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Case Report

Stent fracture in the left brachiocephalic vein

Masamichi Wada*, Masaya Yamamoto, Masanori Shiba, Takahiro Tsuji, Raisuke Iijima, Rintaro Nakajima, Takashi Yoshitama, Hidehiko Hara, Hisao Hara, Taro Tsunoda, Masato Nakamura

Division of Cardiovascular Medicine, Toho University Ohashi Medical Center Hospital, Tokyo, Japan

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Abstract A 68-year-old male hemodialysis patient presented with severe congestion in his left arm. Left arm venography showed a completely occluded left brachiocephalic vein. We chose a self-expandable stent for treating this vein. However, restenosis occurred once at 8 months and again after six additional months. The cause of the restenosis was considered to be a stent fracture. On the first restenosis, we performed redilation with a balloon; on the second restenosis, we chose stent-in-stent with a balloon-expandable stent. At least 9 months after the stent-in-stent procedure, there has been no edema in his left arm. Therefore, stent-in-stent is one of the useful strategies for stent fracture in central venous obstruction.

Keywords: Central vein; Stent fracture; Self-expandable stent

1. Introduction

Central vein obstruction in patients who have a history of hemodialysis is considered to be due to injury during or after insertion of a temporary or tunneled dialysis access catheter placed in a jugular–subclavian route. This vein obstruction can be efficiently treated by angioplasty and stent placement [1]. Stent compression or fracture has been described in the treatment of the subclavian vein for Paget–Schrotter syndrome. This condition results from compression of the subclavian vein in the thoracic outlet between the first rib and the clavicle.

There have been only a few reports about stent compression in the brachiocephalic vein. The present report describes a case of stent fracture that occurred while treating an occluded brachiocephalic vein in a hemodialysis patient.

2. Case report

A 68-year-old male presented with swelling of his left arm and of a superficial collateral vein around his left

Fig. 1. Venography showing total occlusion of the LBV. The flow of the left internal jugular vein went backward (white arrow).

* Corresponding author. Division of Cardiovascular Medicine, Toho University Ohashi Medical Center Hospital, 2-17-6 Ohashi, Meguro, Tokyo 153-8515, Japan. Tel.: +81 3 3468 1251; fax: +81 3 3468 1269.
E-mail address: wadamasamichi@hotmail.com (M. Wada).

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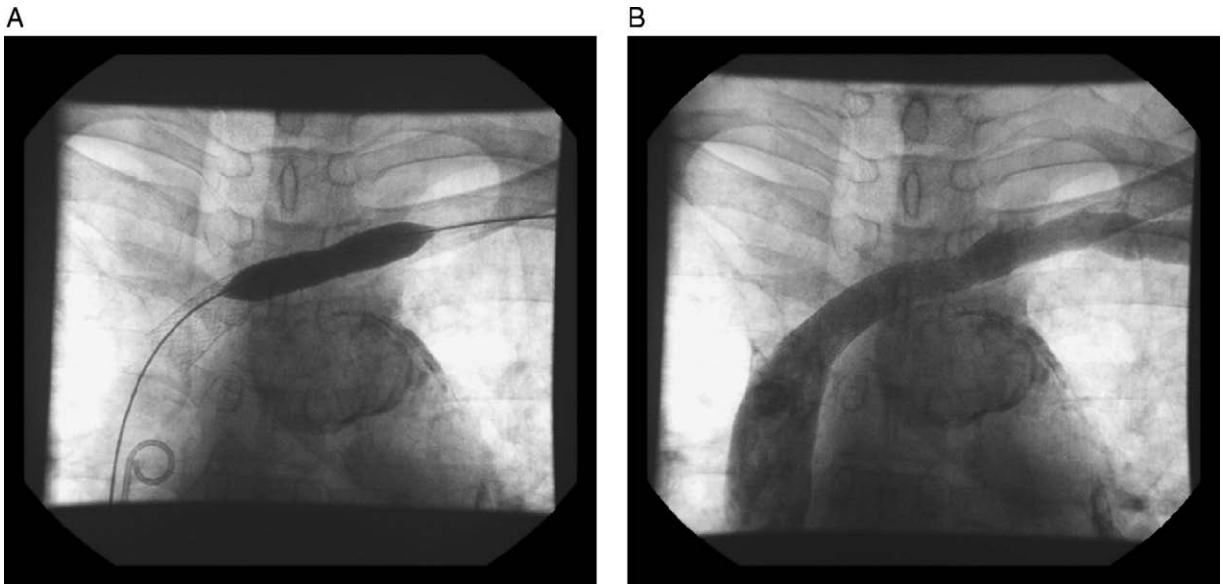

