

CLINICAL GUIDELINES SUPPORTING THE USE OF BUTTONHOLE NEEDLING at SaTH NHS Trust

Lead Clinician: Dr Steve Davies Renal Consultant
Division: 1 (Unscheduled Care)
Implementation date: 16th September 2014
Last updated: Oct 2013
Last review date:
Planned review date: August 2015
Department: RENAL
Directorate: DIVISION 1
Hospital Site: SaTH
Keywords: BUTTONHOLE NEEDLING
Comments: Authors: Sr Jenny Vickers – Lead Nurse HHD
Sr Pam Williams – Renal Training & Education Lead
Sr Oonagh Le'Maitre – Operational Manager

BUTTONHOLE CANNULATION OF ARTERIO-VEINOUS FISTULAS (AVF)
PROCEDURE FOR CREATING A BUTTONHOLE TRACK

1.0 INTRODUCTION

Due to the precarious nature of the track, and increased risk of infection associated with buttonhole needling, at SaTH NHS Trust, our policy is to only offer teaching of the buttonhole technique to patients who needle themselves and/or their carer who is the main needler.

The patient needs to be assessed as to whether they are a candidate for buttonhole needling by the senior dialysis nurse and the access nurse.

2.0 AIM/PURPOSE

To give guidance to the multidisciplinary renal team for the referral and assessment of potential patients for the HHD and/or Minimal care programme at SaTH NHS Trust.
To successfully needle fistula safely using the buttonhole technique.

3.0 OBJECTIVES

To clarify the patient criteria

To ensure all renal staff are aware of the procedure for assessment of the patient for suitability for buttonhole needling.

To ensure all renal staff are trained and competent in the supervising of patients during buttonhole cannulation.

4.0 DEFINITIONS USED

HHD – Home Haemodialysis

AVF – Arterio-Venous Fistula

Buttonhole - cannulation – method of needling the fistula

Rope- ladder needling – method of needling the fistula

5.0 SPECIFIC DETAIL / TRAINING

Buttonhole cannulation involves developing a ‘track’ into the fistula in exactly the same site at exactly the same angle and depth each time (as opposed to area needling, whereby the same area is cannulated in different sites, leading to overall weakening of the vessel wall causing aneurism formation). The track, similar to a body piercing is developed with sharp or ‘conventional’ needles and after about 6-9 sessions it is possible to use blunt

(dull) needles. It consists of a track through the skin as well as a flap in the vessel wall that closes in between dialysis sessions.

ASSESSMENT

Ensure that the patient is deemed suitable for the buttonhole technique

- ie -patients who have a history of cardiac problems or valve replacement surgery
- -patients who have a past or present history of MRSA/MSSA,
- patients who have dermatological problems
- patients who lack good personal hygiene
- The patients suitability for buttonhole needling

All of the above patients need very careful consideration and assessment from the vascular nurse, a senior dialysis nurse and a renal consultant to establish suitability for buttonhole needling.

Unless you are experienced in buttonholing DO NOT ATTEMPT without supervision

Do a complete physical assessment on the access – inspect, auscultate and palpate.

Determine the best two sites on the access – good arterial and venous pressures and good blood flow rate.

Look for straight, not over-used sections of the fistula

Consider who will be accomplishing the cannulation – Ideally the patient will be taught to needle himself.

Consider delaying the track formation to allow for one nurse to be scheduled to needle. Rearranging a patient's dialysis schedule may be a temporary option to assist continuity.

If the vessel is very small, consider 'rope ladder' needling of the fistula until larger needles can be inserted, before starting track formation.

Stay away from aneurysm areas

SITE SELECTION

Assess the fistula in the usual way for bruit, vessel size and depth, tortuosity and skin integrity. Do not proceed if any infection is present.

As with any other cannulation, select sites with a reasonable distance between them to avoid re- circulation.

If possible use a straight portion of the vessel.

SKIN PREP/SCAB REMOVAL (FOR SUBSEQUENT CANNULATIONS)

Use personal Protective Equipment, as per Unit Policy

Encourage patient to wash fistula arm with soap and water before sitting down (K/DOQI 2001). This may be met with resistance from patients, but skin of patients on dialysis has been shown to have more Staphylococcus Aureus than in the general population.

Ensure the work table is clear of any other equipment, patient belongings or paperwork (as per Unit Policy), and clean using wipes.

Use aseptic, no touch technique as per Unit Policy to prepare required equipment.

Follow the current unit Standard Operating Procedure for skin preparation (Chloroprep) therefore – USE FOUR CHLOUOPREP APPLICATORS, 2 BEFORE and 2 AFTER scab removal. This is essential to reduce the risk of infection.

Treat the two buttonhole sites separately – all equipment must be different, chloroprep, picks, etc.

Don't flip the scab off with the needle you will use for cannulation – this contaminates the needle.

Scabs to be removed with 'steri-picks' provided with the blunt needles. Scabs should not be picked off or removed with any sharp needle for the sake of introducing infection and/or making track bigger. If there is no pick then a filter needle can be used.

Remind patient that scabs should never be picked off with their finger nails.

Ensure the WHOLE scab has been removed (ideally in a single piece).

