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Sharp recanalization with transseptal needle for failure standard recanalization in chronic central vein occlusion

KEERATI HONGSAKUL[1], Sorracha Rookkapan[1], Surasit Akkakrisee[1], Phurich Janjindamai[1], Kittipitch Bannangkoon[1], Panat Nisityotakul[1], Pongsanae Duangpakdee[3], Ussanee Boonsrirat[2]
[1]Department of Radiology, Prince of Songkla University, Thailand
[2]Department of Surgery (Cardiothoracic Surgery), Prince of Songkla University, Thailand
[3]Department of Internal Medicine (Nephrology), Prince of Songkla University, Thailand

Objectives : Endovascular recanalization with guide-wire crossing the occluded segment following balloon angioplasty via antegrade and/or retrograde is the standard first option to treat central vein occlusion (CVO). However, many chronic CVO lesions fail using the conventional guide-wire technique. This study aims to present the outcome of sharp recanalization with a transseptal needle in chronic CVO.
Methods : This retrospective study included 22 hemodialysis patients who developed clinical symptoms and signs of CVO with failed conventional endovascular treatment using guide-wire and underwent sharp recanalization with a transseptal needle from January 2018, to December 2023. Demographic data of patients, procedural success, and complications were recorded. Post-intervention primary patency rate was analyzed using survival regression.
Results : Thirteen men and nine women were enrolled with a median age of 50 years (ranges; 30-83 years). The most common site of CVO was the right brachiocephalic vein (21 patients). The average length of occlusion was 2.5 cm (ranges; 1-4.4 cm). Procedural success was 91% (20 patients). Fifteen patients were placed primary stents due to significant immediate elastic recoil stenosis. Major complications occurred in three cases, including massive hemothorax and pulmonary edema. Two cases of hemothorax were successfully treated with stent grafts, and one case of pulmonary edema was immediately hemodialyzed after a successful procedure. The median post-intervention primary patency of balloon angioplasty alone versus balloon angioplasty plus stenting was 2.1 and 8.4 months ($P = 0.014$). Post-intervention primary patency rates at 1, 3, and 6 months in the group of balloon angioplasty alone versus balloon angioplasty plus stenting were 60%, 20%, and 20% versus 100%, 93%, and 73% ($P = 0.011$).
Conclusions : Sharp recanalization with a transseptal needle is effective and safe in chronic CVO cases that fail conventional recanalization. Primary stenting in chronic CVO lesions has a better primary patency compared to balloon angioplasty alone.