Helping to solve the achilles heel of Haemodialysis – vascular access

Buttonhole cannulation technique for arteriovenous fistula in the United Kingdom

For people undergoing haemodialysis, vascular access is their lifeline. Protecting and maintaining access to the fistula is paramount to achieving the best dialysis possible. Epidemiological data has shown the safety and longevity advantage of arteriovenous fistula as access modality of first choice in comparison to arteriovenous graft and central venous catheter [1]

The Renal Association clinical practice guidelines reflect this, currently recommend the use of AV fistula first, AV graft as the second option and CVC as the last option. The same Renal Association guidelines recommend buttonhole technique as one of two techniques for cannulating a fistula [2]

Some of the benefits of buttonhole technique include:

- Prolonged arteriovenous life span and reduction in interventions to prolong arteriovenous life span[3]
- Prevention and reduction of aneurysm development[3]
- Reduced frequency of infiltration and haematoma formation following cannulation[3]
- Reduced pain during cannulation[3]
- Reduce bleeding at the end of haemodialysis treatments[3]
- Promotes self cannulation[3]

Buttonhole technique has also been associated with an increase in infection rates, what causes the increase in infections is unclear and units have varied experiences[3]. The Renal Association Clinical practice guideline however references a systematic review by Wong et al suggesting that that risk of access infection can be reduced with attention to hygiene[2]

In 2015 the British Renal Society VASCULAR ACCESS special interest group published Clinical Practice Recommendation for Use of Buttonhole Technique for Cannulation of Arteriovenous Fistulae. These recommendations aim to prevent infections associated with buttonhole cannulation by following the areas of good practice detailed below[3]

3) Screening and selection of patients to undergo Buttonhole cannulation
4) Track development and cannulation for buttonhole cannulation
1) Disinfection procedure and scab removal prior to buttonhole cannulation
2) Mupirocin use with buttonhole cannulation
5) Patient information, engagement and training in buttonhole cannulation
6) Training, education and monitoring of healthcare staff performing buttonhole cannulation

In 2018 the British Renal Society VASCULAR ACCESS special interest group, together with VASBI published a needling decision making model as part of their Clinical Practice Recommendations for Needling of Arteriovenous Fistulae and Grafts for Haemodialysis. This model is designed to further assist nurses and patients to decide which needling technique is best for each individual arteriovenous fistula[1].

Haemodialysis centres now have the necessary reference materials to align with the Renal Association recommendations of offering both buttonhole and rope ladder techniques as possibilities for cannulation of an arteriovenous fistula as part of their fistula preservation strategy.

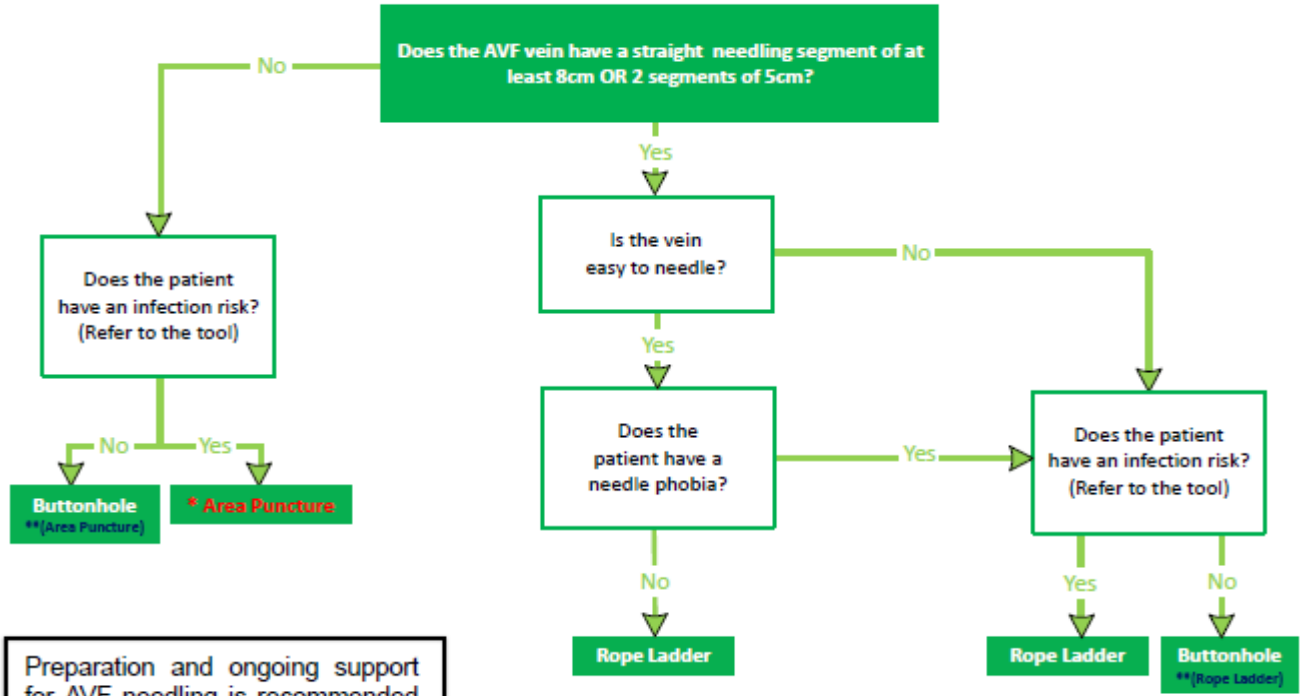
To assist centres in implementing the clinical practice recommendations for needling of arteriovenous fistulae, xtra-med run vascular access workshops for interested staff. Please contact xtra-med for further information.

1.Clinical Practice Recommendations for Needling of Arteriovenous Fistulae and Grafts for Haemodialysis
2.Clinical Practice guideline Vascular Access for Haemodialysis 6th Edition
3.Clinical Practice Recommendations for Use of Buttonhole Technique for Cannulation of Arteriovenous Fistulae

NEEDLING DECISION MAKING MODEL

This tool has been developed to help haemodialysis nurses and patients decide which needling technique is best for each individual arteriovenous fistula (AVF). However, this assessment will be unique and individual to each patient, so you will still need to apply clinical judgement. You may diverge from the decision making aid, so consider how your clinical expertise can justify this divergence. In particular, patient's who self needle their AVF may prefer to use buttonhole needling technique, although this will still be related to personal consideration.

Arteriovenous grafts (AVG) are not included in this model. AVG always have a long, straight needling segment, so should automatically undergo rope ladder needling.



Preparation and ongoing support for AVF needling is recommended in all age groups. Coping techniques such as relaxation, distraction and play therapy should be considered.

* BRS and VASBI do not recommend area puncture. If this assessment results in area puncture, please refer to the 'Area Puncture Action Chart.'

** If your unit does not use buttonhole, then you will need defer to the technique in brackets in the relevant box.

Infection Risk Screening Tool		
Criteria present: (Please tick)	Yes	No
Metallic Heart Valve		
Pacemaker		
Previous MSSA/MRSA bacteraemia		
Previous endocarditis		
Significant structural valvular heart disease		
MSSA / MRSA positive		
Mupirocin resistant MSSA		
Skin disorders causing itching or skin breakdown around cannulation sites		
Poor adherence to hygiene protocols		
Clinical Judgement/Other Considerations: On the basis of the above, this patient is / is not (delete as applicable) suitable for using buttonhole needling technique.		

www.xtra-med.com
info@xtra-med.com
01663 733522
07717 660461

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