Venous access hubs significantly restrict flow through intravenous cannulae

Philip Jackson[1] & Kevin Holliday[2]
(1) Core Trainee 2 in Anaesthetics and (2) Consultant Anaesthetist, Raigmore Hospital, Inverness

Introduction

In Raigmore Hospital, it is standard practice for labour ward staff to insert a 16G cannula into labouring women. An access hub is attached to these cannulae before intravenous infusions are commenced in accordance with national and hospital policy. We noticed the appearance of these access hubs in women transferred from the labour ward to theatre and hypothesised that there was likely to be a significant restriction in flow of intravenous fluid.

Methods

We ran 500 ml of 0.9% sodium chloride solution via a blood giving set through various cannula setups. The time taken in each case was noted. This was repeated five times per setup and a mean result taken. The resulting times were then converted into a flow rate (Table 1).

Results

Setup		Flow rate ± standard deviation / ml·min^{-1}	Flow rate relative to 16G via gravity
A	16G cannula* via gravity	217 ± 5	-
B	16G cannula* pressurised to 300 mmHg	369 ± 11	170 %
C	16G cannula* with access hub†	106 ± 4	49 %
D	16G cannula* with access hub† pressurised to 300 mmHg	168 ± 5	77 %
E	18G cannula* via gravity	122 ± 4	56 %
F	20G cannula* via gravity	80 ± 1	37 %

**Vasofix®, Braun AG, Germany; †Bionector®, Vygon SA, France*

Table 1

Discussion

Antepartum and postpartum haemorrhage remain one of the top causes of maternal death.[1] The use of access hubs effectively halves the maximum possible flow in the instance that rapid transfusion is required, a finding consistent with previous studies and the manufacturer's literature.[2-4] Inserting large bore cannulae, often without local anaesthesia, and then in effect converting them into small bore cannulae serves no benefit to the patient. It is a clinical governance concern that no clinical staff were consulted about the introduction of access hubs. We recommend that access hubs should not be used in labouring women or in theatre, although they may be appropriate in certain ward areas, for example in stable patients receiving intermittent infusions or maintenance fluids.

References

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