The evolution of endovascular technology has made minimally invasive treatment of aortic pathology possible. Thoracic aortic injury is no exception with the advent of thoracic endovascular aortic repair (TEVAR). Since the approval of TEVAR for treatment of thoracic aneurysms, the indications for TEVAR have expanded to treatment of dissection and traumatic thoracic aortic injury.\(^1\) Despite the absence of randomized clinical trials comparing open repair with TEVAR for traumatic thoracic aortic injury, TEVAR has eclipsed open repair and has been recommended as the preferential operative approach by the Society of Vascular Surgery guidelines (grade 2, level C).\(^2\) Importantly, few studies have examined the long-term outcomes of treating traumatic thoracic aortic injury with TEVAR.

Cheng and colleagues\(^3\) report the results of a retrospective review of patients with thoracic aortic injury over a 10-year period using a large national database comparing patients treated with either TEVAR or open repair. They overcome the problems of follow-up using this 100% captured national database, reporting a mean follow-up of 2.8 years. They demonstrate that TEVAR was associated with significantly lower in-hospital mortality compared with the open repair group (9% vs 27%; odds ratio, 0.27; 95% CI, 0.12-0.60; \(P = .002\)). Additionally, many complications were lower in the TEVAR group. Importantly, the long-term survival benefit of endovascular repair appears to persist out to as far as 5 years and there was no difference in long-term reintervention rates in either of the groups.

This study provides a nice example of how in the absence of randomized clinical trials, quasi-experimental designs can be used to provide the next best level of evidence. The data presented by Cheng and colleagues\(^3\) inform our understanding of the short- and long-term outcomes among patients treated for traumatic thoracic aortic injury. Given the outcomes noted in this analysis, it would be hard to conceive of a randomized clinical trial being approved where the mortality of open repair is 3 times higher than endovascular repair. Although the unique Taiwanese national data source provides 100% follow-up within the study cohort, there are still some major limitations. The authors have attempted to adjust for measured confounders using propensity score matching; however, unmeasured confounders may remain and bias the results. Highly granular data regarding the traumatic thoracic aortic injuries themselves, including the grade of injury, hemodynamic status of the patient, and extent of repair, limit this study. Despite these limitations, however, Cheng and colleagues\(^3\) have contributed to our understanding of the outcomes of treating traumatic thoracic aortic injury with TEVAR. As technology continues to evolve at a rapid pace, similar studies will be needed to fill our gaps in knowledge where clinical trials are either too expensive or difficult to perform.
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REFERENCES

