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IMAGES IN INTERVENTION

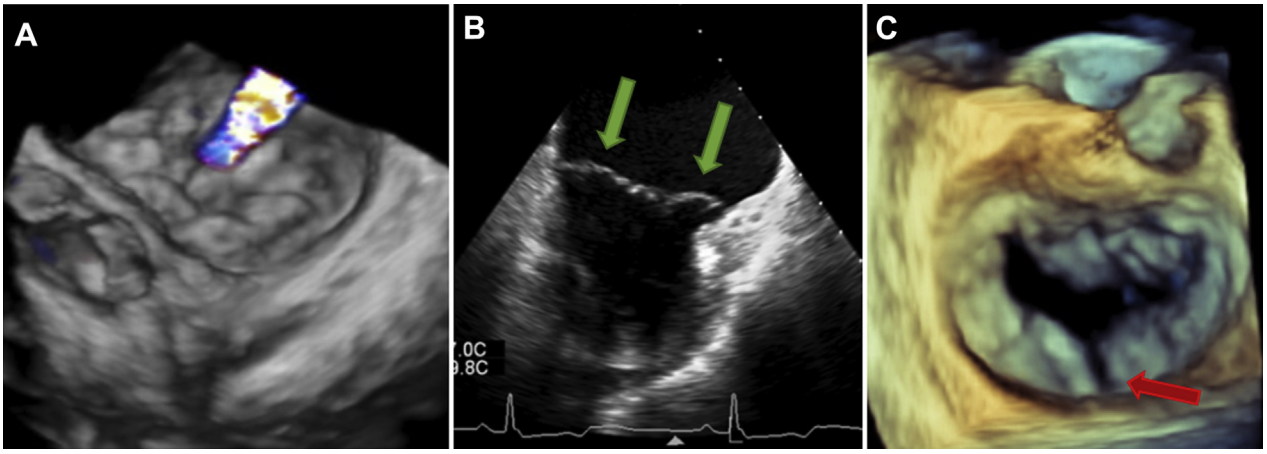
Transcatheter Mitral Annuloplasty in Barlow's Mitral Regurgitation With Deep Cleft

Shingo Kuwata, MD, PhD, Michel Zuber, MD, Fabian Nietlispach, MD, PhD, Maurizio Taramasso, MD, PhD, Francesco Maisano, MD

Barlow's valve is a clinically important etiology of degenerative mitral regurgitation (MR). In addition, abnormal, deep, cleft-like indentations make mitral valve (MV) repair much more complex (1).

An 80-year-old woman (EuroSCORE II 4.05%, STS score 5.6%) was admitted due to heart failure 10 months before. Two- and 3-dimensional transesophageal echocardiography revealed severe MR (**Figure 1A**) (effective regurgitant orifice area 0.7 cm^2) due to bileaflet prolapse with dilated annulus (**Figure 1B**) and a deep, cleft-like indentation in the P2 segment of the posterior leaflet (**Figure 1C**) without significant trans-MV mean pressure gradient (1 mm Hg) (Online Video 1). The patient was considered eligible for transcatheter MV annuloplasty using a Cardioband (Edwards Lifesciences, Irvine, California). The anchors were implanted from the anterolateral commissure,

FIGURE 1 Pathophysiology of MR



Severe mitral regurgitation (MR) **(A)** was due to bileaflet prolapse with dilated annulus **(green arrows in B)** and a deep, cleft-like indentation in the P2 segment of the posterior leaflet **(red arrow in C)** assessed by transesophageal echocardiography (Online Video 1).

From the University Heart Center Zurich, University Hospital Zurich, Zurich, Switzerland. Dr. Nietlispach is a consultant for Abbott, Medtronic, and Edwards Lifesciences. Dr. Taramasso is a consultant for Abbott Vascular and 4Tech. Dr. Maisano is a consultant for Edwards Lifesciences and Valtech Cardio; and receives royalties from Edwards Lifesciences. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

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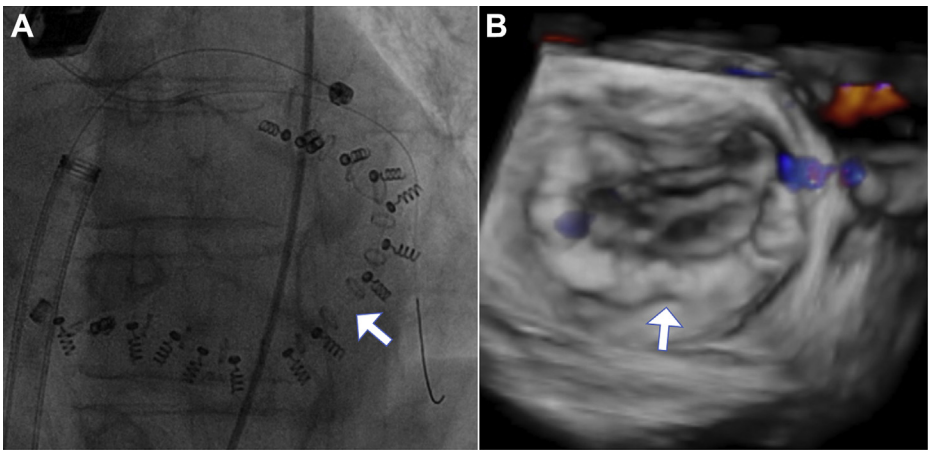
FIGURE 2 Cardioband Implantation



(A) Fluoroscopic image, **(B)** 3-dimensional transesophageal echocardiographic image. An anchor at the point of the cleft was skipped to deploy the device **(white arrows)** (Online Video 2).

through the posterior annulus, to the posteromedial commissure (**Figure 2A**). The Dacron band was then adjusted with cinching to 4.5 cm. With annular size reduction from 9.1 cm^2 to 4.5 cm^2, bileaflet prolapse was corrected, and MR disappeared (**Figure 2B**) without a significant trans-MV mean pressure gradient (1 mm Hg). In addition, with better coaptation, the deep cleft was closed after the procedure as well (Online Video 2). The solution to the larger difference between the 2 anchors beside the cleft was to close the gap with cinching (**Figure 2**).

Barlow's disease can be treated by surgical mitral annuloplasty (2). Transcatheter direct annuloplasty may be an ideal alternative option to treat Barlow's MR with additional abnormal, deep, cleft-like indentations.

ADDRESS FOR CORRESPONDENCE: Dr. Shingo Kuwata, University Heart Center Zurich, Rämistrasse 100, CH-8091 Zürich, Switzerland. E-mail: shingo.k.571019@gmail.com.

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KEY WORDS annuloplasty, cardioband, degenerative MR, transcatheter mitral valve repair

APPENDIX For supplemental videos, please see the online version of this paper.