Transfemoral uncovered stent to treat iatrogenic type A dissection during transcatheter aortic valve implantation

Giuseppe D’Ancona1, Stephan Kische1, Martin Dissmann1, Miralem Pasic2, Alexander Mladenow2, and Hüseyin Ince1*

1Department of Cardiology, Vivantes Klinikum im Friedrichschain und Am Urban, Landsberger Allee 49, 10249 Berlin, Germany and 2Deutsches Herzzentrum Berlin, Augustenburger Platz 1, 13353 Berlin, Germany

* Corresponding author: Tel: +49 30 130231174, Fax: +49 30 130232063, Email: Hueseyin.Ince@vivantes.de

A 91-year-old female was referred to our institution for transfemoral transcatheter aortic valve implantation (TAVI).

Under general anaesthesia, a 25-mm fully retrievable and re-positionable prosthesis (Direct Flow Medical®) was implanted. A control aortography confirmed perfect positioning and functioning of the prosthetic valve with aortic dissection extending from the ascending aorta to the aortic arch and the distal thoracic aorta (Panels A–C).

We decided to manage the condition in an endovascular fashion implanting, transfemorally, a 32-130-28 mm self-expandable uncovered single flared stent (E-XL®, JOTEC GmbH, Hechingen, Germany) (Panel D). Control angiography confirmed full expansion of the aortic true lumen, good perfusion of the coronaries, neck vessels, and distal thoracic aorta (Panels E and F).

The patient was eventually extubated the next day and discharged 1 week later. A control CT angiography confirmed, at discharge and 1 month later, perfect stent expansion, false lumen thrombosis in the thoracic descending aorta, and full perfusion of the neck vessels (Panels G and H).

We suppose that the aortic dissection had a retrograde mechanism and the primary entry tear was located in the descending aorta resulting from excessive ‘stiff-wire’ manipulation during insertion of the large introducer sheath. Dissection progression was possibly slow and was noticed, almost simultaneously, on TEE and fluoroscopy. Onset of symptoms in a mildly sedated patient would have promptly suggested the diagnosis. An uncovered stent may not seal completely the dissection but will scaffold and support the flap throughout its length so to achieve false lumen stabilization, depressurization, remodelling, and eventual late thrombosis.

(Panel A) Control aortography after TAVI demonstrates type A aortic dissection with flap extending from the ascending aorta, arch, and thoracic aorta (arrow heads). (Panel B) Intra-operative TEE showing dissection flap in the ascending aorta (short axis) with partial diastolic collapse of the true lumen; RA, right atrium; RV, right ventricle; PA, pulmonary artery; TL, true lumen; FL, false lumen. (Panel C) Particular of an intra-operative TEE short-axis view of the descending thoracic aorta with dissection flap. FL, false lumen; TL, true lumen. Star indicates pig-tail catheter within the aortic true lumen. (Panel D) Transfemoral positioning of the self-expandable stent with the proximal landing zone in the ascending aorta. (Panel E) Control aortography after stent release showing full expansion of the stent and no perfusion of the false lumen. (Panel F) Control aortography after stent release showing antegrade perfusion of the neck vessels (arrow heads). (Panel G) Control CT angiography showing false lumen exclusion in the ascending aorta and false lumen initial thrombosis in the distal thoracic aorta (arrow heads). (Panel H) Control CT angiography reconstruction and central lining showing full expansion and apposition of the stent with neck vessels perfusion (arrows) and distal false lumen thrombosis.

Published on behalf of the European Society of Cardiology. All rights reserved. © The Author 2014. For permissions please email: journals.permissions@oup.com.