

**Title:** Perforated ACURATE neo valve soon after Valve-in-valve TAVI.

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# Perforated ACURATE neo valve soon after Valve-in-valve TAVI

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**Running title:** Perforation after valve-in-valve TAVI

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### **Classifications:**

Aortic stenosis

TAVI

Valve-in-valve

A 61-year old male was operated with a 25 mm Biocor (St Jude Medical, St Paul, MN) aortic bioprosthesis in 2001. In 2017 the patient developed dyspnoea. Echocardiography revealed severe transvalvular regurgitation.

In January 2018 a TAVI (Transcatheter Aortic Valve Implantation) valve-in-valve procedure was performed using a 23 mm ACURATE neo prosthesis (Boston Scientific, Marlborough, MA) (Panel A). The prosthesis was postdilated with a 22 mm balloon. Postoperative and 30-day echocardiography was unremarkable.

In August 2018, the patient reported exertional dyspnoea. Echocardiography showed severe para- and transvalvular aortic regurgitation. There were no signs of infection. Both prostheses were explanted and a Perimount Magna Ease 23 mm bioprosthesis (Edwards Lifesciences, Irvine, CA) was successfully implanted. Recovery was uneventful.

The ACURATE neo TAVI prosthesis has a triangular area under each stent post which is covered with porcine pericardium but not protected by metal, possibly a weak spot. It was noticed the stent posts of the Biocor prosthesis and the ACURATE neo were aligned (Panel B) putting the weak spot in contact with the top of the surgical bioprosthesis' stent posts, and causing a hole at this location by abrasion (Panel C).

This mechanism of prosthesis failure may indicate that the ACURATE neo prosthesis should be used with caution in valve-in-valve procedures. (Video 1).<sup>1</sup>

#### **Conflicts of interest:**

Andreas Rück has received lecture honoraria, research support and proctor fees from Boston Scientific and Edwards Lifesciences.

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Magnus Settergren has received lecture honoraria and proctor fees from Abbott, Boston Scientific, Medtronic, WL Gore and Edwards Lifesciences.

Nawzad Saleh has received lecture honoraria and proctor fees from Boston Scientific.

Dinos Verouhis has no conflicts of interest.

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### Figure legend:

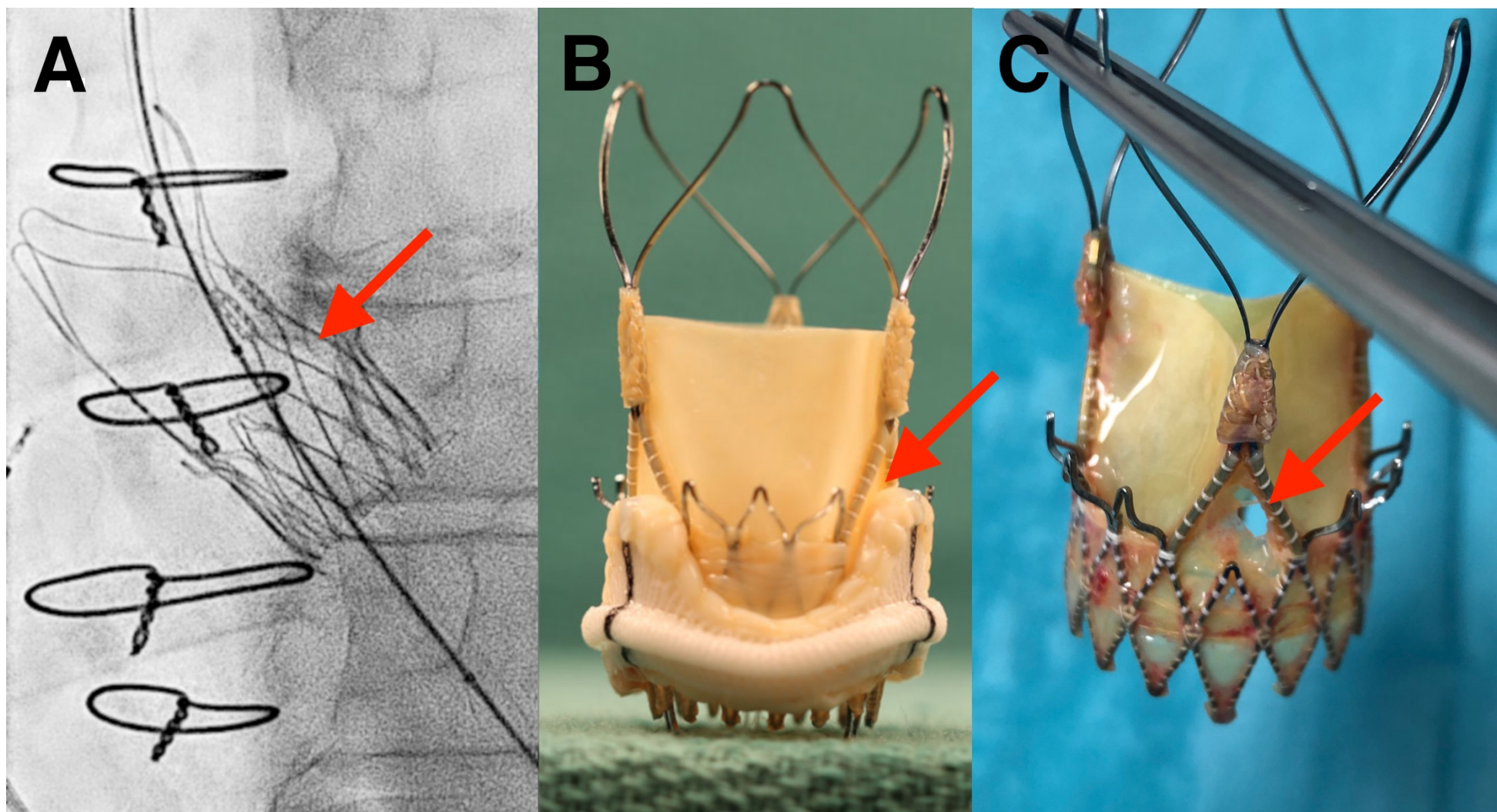
**Panel A:** Fluoroscopy after valve-in-valve TAVI using the ACURATE neo inside a Biocor surgical bioprosthesis. Red arrow showing the same area as in panels B and C.

**Panel B:** Ex-vivo image showing (red arrow) proximity of the upper edge of the stent post of the Biocor (outside) and the ACURATE neo prosthesis. Image courtesy of Dr. Vinayat Bapat and UBQO Limited, London, UK.

**Panel C:** The explanted ACURATE neo, with a hole under the stent post between the right and left cusp (red arrow).

### References:

1. Holzamer A, Kim WK, Ruck A. Valve-in-valve Implantation Using the ACURATE Neo in Degenerated Aortic Bioprostheses: An International Multicenter Analysis. J Am Coll Cardiol Intv; 2019 (in press).



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