Fig. 2. (A) A 14×60-mm SMART stent (Cordis) was deployed in the LBV with sufficient postdilation using a 12-mm-diameter balloon. (B) After the first intervention. The flow of the left internal jugular vein followed the normal direction.

shoulder and chest. History includes hemodialysis for the past 16 years due to nephrosclerosis. He has a native left radial arteriovenous (AV) fistula for hemodialysis. In March 2004, he was admitted to our hospital. Venography revealed a total occlusion of the left brachiocephalic vein (LBV). Both the left brachial and the right femoral approaches were taken, and simultaneous injection was performed both proximal and distal to the occluded site. The flow of the left internal jugular vein went backward, and the contrast medium returned from the right internal jugular vein (Fig. 1). Superficial collateral flow was observed. An angulated 0.035-in. Radifocus guide wire (Terumo) crossed the lesion quite smoothly. The strategy for the occluded brachiocephalic vein consisted of predilatation with a 4×20-mm SYNERGY balloon (Boston Scientific), followed by a 14×60-mm self-expandable nitinol SMART stent (Endvascular; Cordis, Warren, NJ, USA) with postdilatation at a high inflation pressure rate of 10 atm using a 12×40-mm SYNERGY balloon (Boston Scientific). The stent was dilated sufficiently, and then the flow of the left internal jugular vein followed the normal direction (Fig. 2). The swelling of his left arm dramatically decreased in a few days. However, the patient returned with recurrent edema 8 months after the initial intervention. Fluoroscopy demonstrated a stent fracture at the body of the stent. Venography revealed restenosis at the fracture site of the stent (Fig. 3). Repeat angioplasty was performed with a 14-mm-diameter balloon, and the patient became free from swelling in his left arm. Four months after the repeat angioplasty, computed tomography was performed to observe the condition of the

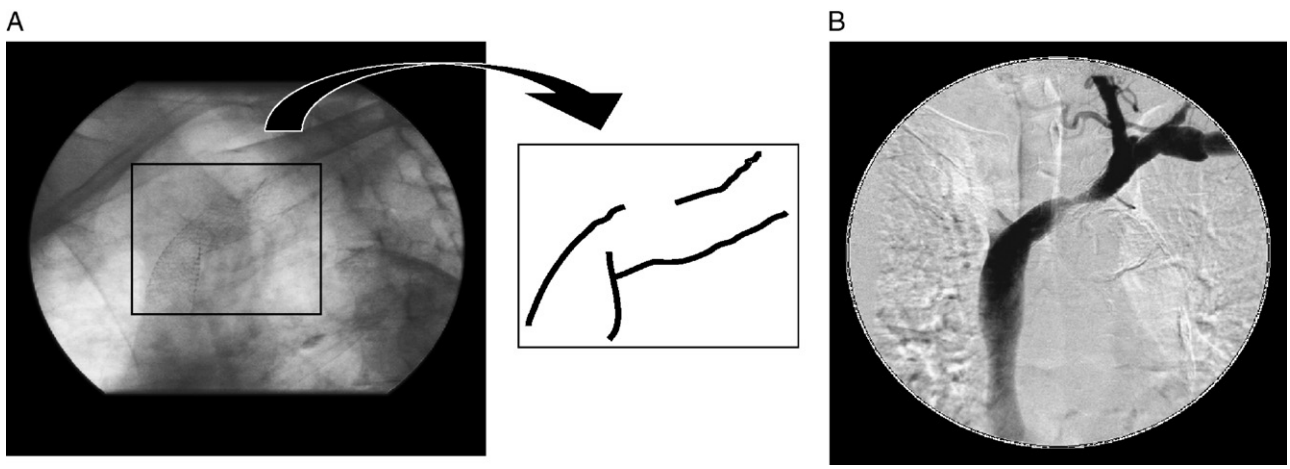

Fig. 3. (A) Stent fracture occurred 8 months after the initial intervention. A complete separation of stent segments could be observed. (B) Venography revealed restenosis at the fracture site of the stent.