation – either before AVF created or after AVF has been created if unsuitable before
9.3. Patient factors:
9.3.1. Age >65 years
9.3.2. Diabetes mellitus
9.3.3. BMI >29 kg/m²
9.3.4. Other patient factors e.g. preservation of a dominant arm and poor vessels in the non-dominant
10. Suitable anatomy for placement of an ecAVG (Gore Acuseal), not necessarily in the same limb

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Sex
All

Key exclusion criteria
1. Been treated in a drug study within 60 days of study enrollment
2. Pregnant at the time of consent
3. Life expectancy <1 year
4. Not likely to require hemodialysis within 6 months
5. Commencing hemodialysis more than 3 weeks prior
6. Having a tunnelled central venous catheter (TCVC) with an anticipated duration >3 weeks
7. Vessels not suitable for an AVG (advised minimum size 4.5 mm inflow brachial artery, 3 mm radial artery, 3 mm vein – complete details in SOP)
8. A good option for an AVF (>50% likelihood of success) in a suitable upper limb that includes all anatomical favorable measurements and characteristics: wrist – radial artery >3 mm AND cephalic vein >3 mm AND cephalic vein length >6 cm AND less than 5 mm from skin surface;

elbow – brachial artery >4 mm AND cephalic vein >4 mm AND cephalic vein length greater than 6 cm AND less than 5 mm from skin surface. These are not absolute and should be taken in the context of a clinical decision.
9. A history or evidence of severe systemic disease including:
9.1. Cardiac disease (NYHA Functional Class III or IV, evidenced by the inability to lie flat), myocardial infarction in the 6 weeks prior to randomisation, ventricular tachyarrhythmia requiring continuing treatment, unstable angina
9.2. Systolic blood pressure < 90 mmHg, unless willing to take anti-coagulants
9.3. Uncontrolled diabetes, evidenced by recurrent hyopglycaemic attacks/hyperglycaemic episodes)
9.4. Stroke within 1 month of study entry
9.5. History of cancer (excludes basal cell cancer) with active disease or active anti-tumour (cytotoxic) treatment within the previous year
9.6. Suspected or documented hyper-coagulable state, unless willing to take anti-coagulation
9.7. Bleeding diathesis
9.8. Active clinically significant infection (WBC >15,000 cells/mm^3) other than treated CVC use
10. Known or suspected central vein stenosis/occlusion on the side of planned access
11. History of heparin-induced thrombocytopenia
12. Biological immunosuppression
13. Any other condition which in the judgment of the investigator would preclude adequate evaluation of the safety and efficacy of the Acuseal / fistula e.g. poor compliance
14. Unwilling or unable to attend standard 3-monthly surveillance

Date of first enrolment
28/02/2023

Date of final enrolment
01/02/2025

Locations

Countries of recruitment
United Kingdom

England

Scotland

Wales

Greece

Italy

Spain

Study participating centre
NHS Greater Glasgow and Clyde
J B Russell House

Gartnavel Royal Hospital
1055 Great Western Road Glasgow
Glasgow
United Kingdom
G12 0XH

Study participating centre
Guys and St Thomas' NHS Foundation Trust
249 Westminster Bridge Road
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Study participating centre
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E1 2ES

Study participating centre
Cardiff & Vale University Lhb
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Study participating centre
Insubria University Hospital
Department of Vascular Surgery and Department of Surgical Sciences
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Study participating centre
Hospital Clinic de Barcelona
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Sponsor information

Organisation
NHS Greater Glasgow and Clyde

ROR
https://ror.org/05kdz4d87

Funder(s)

Funder type
Charity

Funder Name
Kidney Research UK

Alternative Name(s)

Funding Body Type
Private sector organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan

With relevant permissions anonymised published data will be made available on request on completion of the study.

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
HRA research summary			26/07/2023	No	No