

Fistula Cannula - Is this an alternative to conventional haemodialysis needles?

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Abstract

Many patients experience problems with conventional haemodialysis needles such as pain, dislodgement and discomfort. A fistula cannula is a flexible and blunt plastic needle designed for haemodialysis cannulation, which may reduce these issues (Parisotti 2016). Its design is a sharp metal needle which is used to puncture the fistula or graft and then guide the blunt plastic sheath into the vessel. Once the sheath is in position, the needle is removed, leaving only the sheath in-situ. This project trialed the use of the fistula cannula in one satellite haemodialysis unit with the aim of evaluating their safety and impact on patient experience.

Method:-

Patients were invited to trial the cannula if they met any of the following criteria:-

1. Experienced needle dislodgement/infiltration previous 4 months.
2. Excessive pain while needles in-situ or while needles inserted.
3. Nickel allergy.
4. Excessive bleeding post needle removal.

Five patients met the criteria and trialed over a 3 month period, 21/10/19 – 22/01/2020 using the fistula cannula.

The following data was collected prospectively for each patient.

1. Pain score - 0 = no pain, 10 = significant pain on insertion and in-situ.
2. Arterial (AP) and Venous pressures (VP) - pumps reached full speed.
3. Duration of bleeding time post needle /fistula cannula removal.

Staff feedback was obtained via informal discussion at team meetings mid and end of trial.

Results (see table 1):-

There were no episodes of dislodgement, infiltrations or allergy during the trial period. All patients reported reduced discomfort at insertion and during treatment with cannula compared to needles. Neither arterial nor venous pressures were worse with cannula than with needles. Bleeding time was reduced by using the cannula for all participants. Statistical tests will be performed prior to presentation (if abstract accepted) to ascertain if differences were significant.

Staff required additional training to perform the cannulation but reported enjoying the learning curve of using this tool and that it results in better patient experience despite the inability to manipulate post insertion. Disadvantages include the requirement for an occlusive dressing to secure the cannula during haemodialysis and a clamp to prevent blood spillage on connection/disconnection from haemodialysis due to the absence of a one-way valve.

Conclusion:-

Fistula cannula appears to provide a safe alternative to conventional needles and improve patient comfort during haemodialysis. Because they are up to four times more expensive than conventional needles, widespread introduction beyond patients who experience difficulties with needles may not be an efficient allocation of resources. Long-term randomised trials would ascertain if they improve AVF/AVG longevity and or stop/slow down formation of aneurysms, which would make their use more cost-effective.