Once anomaly, twice coincidence, thrice...

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NeoChord rupture near the ventricular apical insertion site.

Central Message

Two cases of delayed rupture of NeoChords demonstrate that mechanical chord failure can occur and will need further investigation in terms of incidence and prevention.

See Articles pages e23 and e27.

In this issue of the *Journal*, Grinberg and colleagues¹ present 2 cases of late rupture at 12 and 30 months of transapically implanted NeoChords (NeoChord Inc, St Louis Park, Minn). Grinberg and colleagues¹ conclude that differences from conventional chords in terms of axis and length could explain reported midterm chordal ruptures and that large-volume and long-term studies as well as biomechanical studies are required.

Just recently in this same *Journal*, Heuts and associates² reported a case of rupture at 5 months of all 3 NeoChords placed for mitral repair. Other NeoChord failures have been seen as a result of leaflet rupture, rupture of adjacent mitral chords, and change in relative NeoChord length.³ Delayed left ventricular apical rupture after NeoChord placement has also been described.⁴ Fortunately, rupture of NeoChords remains infrequent in the literature, and several series have reported reasonable clinical results with commercially available NeoChord placement in as many as 213 patients with follow-up out to 1 year.³ Even standardly placed GORE-TEX (W. L. Gore & Associates, Flagstaff, Ariz) neo-chords are known to have some small risk of rupture, possibly from trauma to the chord during placement or from late calcification.

Despite potential failures, NeoChord treatment of mitral regurgitation does have potential advantages of avoiding cardiopulmonary bypass, avoiding the stenotic effects of rings and MitraClip (Abbott Laboratories, Abbott Park, Ill), allowing active repair adjustment during physiologic conditions, and potentially managing larger flail gaps than feasible with MitraClip.

This report and that of Heuts and associates² demonstrate that rupture of NeoChords can occur. As with any new technology, caution is warranted until large numbers of long-term results are available for the NeoChord technique. One failure might be an anomaly, two might be a coincidence, but three or more suggest that further investigation is needed into the incidence and prevention of chordal rupture with NeoChord placement.

References

1. Grinberg D, Nouhou KA, Pozzi M, Obadia JF. Artificial mitral chordae: when length matters. *J Thorac Cardiovasc Surg.* 2019;157:e23-5.
2. Heuts S, Kawczynski M, Olsthoorn JR, Nia PS. Late rupture of transapically beating heart implanted NeoChords. *J Thorac Cardiovasc Surg.* 2019;157:e27-9.
3. Colli A, Manzan E, Aidietis A, Rucinskas K, Bizzotto E, Besola L, et al. An early European experience with transapical off-pump mitral valve repair with NeoChord implantation. *Eur J Cardiothorac Surg.* 2018;54:460-6.
4. Kassem S, Ricciardi G, Salvi L, Alimento M. Late left ventricular rupture as a complication of NeoChord implantation for mitral valve repair. *J Thorac Cardiovasc Surg.* 2018;156:e1-4.