

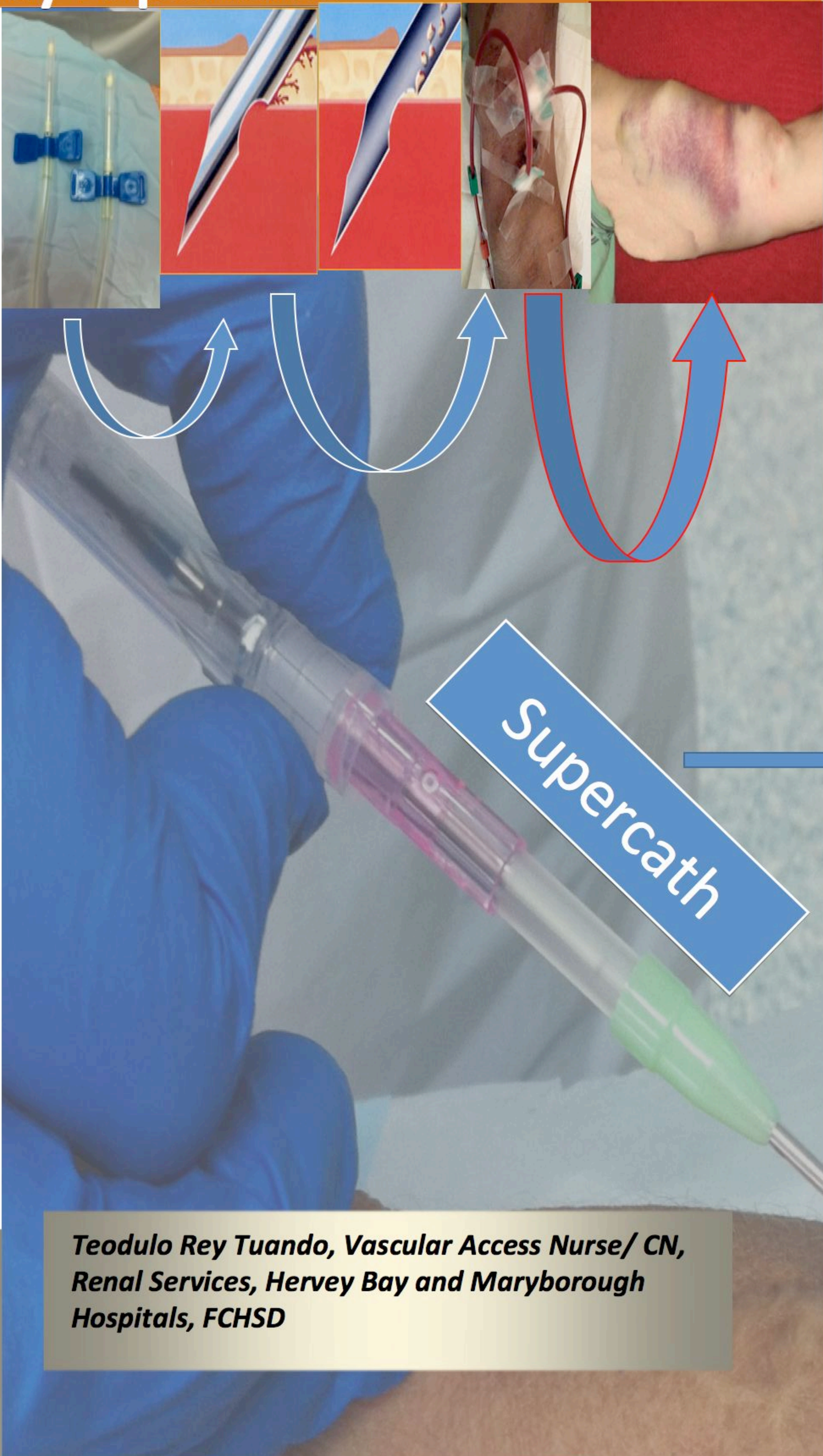
The advantages of Fluoroplastic in the Cannulation and Use of the Vascular Access for Haemodialysis: The Hervey Bay Experience

Background:

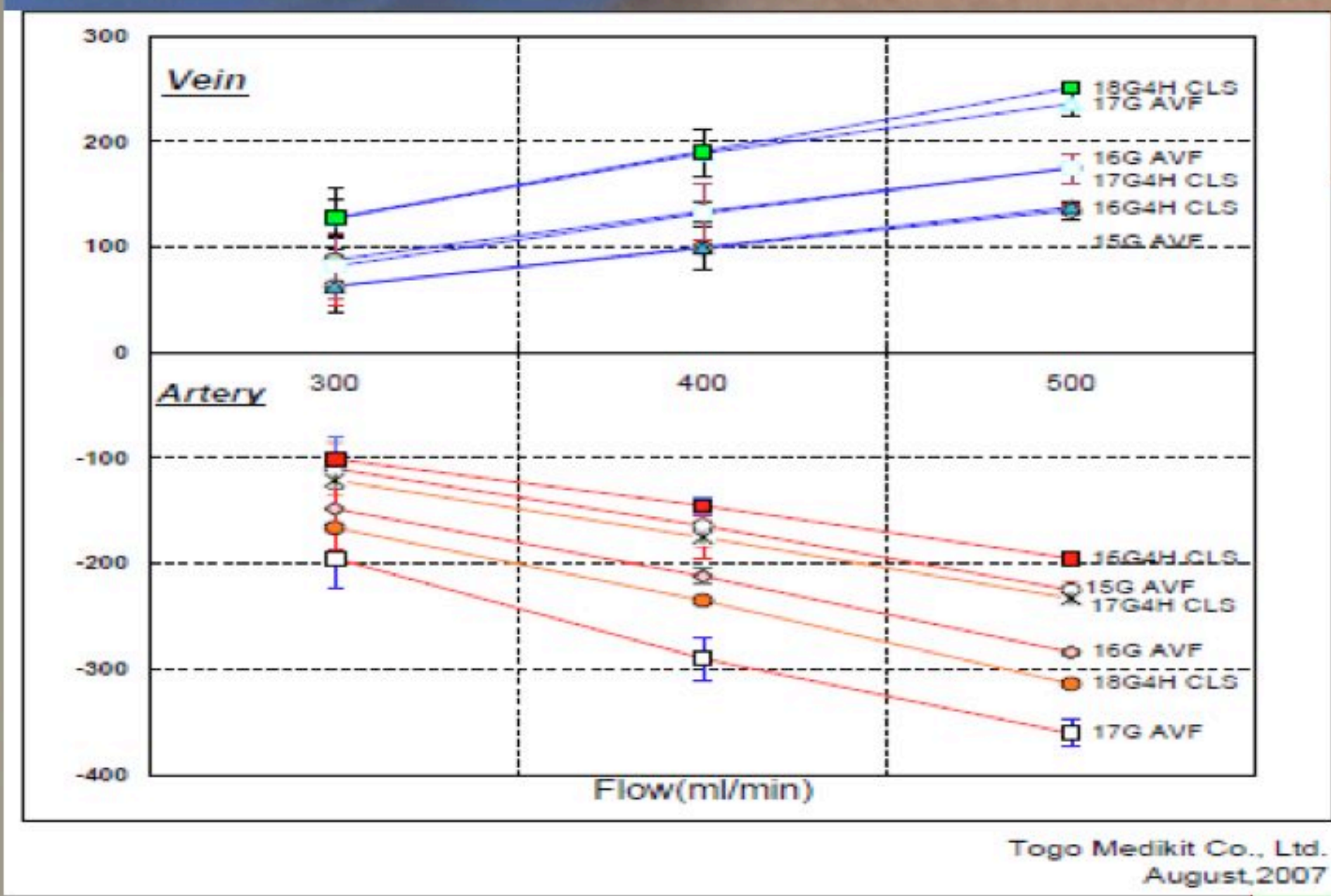
The cannulation of the fistula and graft for haemodialysis has traditionally been with the use of steel winged cannulae. With its inherent characteristics, most of the problems encountered with these steel cannulae were dealt with traditional and conventional interventions. Common problems are blown sites due to accidental bending of the arm and re-cannulation, difficulty advancing and positioning the steel cannula in deep or tortuous vein oftentimes resulting to a through-and-through cannulation and extravasation. With the emerging trend of ultrasound-assisted cannulation, there have been reports of increased success in cannulation but this does not address all the challenges faced with the use and care of the vascular access. In the Hervey Bay Hospital and Maryborough Hospital Dialysis Units, immediate and clear advantages were observed with the use of the Supercath fluoroplastic catheters. Improved patient comfort was immediately reported because of freedom to move the limb and no risk of blowing the cannula site; the Supercath has clear advantage on tortuous veins; there was significant reduction of arterial and venous pressures that lead to attain the required maximum Qb.

Results and Observations:

1. Patients found it more painful at insertion compared to the steel cannula
2. Significant reduction in AP and VP.
3. Less pain, tissue and vessel damage during removal resulting to less bleeding.
4. Overall, patients found it favourable in respect to freedom of arm movement
5. During insertion, at least half of the cannula must be inside the vessel before any attempt to withdraw the metal cannula and advance the fluoroplastic part.
6. The Safety version requires rotating the safety hub to assist in fully withdrawing the steel cannula
7. If repositioning is needed during the insertion procedure and the metal cannula has already been partly drawn back, the fluoroplastic must be the one pulled back into the metal part.



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Flow/Pressure Ratio Table					
Supercath CLS (Plastic Catheter)			VS.		
			AVF needle (AVF metal needle)		
Flow [ml/min]	300		400		500
	Artery	Vein	Artery	Vein	Artery
16G4H CLS (Catheter)	-101	63	-146	100	-195
17G4H CLS (Catheter)	-121	82	-175	132	-233
18G4H CLS (Catheter)	-166	128	-235	191	-314
15G AVF (metallic needle)	-110	83	-164	99	-225
16G AVF (metallic needle)	-148	88	-212	134	-284
17G AVF (metallic needle)	-195	127	-290	189	-361

Steel Winged AVF Cannula						Supercath Cannula							
	Nee dle Gau ge	Qb	AP	V P			Ca nn ula Ga ug e	Q b2	AP 2	V P 2		Differe nce in AP	Differen ce in VP
22 Patients													
Mean	15	288. 6	- 12 6	14 0			16	29 6	- 84. 2	10 9		-32.5	34

Conclusion:

We conclude that the Supercath has more advantages than disadvantages. Personnel training is essential on the proper use of the cannula because repeated unsuccessful cannulations using the Supercath can lead to staff dissatisfaction. It should be remembered that fistulae and grafts have walls that are thick and also have scars on the overlying tissue than may contribute to some degree of resistance during the initial stage of insertion. The metal cannula with its bevel protrudes from the fluoroplastic component hence a blood flash back doesn't ensure that the fluoroplastic has also entered the vessel. This is the reason why a minimum half of the cannula length must be inside the vessel before advancing the fluoroplastic fully or withdrawing the metal cannula. In theory, because the Supercath is non-metal and is biocompatible, there would be significant reduction in intima damage and host reaction to the material thereby protecting the access and prolonging its life span.