Guidelines in the management of patients undergoing AVF procedures and the subsequent care needed to maintain AVF function.

Dr J Nicholas – February 2011. – Reviewed + updated - 2016.

Introduction.

All care has to be taken to ensure that AVF surgery outcomes are optimal and patient selection and preparation is key. Hypovolaemia and hypotension must be avoided and optimal AVF needling techniques utilised to ensure patients and their fistulae are preserved.

This document outlines guidance in the management of patients undergoing AVF surgery and their ongoing care and has an appendix of outcomes to guide patient care.

Steps needed to prepare patients

It has been agreed that the Renal Unit will be given sufficient warning of all operation dates to be certain that patients are stable enough to undergo surgery and to offer effective coordination with all concerned.

The Vascular Access Team (VA Team) must be informed dates for all surgeries. The VA Team will then ensure that the process of coordination is addressed and all teams informed.

All patients due to undergo surgery can be reviewed at least weekly by the teams involved. If there are issues associated with any patient, these can be discussed with the relevant supervising consultants and measures taken to address them.

If needed, direct nephrologist to surgeon discussions should occur to address problems which have been highlighted.

Volume status.

All dialysis patients should be maintained at their ideal weight. In reality, this concept cannot be easily achieved as patients do suffer intercurrent illnesses which will perturb their situation. Once a surgical date has been defined, the optimal weight and blood pressure profile needed to support surgery will need to be indentified. This can be achieved by the doctors and nurses managing the patients in their specific areas. A clinical assessment of the patient's volume status and any necessary adjustment to that status will need to be actioned.

For HD and PD patients and their volume status.

As patients can develop hypotension following any procedure/ anaesthesia, it is adviced that the patient is maintained at least a Kg above their dry weight for at least a month to ensure that the fistula will not fail as a result of hypotension.

However, If patients are hypertensive (>160/90 mmHG – pre dialysis) and/or has excessive interdialytic weight gains (>3kG) or are relatively hypotensive (<130/90 mmHG – pre dialysis), these must be reviewed by the nephrologist managing their care, enabling the identification of the appropriate volume and blood pressure profile for the person.

If a patient is over hydrated, there is a considerable risk of pulmonary oedema and such a situation must be avoided.

For CKD or transplant patients and their volume status.

The patients should be reviewed by the consultant managing their care. Diuretics and blood pressure medications will have to be adjusted to avoid hypo/ hypertension. If informed in time, the Chronic Kidney Disease Team will review the patient ahead of the operative date and discuss the patient with the supervising consultant.

Steps needed to monitor patient around operative days.

HD patients

Haemodialysis prior to surgery is needed to ensure that patients are in a stable state in terms of biochemical and haemodynamic profiles. Ideally, the patient should be dialysed 12 hours prior to surgery and all steps taken to avoid hypovolaemia or hypotension.

There can be difficulties on a Monday theatre list. Ideally, the patient should be dialysed at the earliest slot and hypotension avoided. If there are any concerns, the patient should be reviewed by the oncall Nephrologist. For all other patients, a dialysis session on the afternoon or late shift, day before surgery should ensure that the person is prepared for theatre. The serum chemistry should be checked by 08:00 hrs to be certain that there are no complications associated with hyperkalaemia.

PD patients.

Patients could continue with their PD treatments whilst undergoing AVF surgery. Again their BP, volume status and medications should have been assessed to avoid hypotension.

CKD and Transplant patients.

BP and volume status should have been assessed to avoid hypotension. Diuretics and antihypertensive agents may need to be discontinued.

Post op care.

All patients discharged from the surgical team are reviewed in the clinical areas (HD, PD , CKD or Transplant). It is common for the HD patients to have their AVF reviewed on each session they do attend for dialysis.

In the case of CKD/ Transplant patients, It is common for the patients to be seen by the nurse teams on the day of discharge, a week later, then at week 3 , followed by an appointment in the clinic in the subsequent month. The fistulae are reviewed at each clinic attendance to be certain that function is

maintained. Based upon clinical need, the frequency of reviews can be increased.

Formalised review of AVFs postoperatively have been undertaken by Sister Spooner to support this process.

If there are concerns of fistula dysfunction, the consultant managing the patient's care/ VA Team must be contacted to address what other interventions are required. Referral for radiological, surgical interventions can be directed following such a review.

Given the issues of concerns of early AVF failure and supervision of these cases, the mechanisms of AVF review must be recorded appropriately in the Renal IT system. The individuals involved in supervising these aspects will receive the appropriate training to do so.

Needling of AVF/ AVGs after construction.

Vascular grafts in general can be utilised within a few weeks of placement. It is common that the surgical team has specified when the graft can be needled. If there is uncertainty, please contact the nephrologist managing the patient's care or the VA Team.

AVFs can be used within six to eight weeks after a period of maturation. However, brachio-basilic fistulae will need a longer period of time to allow for the two stages of surgery.

Ideally, area puncture of AVFs/AVGs must be avoided. Needling audits of fistulae must be carried out to evaluate practice and preserve fistula function.

If there is any doubt or there are complications associated with needling a fistula the patient must be seen by the supervising nephrologist and the nurse in charge of the patient's care.

AVF surveillance.

All access used in HD patients are reviewed by the nursing and medical staff on a regular basis. AVF/AVGs have their function assessed using the Transonic device measuring access flow rates. If there are concerns of dysfunction, the patient must be reviewed by the supervising consultant/ VA Team and appropriate radiological/ surgical interventions arranged.

When to remove dialysis lines after AVF/AVG utilisation?

Once the fistula or graft has been utilised, it is important that the dialysis line (if used) is removed at the earliest opportunity. As a guide, the line should be removed after the sixth successful dialysis session, where an AVF/AVG has been used completely. If there are difficulties in needling the fistula adequately and/or factors hindering line removal, the patient should be discussed with the supervising nephrologist/ VA Team. In these cases the patient may require radiological/surgical interventions to improve the performance of the vascular access to enable better dialysis and line removal.

The far Infra red devices are being used in New Cross, Pond Lane and Cannock units to support the maturation of fistulae.

Patient education.

All patients undergoing AVF/AVG surgery are counselled about the procedures and have been given an educational leaflet about the care of their vascular access. The leaflet further explains the manner in which a fistula should be needled and tries to ensure that regional puncture of AVFs are avoided.

In order to ensure adequate maturation of fistulae, the Vascular Access Team and CKD nurses have offered extra sessions to educate the patients about the types of excercises to undertake.

In addition all patients are informed about the relative merits of a fistula rather than the reliance on a dialysis catheter for haemodialysis access. These aspects are reinforced in the haemodialysis clinics.

Patients with fistulae are offered wrist bands to identify their status and to minimise trauma to the fistula arm as a result of unsafe cannulations.

Patients have been adviced to check their own vascular access on a regular basis, and in cases of AVF failure, they have been instructed to contact their renal units directly, if there are any concerns. All details are offered in a patient leaflet.

Glossary: AVF – arteriovenous fistula; AVG – vascular graft; CKD – chronic kidney disease; HD – haemodialysis, CAPD or PD – peritoneal dialysis. BP – blood