

Abstract

Buttonhole Cannulation VS Conventional Cannulation – The Quality Outcome

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Introduction:

There are 2 main techniques of cannulating the arteriovenous fistula. The commonest being the conventional rope ladder technique, followed by the buttonhole technique. This study was performed to investigate the effect of both cannulation techniques on the quality outcome.

Method:

Buttonhole cannulation was initiated in Pusat Hemodialysis Mawar since August 2010, patients were recruited based on self preference. A 1- month quality outcome study was conducted from 18/7- 16/8/2012. Two groups were defined: a buttonhole cannulation group and a matched control group with conventional rope ladder cannulation. During each session of dialysis (total of 12 sessions), the pain score (using Visual Analogue Scale), number of attempts of cannulation, hematoma, bleeding at the needle site during hemodialysis, compression time after needle removal were documented. Patient's and cannulator's overall satisfaction (using "forced choice" Likert scale) were recorded on the last session. The data were statistically analyzed.

Results:

Eighty one patients with buttonhole cannulations were matched with 81 patients with conventional cannulations. The demographic data were similar in these 2 groups: Female 54.3% both groups, mean age- 57 years vs 59 years, Chinese- 37.0% vs 42.0%, Malay- 39.4% vs 43.2%, Indian- 13.6% vs 14.8% and diabetes 69.1% vs 65.4%. Arteriovenous fistula: radiocephalic- 39.5% vs. 40.7%, brachiocephalic- 53.1% vs 51.9%, brachio basilic- 7.4% both groups, mean functional patency- 825 days (27.5 months) vs 867 days (28.9 months). Quality outcome: pain- no difference between the 2 groups (mean pain score 1.23 vs 1.17, p= 0.61), ease of cannulation- buttonhole group had more unsuccessful cannulations (mean attempts 1.2 vs 1.0, p=0.0003), compression time- buttonhole group had shorter hemostasis (mean 5.8 vs 9.2 minutes, p<0.0001), patient's satisfaction- 100% in both groups, cannulator's satisfaction- 100% in conventional group and 96% in buttonhole group but the difference was not significant (p=0.2). Buttonhole group had less frequency of bleeding at needle site (8 vs 49 cases, p=0.003) and hematoma (1 vs 9 cases, p=0.03).

Discussion & Conclusion:

Buttonhole cannulation is superior in securing hemostasis as compared to conventional cannulation, but not in reducing pain and ease of cannulation. More educational workshops should be conducted to improve the skill.