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Paclitaxel assisted balloon angioplasty of venous stenosis in haemodialysis access: PAVE trial

Submission date
28/10/2015

Recruitment status
No longer recruiting

Registration date
28/10/2015

Overall study status
Completed

Last Edited
08/11/2023

Condition category
Circulatory System

[X] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Chronic kidney disease (CKD) is a long-term condition where the kidneys do not work properly. In a healthy person, the kidneys are vital for filtering out the waste products and excess water in the blood, and converting them into urine. In patients suffering from CKD, the kidneys are unable to do this, and so the body is unable to get rid of the waste products building up in the blood. Haemodialysis is one of the most common treatments for CKD patients, and involves diverting the blood into an external machine so that it can be “cleaned”, before being returned to the body. Haemodialysis requires direct access to the circulatory system (blood stream) and the best option for this is a by creating an arteriovenous fistula (AVF), which is made by surgically joining an artery and a vein in the arm. AVFs have a limited lifespan, and over time become narrowed (stenosed) or blocked (thrombosed). This can lead to a patient being admitted to hospital to have emergency lines fitted in their neck, which can cause infection. The fistula can be used for haemodialysis again if it is “re-opened”. This is done by inflating a small balloon inside the fistula to flatten any blockages against the artery wall (fistuloplasty). In many cases however, the narrowing (stenosis) can return, re-blocking the fistula. Studies have shown that in the legs and heart, using a balloon coated with certain drugs, such as paclitaxel, can prevent cells from multiplying and re-blocking the artery. The aim of this study is to find out whether using paclitaxel coating balloons in a fistuloplasty procedure can help to prevent later AVF stenosis.

Who can participate?
Adults who have a narrowed AVF, which has been used for haemodialysis at least 12 times.

What does the study involve?
Participants are randomly allocated to one of two groups. Both groups receive the standard fistuloplasty procedure, in which a plain balloon is inflated until the fistula becomes wide enough to become usable. Those in the first group then receive a second fistuloplasty with a balloon coated in a drug called paclitaxel, which is inserted and inflated until it touches the wall of the blood vessel and transfers the paclitaxel onto the blood vessel wall. Those in the second group receive a second fistuloplasty with a balloon which is not drug coated. Participants attend regular follow-up appointments so that the openness (patency) of the fistula can be monitored.

What are the possible benefits and risks of participating?
Participants who receive the drug coated balloon treatment may have the chance of a better outcome for their fistula. Risks of participating are minimal, however the fistuloplasty procedure may be uncomfortable and cause pain.

Where is the study run from?
Guy's Hospital, London (lead centre) and five other NHS hospitals in England (UK)

When is the study starting and how long is it expected to run for?
November 2015 to November 2017

Who is funding the study?
National Institute for Health Research (UK)

Who is the main contact?
Leanne Gardner, leanne.gardner@kcl.ac.uk

Contact information

Type(s)
Public

Contact name
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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
CPMS 20038

Study information

Scientific Title
Paclitaxel assisted balloon Angioplasty of Venous stenosis in haEmodialysis access: The PAVE trial. A multicentre double-blind randomised controlled trial in haemodialysis patients with a stenosis in a native arteriovenous fistula

Acronym
PAVE

Study objectives
The aim of this study is to compare the efficacy of additional paclitaxel-coated balloon fistuloplasty to plain balloon fistuloplasty only to preserve the patency of arteriovenous fistulae used for haemodialysis.

Ethics approval required
Old ethics approval format

Ethics approval(s)
London - Chelsea Research Ethics Committee, 12/05/2015, ref: 15/LO/0638

Study design
Double-blind multicentre randomized controlled trial

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Topic: Renal disorders; Subtopic: Renal disorders; Disease: All Renal disorders

Interventions
Participants are randomised into one of two arms.

Intervention arm: Participants will receive standard-of-care fistuloplasty with a plain balloon, followed directly by insertion of a paclitaxel-coated balloon.
Control arm: An identical procedure is followed, but using a placebo balloon that is not drug coated.

Follow-up for both trial arms is every 3 months post-treatment. Participants in both trial arms who have not reached the primary outcome measure at 6 months post-recruitment will be invited to undergo a protocol fistulogram. Follow-up length is variable, and between 1 and 3 years; follow-up will end when the last recruited participant has been followed for 1 year.

