Journal Pre-proof

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PII: S1078-5884(22)00224-6

DOI: https://doi.org/10.1016/j.ejvs.2022.04.003

Reference: YEJVS 8360

To appear in: *European Journal of Vascular & Endovascular Surgery*

Received Date: 4 April 2022

Accepted Date: 4 April 2022

Please cite this article as: Ali T, Stather P, Rupture post-EVAR: Are we missing the signs?, *European Journal of Vascular & Endovascular Surgery*, https://doi.org/10.1016/j.ejvs.2022.04.003.

Rupture post-EVAR: Are we missing the signs?

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The rate of reintervention and rupture post endovascular aneurysm repair (EVAR) has always been its Achilles heel, with post-EVAR surveillance an essential component to enable timely reintervention and reduce this rupture risk. Andersson *et al*.[1] present a 10-year study across 5 Swedish hospitals whereby they have retrospectively analysed all post-EVAR ruptures to determine whether precursors of rupture would have been detected by using a structured CT analysis.

In this study, 45 post-EVAR ruptures occurred in 43 patients out of 1805 EVARs (incidence 2.5%) with a further 6 cases identified who had their original procedure elsewhere. Of these 51 patients, 16 had precursors of rupture already noted on surveillance, with a further 27 found to have identifiable precursors of rupture when reviewed retrospectively using the structured analysis protocol. The authors therefore claim that the use of this structured protocol will increase the detection rate of post-EVAR complications. Whilst this statement is true, it should be noted that 410 patients had undergone reintervention within the study period, and 16 patients had a decision not to treat, therefore the current detection rate of complications is 22.7%, with the structured analysis increasing this by 1.5%. It should also be noted that only those with post-EVAR rupture were retrospectively reviewed.

Current ESVS guidelines[2] recommend CT follow-up post-EVAR however surveillance strategies and modalities vary widely, with the majority using ultrasound surveillance. Although ultrasound is user dependant, and poor for looking at seal zones and migration, it is cheap, and reduces the risks of ionizing radiation and renal impairment. The use of CT scans also requires appropriately trained radiologists for reporting. It is unclear whether CT scans were reported by vascular radiologists, as it can be challenging for subtle changes related to post-EVAR complications to be identified by non-vascular radiologists. Furthermore, ensuring a standardised CT protocol is performed (triggered vs timed, phases, unenhanced and arterial vs triple phase) is an essential aspect of imaging. Standard reporting practices in the 5 hospitals were not clear.

Recently the ODYSSEUS study[3] has shown that in patients with a normal initial CT scan post EVAR, discontinuing surveillance was not associated with poorer outcomes, and ESVS guidelines[2] which have undergone single centre evaluation[4], raise the possibility of reduced surveillance in patients with normal initial post-operative CT scans. This underlines the premise that patients will present with symptomatic complications, however presentation of a subsequent rupture is most likely to be sudden death, and therefore without widespread adoption of post-mortems it is not surprising that outcomes are similar between groups, as many secondary ruptures are likely to remain unknown. Patients

treated for ruptured AAA have an even higher reintervention rate >30% and a secondary rupture rate of 3.3%[5] and are therefore an even more essential cohort to monitor.

Regardless of follow-up strategy, ensuring an appropriate modality of imaging, with the correct protocol, and an appropriately trained specialist to report that imaging in a standardised way is imperative to detect potential post-EVAR complications, and therefore reduce that risk of rupture.

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