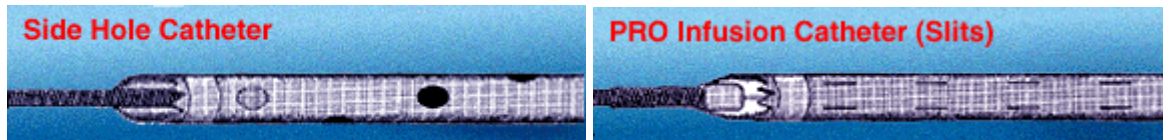


Clinical Goal of the PRO™ Infusion Catheter

The PRO™ Infusion Catheter has been designed to deliver a solution of the physician's choice in an even distribution regardless of how the fluid is infused (continuous infusion, pulse or bolus), and regardless of the dynamic extra-catheter conditions (Variable viscosity of intra-clot infusions or variable vascular pressure).



SIDE HOLES (History)

First attempts to improve the fluid distribution of solutions came when the industry tried to drill or punch holes in the side of an angiographic catheter. There are two drawbacks of this design:

1. When a hole is drilled in the catheter wall, material is removed, thus weakening the integrity of the catheter. Therefore the number of holes that can be put in a side hole catheter is limited.
2. Side holes are non-dynamic and outside forces can impact how much fluid exits each hole. Fluid dynamic studies have shown that fluid will look for the path of least resistance. Therefore if some of the side holes are positioned in a more viscous medium (such as clot) and some holes are positioned in a pocket of non-coagulated blood the fluid will tend to exit in the area of less

SLITS (PRO™ Infusion Catheter)

The solutions to the challenges realized by side hole catheters were addressed by incorporating **Pressure Response Orifices** (PRO™) or slits into the side of the catheter instead of the non-dynamic side holes.

1. Slits remove no catheter material therefore more slits can be incorporated in the catheter without compromising the catheter's strength. The slits are positioned four (4) per row at 90° every 5 mm.
2. The engineers at ANGIODYNAMICS® have used the laws of fluid dynamics to design the patented slits of PRO™ Infusion Catheter (Patent Nos. US 5,250,034, US 5,267,979 and foreign counterparts). These slits have been designed to operate like tiny valves. They

viscous, non-coagulated
blood.

can open at a specified
pressure range by correlating
the elasticity of the catheter
wall material and the slit
dimensions. The resistance of
outside influence can be
minimized to achieve even
fluid distribution by have the
slits open at the same
pressure.