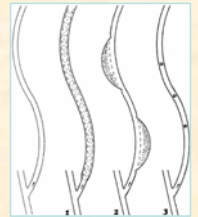


Is buttonhole the superior needling practice in haemodialysis?

Results of a randomised UK trial

Jennie King, Swee Lloyd, Jane Moore, Emma Vaux
Royal Berkshire Hospital, Reading, Berkshire England



Arteriovenous fistula (AVF) for haemodialysis showing
1. Rope-ladder 2. Area dilatation 3. Buttonhole (Kronung, 1984)

Background:

It has been established that the native arteriovenous fistula (AVF) is the gold standard vascular access for haemodialysis. Rope-ladder cannulation using sharp needles, where different rotating sites along the length of the AVF are selected at each dialysis session, has been the traditionally recommended method. In recent years the buttonhole method, also known as constant site, where blunt needles are inserted in exactly the same place each dialysis is starting to challenge needling practice. Many observational studies and small trials have reported on the buttonhole method but what still remains uncertain is the optimum method of cannulation.

Objectives:

To determine what should be considered best practice as a result of the direct comparison of outcomes during a one-year study of different cannulation methods in a typically busy haemodialysis department.

AV FISTULA - NEEDLE PLAN PATIENT: _____

AS FROM: _____ GRADE: _____ POSITION = LEFT FOREARM

NEEDLE SIZE: _____ START FLOW RATE: _____ MAX FLOW RATE: _____

NOTES: _____

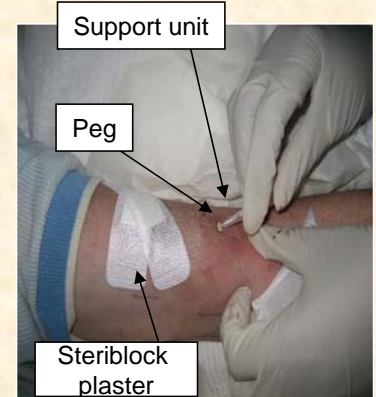
V DEPTH: _____ ANGLE: _____ PACKING: _____ METHOD: _____ DIRECTION: _____

A DEPTH: _____ ANGLE: _____ PACKING: _____ METHOD: _____ DIRECTION: _____

Fistula needling plan – created by the initial needler to give detailed instructions of needle direction, angle, depth etc

Biohole Buttonhole device ® (pegs) were used to develop tunnel tracks

- Sterile pack – two in box. Single use only. (£10/ pair)
- Follow protocol – pegs inserted post dialysis into sharp needle tracks and generally used for first 6 dialysis sessions
- Use strict aseptic technique for peg insertion
- Use forceps or fingers with new sterile gloves
- 'Support unit' aids peg insertion and is then discarded
- Hypoallergenic plasters such as Steriblock prevent plaster sensitivity to skin



Methods:

A prospective randomised controlled trial (RCT) of 140 haemodialysis patients with 70 in each group, were needed using either the buttonhole (BH) method or normal practice (NP) (rotating needling sites). Patients with either an existing fistula and those with a newly created one were invited to take part. The study was designed to determine the primary and secondary AVF patency rates at one year and the complication rate for each cannulation method.

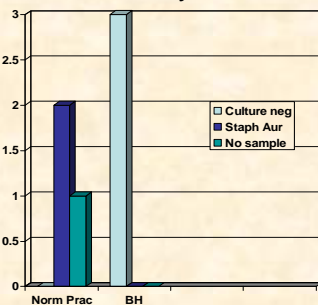
The study was reviewed and approved by the local ethics committee and also supported by the National Institute for Health Research (NIHR CLRN). A nephrologist and the renal access nurse identified patients suitable to be approached. Criteria for eligibility were included in the study protocol. SPSS software is being used to perform statistical analysis. The following outcomes were measured or assessed: fistula interventions including fistuloplasty, surgical intervention, creation of new access; infection; needling pain perceived by patient using a verified pain scoring system; time to haemostasis following needle removal; patient and staff comments about the needling experience; photographic evidence.



Compare fistula photos patient 1/022, 25/9/08 and 24/6/10 to illustrate the effects of NP (rotating sites) needling using sharp 15G needles (note scarring, skin discolouration and slight fistula growth/aneurysm development).

Compare fistula photos patient 1/082, 10/2/09 and 24/6/10 to illustrate the effects of BH needling using blunt 15G needles (note typical rounded BH scars, absence of skin discolouration and absence of aneurysm development).

Fistula study infections



There were 6 in total. 3 in each group. 2 staphylococcus aureus blood borne bacteraemias in the NP group and one suspected infection with no sample obtained.

There were 3 infections in the BH group. All were exit site skin infections – culture negative.

Results:

Matched groups randomised 70 in each to BH/NP.
BH group 47m, 23f. Age range 23-86 years, 18 diabetics.
NP group 44m, 26f. Age range 22-88 years, 15 diabetics.
Study data was collected between Oct 2007 and July 2010.

Discussion about results

Statistical analysis of data is not available at the time of making this poster but preliminary results suggest that:

1. No increased incidence of infection with either needling methods.
2. BH method reduces: need for local anaesthetic, haematomas, bleeding times post dialysis.
3. BH preferred by many patients and staff.
4. Some patients will still require an alternative needling practice to BH (those in whom blunt needles are unsuccessful)
5. Financial burden as blunt needles are more expensive than sharp ones.

Key Issues for discussion

Scab removal to reveal the BH site must be complete and hygienic. Are your instruments used for scab removal causing exit site trauma? Are your self caring patients assessed as competent?

Same nurse/ buddy to develop new BH sites. Keep a written record / plan (see diagram) of needle direction, angle, depth

Eyesight – can you see the buttonhole sites clearly?

Blunt or sharp needles? – Avoid the use of sharp needles in a formed tunnel track whenever possible. Needle with a sharp elsewhere if unsuccessful. Some patients may never be established with blunt needles.

Infection risks – always use an approved disinfection practice – cleanse the exit site pre and post scab removal. Use single use scab picker. Remove scab completely. Avoid sharp needles in formed tunnel.