If scab removal is difficult with steri-picks alone, soak the scabs with saline soaked gauze.

CANNULATING THE TRACK

Ensure that the patient knows the importance of the positioning of the arm – same height, same angle same placing of tourniquet – diagram on patients dialysis prescription if necessary. Always use a tourniquet.

Local Anaesthetic

The preferred choice of local anaesthetic if needed, for buttonhole needling is Emla Cream. This ensures that the scab is softened for removal and the fistula can then be cleaned properly after removal of the cream.

Local anesthetic (Lidocaine 1%) should not be used.

Select needle size appropriate for the size of the vessel and appropriate for the blood flow rate

BFR 300 to 350 ml/min – 16 gauge needle

BFR 350 to 450 ml/min– 15 gauge needle

Sharp and blunt needle gauges need to be the same

Use the correct length of needle – 1” for normal depth fistula and 1 ¼ “for deep fistulas.

Advance sharp needle gauges as you normally would, but use the same sites

When you have reached the ordered needle gauge, continue cannulations with sharp needles until you have determined the sites are ready for blunt needles.

Note the high importance of the positioning of the arm –this must be exactly the same each session.

Both needles to be inserted at angle of around 45 degrees in the **centre** of the vessel.

Both needles to point in the direction of the blood flow, bevel up. **DO NOT TURN THE NEEDLE.**

Needles to be taped down securely as per Unit Protocol.

Dispose of sharps as per Unit Protocol (H&S)

Changing to blunt / dull needles

Sharp needling into exactly the same point, at the same angle, in the same direction, must take place for 6 – 9 sessions. After this a blunt (dull) needle must be used. A blunt needle, at times, can be used at session 4; the insertion of the needle will glide smoothly down the track.

If more than 12 session, give serious consideration of starting a new site (any more will create an area puncture effect which is undesirable).

After approximately 6-9 sessions (sometimes sooner), the track is often formed, but it can vary from patient to patient .It is possible to feel when the track is formed and ready for a blunt needle (this will come with experience and practice) as well as being able to see a round scab developing.

This will be individual to each patient; transition to blunt needles needs to be as soon as possible to prevent damage to the vessel flap or to prevent creating multiple tracts and potential aneurysm formation.

Look for these things –

- Can you visualize a round hole?
- Does it look well healed?

- Is there a decrease in resistance from day to day?

Gently insert the blunt needle, and advance through the vessel. Then a ‘wiggling’ motion can help, so can a GENTLE ‘drilling’ motion; - loosely hold the needle tubing rather than the butterfly when doing so.

The vessel may be gently secured with forefinger if it is unstable or if difficulty is experienced.

The needle needs to be inserted into the fistula within 5 minutes – any longer increases the risk of infection. Always seek help if needed.

Complete all appropriate documentation to ensure continuity and communication to the rest of the team.

Ensuring that clear precise instructions on the arm position and angle of needling is documented on the patient’s dialysis prescription. The use of diagram or photograph is recommended.

If unable to insert blunt needles into an already established track, **DO NOT USE A SHARP NEEDLE** as this can damage the buttonhole track and cause aneurysm/false tracks/bleeding or infection.. Seek advice from others who may be familiar with the track, the Nurse in Charge or the Vascular Access Nurse. It may be necessary to use an alternative site in the meantime or perform a single needle dialysis session until help is available.

If you need to use a sharp needle you **MUST** needle at least ½ inch above or below the buttonhole site.

Document the method you have used in the patients dialysis records.

If a needle has to be withdrawn from a track (trampoline/blind track, etc) for any reason – discard and use a new needle. **NEVER** reinsert.

Ask the patient for input on track location and arm positioning

6.0 Audit

Regular monitoring of patients fistulas.

Documenting any problems

INFECTION CONTROL –BUTTONHOLE SITES.

Unfortunately, it is well known that buttonhole needling exposes the patient to a higher risk of infection compared to other methods as the buttonhole track can harbour organisms that can be introduced into the patient’s bloodstream resulting in **Life Threatening** consequences for the patient if there is inadequate attention to skin preparation (Marticorena et al, 2006). It is also important to be aware that the risk of infection is increased as staff becomes more familiar with the technique and practice may

slacken (Ball et al, 2008). However Infection control is a **priority** within the Unit, and every possible step must be taken to protect the patients in our care.

If a buttonhole site infection is suspected:

Send **swab** for culture and sensitivity immediately.

Take blood for **C.R.P** (and chase result as soon as possible), send **blood cultures** if patient has pyrexia)

Contact medical team, **it is essential that treatment with antibiotics is commenced without delay. Oral antibiotics / I.V.Vancomycin if pyrexia is present may be required.**

OUT OF HOURS -MEDICAL TEAM MUST BE CONTACTED, IF NECCESARY BY PHONING THE CONSULTANT ON CALL.

Cannulate fistula with a conventional needle, **AVOIDING** the buttonhole site to commence dialysis.

Observe patient carefully during dialysis for increased temperature/rigors.

All relevant documentation to be completed thoroughly.

If any patient with buttonholes is unwell with unexplained pyrexia, consider buttonhole infection and treat as above.

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