

See Article page 58.



## Commentary: Dogma to diachronicity: Evolving to lesion-specific repair of Barlow valves

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In this issue of the *Journal*, Barlow and colleagues<sup>1</sup> take us on a historical journey through John Barlow's eponymous description of the most severe form of myxomatous mitral valve degeneration. The authors<sup>1</sup> point out that Barlow valves, instead of Barlow's disease, may be the more appropriate nomenclature to describe the pathoanatomic features and management of this form of diffuse bileaflet myxomatous degeneration. In the 4 decades since Barlow's initial description, diagnosis and surgical management have substantially evolved. Advances in diagnostic imaging methods along with an enhanced understanding of functional anatomy have enabled targeted, patient-specific repair techniques.<sup>1-4</sup>

Carpentier,<sup>5</sup> who coined the term Barlow valve, outlined the principles of mitral valve repair with quadrangular leaflet resection, annular plication, chordal shortening, chordal transfer, and ring annuloplasty, to provide the foundation for our current surgical techniques for repair. To durably repair primary degenerative mitral regurgitation, instead of using a dogmatic approach based on one method, most now prefer a diachronic one—developed through assimilated technical advancement and lesion-specific therapy.<sup>1,4-6</sup>

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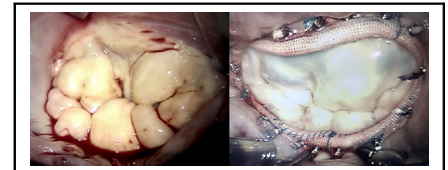
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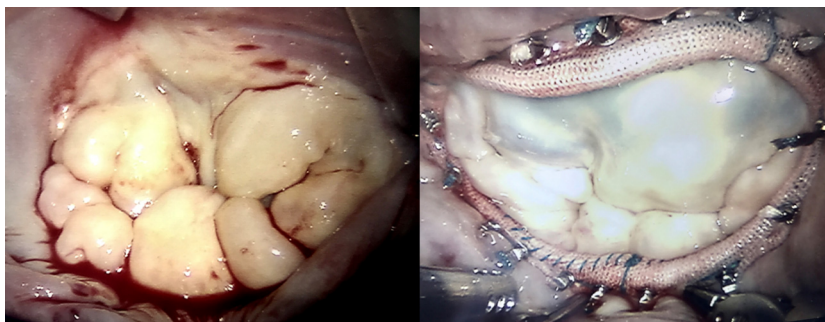
A lesion-specific tailored approach may facilitate durable mitral repair of Barlow valves.

### CENTRAL MESSAGE

Understanding the functional anatomy and pathoanatomic mechanism of a Barlow valve provides guidance for a targeted, lesion-specific, and durable mitral repair.

For bileaflet pathology, many experienced surgeons now advocate for a primarily posterior leaflet solution whenever feasible. Larger annuloplasty rings and tailored lesion-specific therapy may treat the primary pathology, restore excellent depth of coaptation and optimal effective orifice area, while simultaneously mitigating risk of systolic anterior motion.<sup>6-8</sup> Applying limited focal resections, respecting with nonresection techniques facilitated by polytetrafluoroethylene neochords, or a combination of both with a “respectful resection” are all methods to arrive at the same solution.<sup>7</sup> In some situations, extensive sliding leaflet valvuloplasty may indeed be required to reduce posterior leaflet height in the setting of a severe Barlow valve. However, in less-severe cases, excessive resection with or without annular plication may be accompanied by unwanted leaflet tension and limited mobility of the posterior leaflet, both negative influences for long-term durability. Similarly, relative immobility can be caused by excess tension applied to the posterior leaflet with neochordal nonresection techniques.

Durable repair of diffuse myxomatous degeneration can be achieved with preoperatively identified and intraoperatively confirmed lesion-specific solutions. As the authors<sup>1</sup> point out, an in-depth knowledge of the functional anatomy and mechanism of the regurgitation often provides the specific pathoanatomic targets to address surgically.<sup>3</sup> Currently, the repair rate for primary mitral regurgitation is greater than 80% in the United States and 14% are now performed robotically.<sup>4</sup> As imaging and knowledge of functional anatomy has advanced along with surgical



**FIGURE 1.** Barlow valve pathology of severe diffuse bileaflet myxomatous degeneration and excess motion can be durably repaired with targeted, lesion-specific, techniques to achieve the following goals: (1) restoring the depth of coaptation, (2) preserving bileaflet motion without tension, (3) avoiding systolic motion of the anterior leaflet, and (4) providing the largest effective orifice area possible with annular stability and minimal residual gradient.

technique, all forms of pathoanatomy including Barlow valves can be durably performed robotically by experienced teams (Figure 1).<sup>8</sup> We congratulate Clifford Barlow and colleagues<sup>1</sup> for their enlightening description of John Barlow's contributions, as lessons from the past indeed serve as the guideposts for the future.

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