

Comparison of dynamic pressures between metal needle and plastic cannula in hemodialysis treatment

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Background/Aims: Traditionally, metal needles have been used in hemodialysis treatment for decades, while the usefulness of plastic cannula has been recently introduced. But, investigations for hemodynamic characteristics of plastic cannula are still lacked. We compared the dynamic arterial and venous pressures between the metal needle and plastic cannula. **Methods:** The present study was a prospective, randomized, open-label study. Twenty-six subsequent incident hemodialysis patients with a newly placed arteriovenous graft were randomly allocated into a plastic cannula group (plastic group) or a metal needle group (metal group) from December 2018 to June 2019. The number of patients in the metal and plastic group was fifteen and eleven, respectively. The arterial and venous pressures during the first three consecutive hemodialysis sessions at the various blood pump flow rate from 150 to 350 ml/min were documented. **Results:** Dynamic arterial and venous pressures were more significantly decreased in the plastic group than the metal group in the blood pump flow rate above 200 ml/min (Student t-test, P value < 0.05). The benefit of hemodynamic stability was more pronounced in the high blood pump flow rate (Fig 1). **Conclusions:** Plastic cannula had an advantage in the hemodynamic stability in comparison to the metal needle, especially in the high blood pump rate. Therefore, the plastic cannula may be more useful in the necessity for high blood flow rate such as hemodiafiltration treatment.

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