THE TEXAS HEART INSTITUTE® JOURNAL

Images in Cardiovascular Medicine

Bail-Out Stent Graft Implantation for Wire Perforation of an Axillary Artery Branch

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Keywords: Stents; axillary artery; wire perforation, complication

Case Description

An 85-year-old man with stable angina underwent an elective percutaneous coronary intervention through the right radial artery under dual antiplatelet therapy. One hour after the procedure, he reported increasing pain in his right axilla. A noncontrast computed tomography scan revealed a massive axillary hematoma, suggestive of catheter-related arterial bleeding (Fig. 1). Urgent angiography via percutaneous right brachial artery access revealed the perforation of an axillary coronary artery branch (Fig. 2A). The extravasation was not observed in selective angiography of thoracoacromial artery branches (Fig. 2B). The small side branch distal to the thoracoacromial artery was confirmed as the origin of extravasation (Fig. 2A). A 0.025-in × 45-cm Terumo radial access kit wire or 0.035-in angled Terumo Radifocus hydrophilic guidewire seemed to have strayed into the side branch during the preceding coronary intervention. As the patient's hemodynamic status steadily deteriorated and he exhibited signs of delirium, an 8.0 × 50-mm self-expandable GORE VIABAHN stent graft (W. L. Gore & Associates, Inc) was deployed through a 0.014-in Jupiter FC peripheral guidewire (Boston Scientific) via percutaneous brachial access with a 7F sheath, which improved the patient's blood pressure. Follow-up angiography confirmed the disappearance of the perforated branch vessel (Fig. 2C). The subcutaneous hematoma gradually regressed, with no evidence of compartment syndrome. No vascular events have occurred during 1-year follow-up.

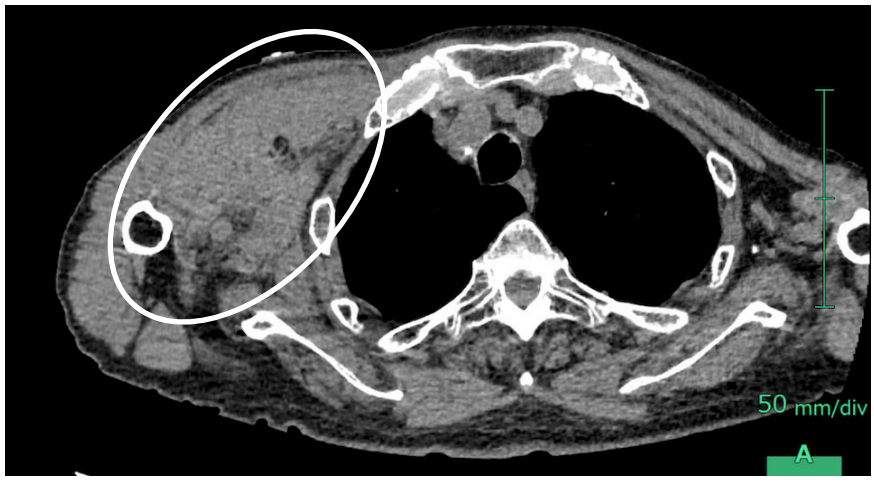

Fig. 1 Noncontrast computed tomogram reveals a massive hematoma in the right axilla (white circle).

Citation: Fukui T, Ogasawara N. Bail-out stent graft implantation for wire perforation of an axillary artery branch. *Tex Heart Inst J*. 2023;50(40):e228082. doi:10.14503/THIJ-22-8082
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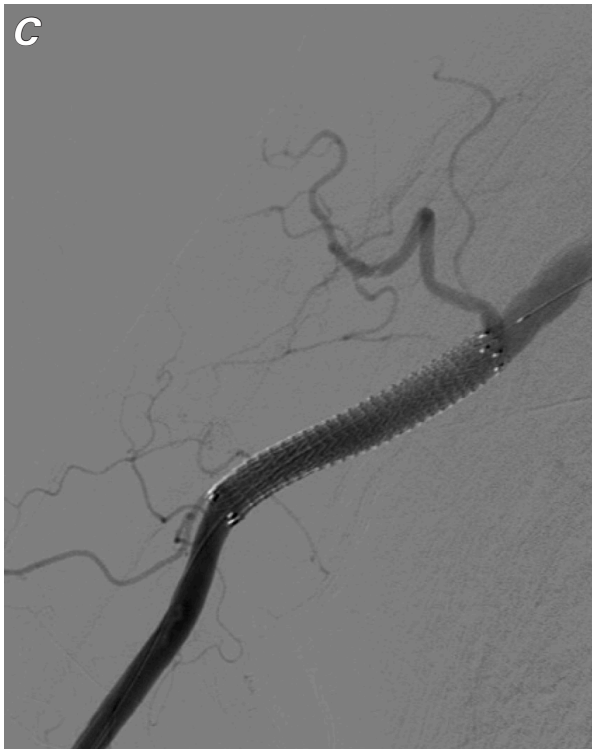

Fig. 2 Postoperative angiogram of the axillary artery. **A**) The angiogram reveals the perforation of an axillary artery branch (white circle). The small side branch distal to the thoracoacromial artery was confirmed as the origin of extravasation (arrows). **B**) The extravasation was not observed during selective angiography of the thoracoacromial artery branches. **C**) After stent-graft deployment, angiography confirmed the repair of the perforated branch vessel.

Supplemental motion images are available for Figures 2A, B, and C.

Comment

Subclavian and axillary artery injuries are generally caused by trauma and associated with high surgical mortality and morbidity because of their anatomical complexity. Today, endovascular repair has become the favored method of managing these injuries because it enables a safe, minimally invasive procedure.[1] The literature has extensively described treatments for traumatic injuries, including pseudoaneurysm, fistula, and perforation, but few such reports discuss iatrogenic injuries, especially those of the axillary arteries.[2] Prolonged balloon inflation is usually the first-line treatment, and coil embolization is beneficial in terms of selective occlusion. In this case, however, both would have taken more time than direct stenting. Thus, stent grafting was the preferred choice. The stenting position was carefully determined so as not to cover the thoracoacromial artery. Interventionalists should make treatment decisions based on the patient's vascular status and condition. Stent grafting enables prompt hemostasis, even with the risk of native vessel occlusion. Identifying the origins of the trauma and the anatomical relationship between the injured and native vessels is essential. Blind advancement of guidewires or other devices can lead to vascular injury and other complications. Therefore, fluoroscopy should always be used when advancing guidewires or other devices. Further investigations are required to determine the safety and efficacy of stent grafting for iatrogenic axillary artery injuries.

Published: 19 July 2023

Author Contributions: The paper was authored by Tomoki Fukui, MD. Nobuyuki Ogasawara, MD, was involved in the conception and design of the study and writing the article. Both authors gave final approval of the manuscript.

Conflict of Interest Disclosure: None.

Funding/Support: None.

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