the systolic phase, however, the leaflet easily tends to touch suture remnants, such as overknotted sutures or suture tails that are too long.^{2,3} Overknotted sutures should be avoided, and suture tails should be cut as short as possible, especially when implanting an externally mounted bioprosthesis.

This report was approved by the institutional ethics committee of Nagoya Heart Center. Written, informed consent was obtained from the patient.

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EDITORIAL COMMENTARY

The tail wagging the dog: Attention to detail in valvular surgery

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Successful valve surgery requires exquisite attention to detail at all phases of the operation. In aortic valve surgery, careful debridement of the calcified annulus and appropriate sizing of the aortic root are basic techniques taught to all cardiovascular surgical trainees. Careful placement of annular sutures is then demonstrated to avoid paravalvular leaks. Attention to the aortotomy is important while seating the valve to avoid tearing of the often-friable aorta. Next, appropriate tension while tying the annular sutures will avoid “pulling” through the native tissue while at the same time avoiding suture breakage or worse, a loose knot leading to an insecure valve. In this issue of the *Journal*, Dr Tamaki and colleagues¹ turn our attention to an often-overlooked component of the operation: suture cutting.

The very convincing figures and the early failure of a Trifecta (St. Jude Medical, Minneapolis, Minn) bioprosthesis point to repetitive trauma from an adjacent suture tail. A careful review of Figure 1 in the article of Tamaki and colleagues will demonstrate what we would normally consider an inappropriately long suture tail. Our trainees are instructed to cut sutures carefully at the level of the knot and to avoid tying more than 5 or 6 throws on any given suture to avoid a potentially dangerous suture tail. This case

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Central Message

Attention to detail is paramount to successful clinical outcomes after valve surgery.

See Article page 1432.

report and several personal anecdotes lends evidence to the prevailing theory that inappropriately long suture tails (either as the result of excessive throws or sutures cut too long) can cause injury. A similar phenomenon was observed when PROLENE sutures (Ethicon, Somerville, NJ) were used to repair degenerative mitral valves (Marc Gillinov, personal communication). A long tail (necessitated by the >8 throws needed when tying PROLENE) caused repetitive injury to a previously normal anterior mitral leaflet leading to perforation.

The authors also allude to the fact that externally mounted bioprosthesis such as the Trifecta or the Mitroflow (Liva-Nova; London, United Kingdom) are more prone to this form of injury as the cusps open wider during systole and are therefore more likely to come into contact with annular

sutures. Although I agree with their assertion, we should be aware that any valve including mechanical prostheses can be affected by an inappropriately long suture tail. I commend the authors for their forthright reporting of this rare, but likely underreported, complication and for their detailed accompanying figures. It is a sobering reminder that even

when you leave the operating room with a successful outcome, a technical error can lead to early failure.

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