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CORRESPONDENCE

Re: 'Type II Endoleak: Conservative Management Is a Safe Strategy'

Sidloff et al.¹ report an improved overall mortality among patients with type 2 endoleaks. However, their conclusions must be interpreted with caution as study design and consequent selection bias are limiting factors. Moreover, a causal connection between type 2 endoleaks and improved survival is implausible and most likely the effect of confounders. Although a lower atherosclerotic burden in these patients has been reported,² this hypothesis does not find support in the presented data.

Type 2 endoleaks have been associated with occult or posture dependent type 1 and type 3 endoleaks,^{3,4} suture line holes,⁵ or late fabric failure,⁶ which lead to outflow of blood from the sac to its' main collaterals. In their cohort, Sidloff et al. reported six cases of type 1 endoleak among the type 2 endoleak group, which was not statistically significant. Nevertheless, although angiography has been demonstrated to be more discriminating for the diagnosis of occult type 1 or 3 endoleaks,⁴ it was not routinely performed in the study group.

Type 2 endoleak directed interventions have proven to be ineffective in arresting aneurysm sac enlargement,⁷ and treatment related complications have probably been under reported in the literature.⁸ In the cohort presented by Sidloff et al., interventions were also unsuccessful,¹ but the authors' treatment strategy is not clearly presented. Moreover, data regarding aneurysm sac dynamics following treatment could have further elucidated the outcomes of these interventions.

The bottom line is the natural history of type 2 endoleaks is not clear, their impact on aneurysm related adverse events is controversial, and optimal management remains to be established. Moreover, although attempts to resolve type 2 endoleaks remain largely unsuccessful, type 2 endoleaks are at least associated with an equivalent overall prognosis. Perhaps, this may be further improved if the consequences of unnecessary interventions are avoided.

REFERENCES

- Sidloff DA, Gokani V, Stather PW, Choke E, Bown MJ, Sayers RD. Type II endoleak: conservative management is a safe strategy. Eur J Vasc Endovasc Surg 2014;48(4):391–9.
- 2 van Marrewijk CJ, Fransen G, Laheij RJ, Harris PL, Buth J. EUROSTAR Collaborators. Is a type II endoleak after EVAR a harbinger of risk? Causes and outcome of open conversion and aneurysm rupture during follow-up. Eur J Vasc Endovasc Surg 2004;27(2):128–37.
- **3** May J, Harris JP. Intermittent, posture-dependent, and late endoleaks after endovascular aortic aneurysm repair. Semin Vasc Surg 2012;25(3):167–73.
- 4 Aziz A, Menias CO, Sanchez LA, Picus D, Saad N, Rubin BG, et al. Outcomes of percutaneous endovascular intervention for type II endoleak with aneurysm expansion. J Vasc Surg 2012;55(5):1263-7.

- 5 Ouriel K. Image in clinical medicine. Abdominal aortic aneurysm. N Engl J Med 2002;346(19):1467.
- 6 Dayama A, Tsilimparis N, Kasirajan K, Reeves JG. Late Gore Excluder endoprosthesis fabric tear leading to abdominal aortic aneurysm rupture 5 years after initial implant. J Vasc Surg 2013;57(1):221–4.
- **7** Cieri E, De Rango P, Isernia G, Simonte G, Ciucci A, Parlani G, et al. Type II endoleak is an enigmatic and unpredictable marker of worse outcome after endovascular aneurysm repair. J Vasc Surg 2014;59(4):930–7.
- 8 Sidloff DA, Stather PW, Choke E, Bown MJ, Sayers RD. Type II endoleak after endovascular aneurysm repair. Br J Surg 2013; 100(10):1262-70.

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Re: 'Type II Endoleak: Conservative Management Is a Safe Strategy'

Thank you for your interest in this article. An association between type II endoleak and survival has recently been described in a similar cohort of patients¹; therefore, this finding is not unique. We acknowledge that these observations are unexplained, and possibly secondary to confounders, but do not feel that they can be dismissed without further investigation in independent studies. Furthermore, we feel that whilst interesting, this finding is not the key take-home message from our work, and in-depth