

# Alain Cribier (1945–2024)

By Martine Gilard & William Wijns

 Check for updates

**A**lain Cribier, interventional cardiologist, revolutionized the management of valvular disease. He worked tirelessly to translate his vision into reality, perfecting the procedure of transcatheter aortic valve implantation (TAVI) and spurring on the discipline of structural heart disease treatment by expanding the options for a growing number of patients worldwide.

Alain Cribier was born in Paris in 1945, where he studied medicine at the University of Paris. Following a cardiology fellowship at Cedars-Sinai Medical Center in Los Angeles, he joined the Rouen University Hospital in France as an interventional cardiologist, where he later served as the director of cardiology.

Upon witnessing many patients with aortic stenosis dying because of contraindications to surgery, he developed the technique of balloon aortic valvuloplasty (BAV), which involved enlarging the narrowed, calcified aortic valve by balloon inflation using standard catheterization techniques under local anaesthesia<sup>1</sup>. Even though this concept initially met with scepticism, Alain Cribier had faith in his approach and was able to perform the first successful BAV in September of 1985 on a highly symptomatic, critically ill woman aged 72 years. This procedure resulted in the complete resolution of symptoms in the patient and allowed her to resume a normal life. The results of the first series of patients undergoing BAV at Rouen University Hospital was published in 1986 in *The Lancet*<sup>1</sup>, and the procedure was quickly embraced by the medical community.

BAV was subsequently evaluated in large international European and US registries and reported in hundreds of articles until 1991. However, the benefits of BAV were short-lived, owing to early valve re-stenosis. During this period, he envisaged the concept underlying TAVI – an approach whereby the diseased aortic valve is replaced with a new bioprosthetic valve using only percutaneous cardiac catheterization. The concept of a catheter-mounted valve was not new, having been introduced over 50 years before by



Hywel Davies in 1965 and further developed in 1992 by Henning Andersen, who sought to treat venous vascular disease and aortic valve regurgitation, but not calcific aortic stenosis, which, to his thinking, required surgical valve replacement.

In the late 1980s, when Alain Cribier was confronted with reports of early valve re-stenosis after BAV, he explored the idea of treating aortic stenosis using a prosthesis made from a balloon-expandable metallic frame or a large-diameter ‘stent’ containing a valvular structure that could be delivered to the diseased valve by balloon inflation. He had previously observed during the BAV procedures that large balloons could be inflated completely and circularly, pushing aside the valvular calcifications. Alain Cribier, together with H el ene Eltchaninoff, implanted over 100 prostheses in sheep in both short-term and long-term studies over a span of 2 years. The first-in-human implantation was performed in April 2002 in a man aged 57 years with severe aortic stenosis and in cardiogenic shock, who was deemed unable to undergo surgery owing to multiple comorbidities<sup>2</sup>. The reaction of the global medical community to this first case when it was published in *Circulation* defies imagination, even to this day.

Few medical discoveries have been subjected to such an outstanding scientific follow-up and evaluation as was TAVI. Now, 22 years after the first-in-human case, the indications for TAVI, which were originally limited to compassionate use for patients unable to undergo surgery, have been progressively extended in the US and European guidelines to include patients at intermediate or even low surgical risk.

The ramifications of Alain Cribier’s work are not limited to valvular disease or cardiology alone, but have rippled through many areas of medical practice. Countless young doctors have been inspired to train in performing these innovative techniques. Furthermore, the multidisciplinary ‘heart team’ concept that evolved from the practice of TAVI is the basis for a more holistic approach to personalized patient care.

Alain Cribier transformed and improved cardiovascular care in many creative ways, and his discoveries have improved the lives of countless patients and their families all around the world. He was passionate about sharing his ideas and experience with thousands of colleagues, who are empowered to continue his legacy to serve humankind.

Martine Gilard<sup>1</sup> & William Wijns<sup>2</sup>✉

<sup>1</sup>Facult e de M edecine de Brest, Brest, France.

<sup>2</sup>The Lambe Institute for Translational Medicine and Curam, University of Galway, Galway, Ireland.

✉ e-mail: [william.wyns@universityofgalway.ie](mailto:william.wyns@universityofgalway.ie)

Published online: 03 April 2024

## References

- Cribier, A. et al. Percutaneous transluminal valvuloplasty of acquired aortic stenosis in elderly patients: an alternative to valve replacement? *Lancet* **327**, 63–67 (1986).
- Cribier, A. et al. Percutaneous transcatheter implantation of an aortic valve prosthesis for calcific aortic stenosis: first human case description. *Circulation* **106**, 3006–3008 (2002).

## Competing interests

The authors declare no competing interests.