

Very Short Peripheral Catheter for Reduction of Thrombosis (Ramot)

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The Invention

A peripheral infusion catheter with a very short cannula which significantly reduces the occurrence of inflammation and thrombosis in patients. Protuberations on the cannula prevent unwanted release of the catheter while maintaining position in the vein or artery.

The Need

Short peripheral infusion catheters are the most common intravenous devices being used in today's medical practice. Phlebitis/ Thrombophlebitis, with prevalence of up to 80% of hospitalized population, is the most common complication associated with these devices. Research has shown that the presence of catheters is a major cause of phlebitis in two modalities – first, the constant pressure of the catheter on the vessel wall causes the endothelium to become inflamed. Secondly, the catheter disturbs the blood flow and can cause eddies and recirculation spots which can lead to local build up of unwanted substances at these spots. Thrombophlebitis is a sterile inflammation of the vein wall and appears on average after 3 days of catheterization. It requires additional health care by the medical staff, increases the duration of hospitalization and consequently increases health care costs.

Advantages

The current invention is based on the classic short peripheral infusion catheter but with two crucial changes: 1) the cannula is significantly shorter than normal, so that contact with the vein walls will be eliminated; 2) Protrusions are added onto the cannula outer surface in proximity to the tip in order to anchor the cannula slightly inside the vein lumen, thus preventing the short cannula from sliding accidentally out of the vein. When it is desired to remove the catheter, a slight twist and pull causes the cannula to easily retract without discomfort to the patient.

- Minimizes biomechanical irritation to the vein wall
- Reduces Thrombophlebitis formation by ~35%
- Improved hemodynamics
- Extended dwelling time in-situ
- Improved drug release profile
- Reduces irritation of injected drug (under investigation)

Development Status

A working prototype was built and a successful in-vivo POC demonstrated up to 30% reduction on inflammation rate in large animal studies. The research team also developed a quantitative MRI-based tool for assessment of phlebitis severity index.

It seems that we can effectively reduce inflammation and increase dwelling time, thus enhance quicker recovery and shorter hospital stay as well as reduced complication rate, potentially reducing the economic burden on the health care system.

Patent

WO2012/007944 is pending in the US and EP and granted in China.

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