Intervention Type
Procedure/Surgery

Primary outcome(s)
Time to end of target lesion primary patency* is determined through AVF imaging when patient is referred for a re-intervention, at any point during follow-up (1-3 years).

*Primary patency fails when any of the following occur:
1. Clinically driven re-intervention to the treatment segment
2. Thrombotic occlusion that includes the treatment segment
3. Surgical intervention that excludes the treatment segment from the access circuit
4. Abandonment of the AVF due to an inability to retreat the treatment segment

Key secondary outcome(s))
1. Angiographically determined late lumen loss; measured on a protocol fistulogram at 6 months by an independent core laboratory
2. The rate of angiographic binary re-stenosis; measured on a protocol fistulogram at 6 months by an independent core laboratory
3. Time to end of access circuit primary patency* measured at a referred re-intervention, at any point during follow-up (1-3 years)
4. Time to end of access circuit cumulative patency (when the AVF is abandoned, regardless of radiological or surgical intervention, with or without a thrombosis event) measured at a referred re-intervention, at any point during follow-up (1-3 years)
5. Procedural success determined by measuring residual stenosis (≤ 30%) on post-procedure fistulogram, after treatment fistuloplasty
6. Number of thrombosis events measured at end of follow-up (1-3 years)
7. Total number of interventions measured at end of follow-up (1-3 years)
8. Adverse events (e.g. fistula rupture, infection) measured at end of follow-up (1-3 years)
9. Patient quality of life measured using the EuroQuol EQ-5D generic health survey, and the disease specific Patient (or Palliative care) Outcome Scale symptom score-renal (POS-S Renal) at baseline, 6, and 12 months

*Ends when any of the following occur:
1. Access circuit thrombosis
2. An intervention (either radiological or surgical) anywhere in the access circuit
3. The access circuit is abandoned due to an inability to treat any lesion

Completion date
04/10/2019

Eligibility

Key inclusion criteria
1. Patients (18 years or over) who have a native AVF in the arm that has been used for at least 12 consecutive dialysis sessions
2. An indication for a fistuloplasty as determined by the local clinical team
3. The access circuit is free of synthetic graft material or stents
4. A reduction of vessel diameter of greater than or equal to 50%, and a reference diameter of the outflow vein of at least 4 mm and less that the diameter of the largest available paclitaxel-coated balloon
5. A residual stenosis of 30% after plain balloon fistuloplasty

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Sex
All

Total final enrolment
212

Key exclusion criteria
1. Patient unable to give informed consent
2. Patient unwilling or unable to comply with all study-related procedures
3. Systemic or local (to the fistula) infection treated for less than 10 days prior to the study procedure
4. Synchronous venous lesion, with a reduction of vessel diameter of greater than or equal to 50% measured angiographically, in the same access circuit
5. Location of stenosis beyond the thoracic inlet
6. Thrombosed (failed) dialysis circuit at time of treatment
7. Women who are breastfeeding, pregnant or are intending to become pregnant or men intending to father children, within 2 years of study treatment
8. Known hypersensitivity or contraindication to contrast medium which cannot be adequately pre--medicated
9. Known hypersensitivity or contraindication to paclitaxel

Date of first enrolment
29/10/2015

Date of final enrolment
31/10/2017

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Guy's Hospital
Guy’s and St Thomas’ NHS Foundation Trust
Great Maze Pond
London
United Kingdom
SE1 9RT

Study participating centre
King’s College Hospital
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Study participating centre
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Brighton and Sussex University Hospitals NHS Trust
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Sponsor information

Organisation
Kings College London

ROR
https://ror.org/0220mzb33

Funder(s)

Funder type
Government

Funder Name
National Institute for Health Research

Alternative Name(s)
National Institute for Health Research, NIHR Research, NIHRresearch, NIHR - National Institute for Health Research, NIHR (The National Institute for Health and Care Research), NIHR

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		01/08/2021	03/08/2021	Yes	No
Results article		01/09/2021	08/11/2023	Yes	No
Protocol article	protocol	12/05/2016		Yes	No

HRA research summary			28/06/2023	No	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes