Morphological phenotypes are associated with early type I endoleak despite failure of conventional hostile neck and access metrics

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Background

Traditional binary morphological neck and access thresholds have a limited ability to predict early type 1 endoleaks (T1EL) following endovascular aortic aneurysm repair (EVAR). This study aimed at using fully automated volume segmentation (FAVS) to identify anatomical phenotypes associated with early T1EL.

Methods

This was a multicentre retrospective cohort study of patients undergoing EVAR, whose pre-operative CT angiography were analysed FAVS, with linked National Vascular Registry clinical data. Unsupervised Gaussian mixture modelling was used to identify anatomical phenotypes. The primary outcome was early (≤30-day) T1EL. Phenotypes were compared for endoleak rates and distribution of hostile anatomy. Performance of traditional hostile anatomy constructs was evaluated for comparison, and assessed using receiver operating characteristic, and area under the curve analysis (AUC).

Results

Among 1,003 patients, early T1EL occurred in 62 (6.2%). Traditional hostile anatomy constructs demonstrated poor discrimination for early T1EL (AUC 0.533). Six distinct morphological phenotypes were identified, with significantly different early T1EL rates (4.2%–21.6%, p=0.001). All phenotypes contained anatomies classified as both hostile and non-hostile by conventional criteria (38.9%–83.4%), with significant differences in neck thrombus and calcification burden (p<0.001). After adjustment for baseline characteristics, phenotype remained independently associated with early T1EL and significantly improved model fit compared with hostile anatomy-only models (likelihood ratio test, p=0.041). Overall model discrimination was modest (AUC 0.697, 95% CI 0.632–0.761).

Conclusions

Traditional hostile anatomy definitions inadequately predict early T1EL after EVAR. High-dimensional morphological phenotyping using FAVS identifies anatomical patterns associated with early failure, supporting a move toward morphology-driven EVAR planning.

Conformable Endovascular Aneurysm Repair (EVAR) stability in hostile neck Abdominal Aortic Aneurysms: A single-centre experience

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Background

Stent graft migration is a recognized complication of endovascular aneurysm repair (EVAR) and may result in type I endoleaks, renal artery compromise, and reintervention, particularly in patients with hostile proximal neck anatomy. The GORE Excluder Conformable AAA Endoprosthesis (CLEVAR) is designed to accommodate short, narrow, and highly angulated necks. This study evaluated early graft stability by assessing migration within the first postoperative year in patients with hostile neck anatomy.

Methods

A retrospective analysis was performed of patients undergoing EVAR with the CLEVAR device for hostile neck abdominal aortic aneurysms between January 2019 and December 2022. Patients with computed tomography angiography at both three months and one year postoperatively were included. Migration was defined as the change in distance between the proximal stent edge and the bilateral renal arteries. Descriptive statistics were calculated. Normality was assessed using the Shapiro–Wilk test, and comparisons were performed using the Wilcoxon signed-rank test.

Results

Twenty-five patients were included. Mean stent migration was 1.29 mm (SD 1.36mm), with a median of 0.85 mm and a maximum of 6.0 mm. Mean migration relative to the right and left renal arteries was 1.17 mm and 1.40 mm, respectively, with no significant difference between sides ($p = 0.4261$). Migration was statistically greater than zero ($p < 0.00000001$) but remained small.

Conclusions

The CLEVAR device demonstrated minimal early migration and stable proximal fixation in hostile neck anatomy during the first postoperative year. These findings support reliable early stability, although longer-term studies with larger cohorts are required to confirm durability.

Gender disparities in Thoracic Aortic Aneurysm mortality among older adults aged ≥75 years: A U.S. population-based trend analysis (1999-2023)

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Background

Thoracic aortic aneurysm (TAA) is an important cause of mortality in older adults, with outcomes potentially influenced by sex-based biological and healthcare disparities. Contemporary long-term trends in TAA-related mortality among the elderly, particularly regarding gender differences, remain incompletely characterized. This study investigated mortality trends and sex disparities in TAA-related deaths among adults aged 75 years or older in the United States.

Methods

We analyzed death certificate data from the CDC WONDER database for adults aged ≥75 years with TAA (ICD-10 I71.1, I71.2) from 1999–2023. Age-adjusted mortality rates (AAMR) per 100,000 were calculated by sex. Joinpoint regression estimated annual percentage change (APC) and average annual percentage change (AAPC).

Results

A total of 36,502 TAA deaths occurred. Overall AAMR declined from 11.5 to 6.9 (AAPC –2.09%), with a marked decrease from 1999–2016 (APC –4.27%) followed by a rise from 2016–2023 (APC 3.42%). Men had higher mortality than women throughout. Among men, AAMR fell from 13.3 in 1999 to 8.4 in 2023 (AAPC: –1.93%), declining significantly from 1999–2014 (APC: –5.55%) before rising 2014–2023 (APC: 4.40%). In women, AAMR dropped from 10.5 to 5.8 (AAPC: –2.57%), decreasing significantly 1999–2016 (APC: –3.98%) and remaining stable 2016–2023 (APC: 0.92%).

Conclusions

TAA mortality among adults ≥75 years declined overall but recently increased, especially in men. Persistent sex disparities highlight the need for targeted surveillance, early diagnosis, and sex-specific preventive strategies in the elderly population.

Post-Endovascular Aneurysm Repair surveillance in the United Kingdom: A survey of current clinical practice

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Background
The aim of this survey is to establish current post-EVAR surveillance practice across vascular centres in the United Kingdom (UK) and report variations in practice, including adherence to the latest European Society of Vascular Surgery (ESVS) clinical practice guidelines.

Methods
Cross-sectional web-based survey was disseminated to 64 aortic centres in the UK, and data collected on the use of various imaging modalities at set time points after standard infrarenal and complex EVAR.

Results
Response rate was 84.4% (54/64 centres). Early imaging was CTA (44/54, 81.5%), DUS (22/54, 40.7%) and AXR (8/54, 14.8%) for standard EVAR and CTA (37/39, 94.9%), DUS (11/39, 28.2%) and AXR (6/39, 15.4%) for complex EVAR, with variability in timing. One year imaging for standard EVAR was CTA (21/47, 44.7%), DUS (30/47, 63.8%) and AXR (9/47, 19.1%), and CTA (26/32, 81.3%), DUS (11/32, 34.4%) and AXR (7/32, 21.9%) for complex EVAR.
The predominant choice for annual surveillance after standard EVAR was DUS (45/54, 83.3%) followed by CTA (10/54, 18.5%), with the dominant choice CTA at 22/39 (56.4%) centres and DUS at 21/39 (53.8%) centres after complex EVAR. Only one centre employed an extended interval after initial imaging until 5 years after EVAR as per ESVS guidelines.

Conclusions
This survey reveals the variation in surveillance practices after EVAR between vascular centres in the United Kingdom, with limited adherence to the ESVS clinical practice guidelines. There continues to be a reliance on CTA for early post-EVAR surveillance, with ultrasound mostly used for long-term follow-up.

Reducing delays in the diagnosis and management of arterial acute mesenteric ischaemia: A five-year audit informing development of a multidisciplinary regional care pathway

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Background

Arterial acute mesenteric ischaemia (AMI) is a time-critical vascular emergency with high mortality. Diagnosis is often delayed due to non-specific presentation and variable referral pathways, especially in transferred patients. Delays in recognition, imaging, and specialist involvement worsen outcomes. This audit aimed to identify causes of delay and inform development of a standardised multidisciplinary protocol to reduce time to definitive care.

Methods

A retrospective single-centre clinical audit was conducted between 2020 and 2025. Adult patients with confirmed arterial AMI were identified using hospital coding and vascular referral databases. Patients with incomplete documentation or non-arterial aetiology were excluded. Data were collected against 59 predefined criteria including demographics, comorbidities, referral source, CT imaging timelines, time to management decision, and treatment strategy. Descriptive analysis identified delays and variation in care. The project was registered as a clinical audit and did not require formal ethical approval.

Results

Of 145 screened patients, 88 met inclusion criteria. Admissions occurred under Vascular Surgery (n=40), General Surgery (n=24), combined teams (n=8), and other specialties (n=16). Mean CT request-to-scan time was 3h19m, scan-to-report 4h55m, and CT-to-revascularisation 5h38m. Only 30/88 CT requests documented suspected AMI. Revascularisation occurred in 23/88 patients. Overall mortality was 52/88.

Conclusions

Significant and potentially avoidable delays were identified across the arterial AMI pathway. A structured multidisciplinary protocol and MDT proforma were developed to standardise early recognition, explicit CT documentation, and timely escalation. Wider regional adoption with prospective data collection is expected to reduce diagnostic delay and improve patient-centred outcomes.

Clinical messages from the GLOBALSTAR registry: improving care in Fenestrated Endovascular Aneurysm Repair (FEVAR)

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Background

GLOBALSTAR is a registry of complex EVAR; long-term outcomes of FEVAR have previously been reported. Aims: examine differential outcomes after FEVAR between 'high-risk' subgroups-octogenarians, women, secondary FEVAR and complex graft configurations; describe patient journeys to secondary sac rupture.

Methods

Retrospective cohort study of GLOBALSTAR. Standard descriptive/comparative statistics were applied to peri-operative complications. Kaplan-Meier/cumulative incidence with competing risks were applied to survival, reintervention and endoleaks. Log-rank/Fine-Gray were used to compare subgroup time-to-event functions. Swimmer plot analysis summarised progression to rupture.

Results

n=1651 FEVARs in GLOBALSTAR.

Octogenarians: equivalent incidence of peri-operative complications (p=0.2) and 1-year survival (p=0.11). Equivalent survival out to 7 years between 80-84 and ≥85-year-olds (p=0.284). *Women:* compared to men, ~ double incidence of major complication (22.0%vs11.9%, p<0.001), ~ three-fold incidence of MACE (5.9%vs2.1%, p=0.006) and peri-operative death (5.9%vs2.1%, p=0.004). *Secondary FEVAR:* over follow-up, significantly higher risk of re-intervention (sHR 1.79, 95%CI:1.37–2.34, p<0.001) and graft-related endoleaks, Type I (sHR 2.37, 95%CI:1.45–3.88, p=0.001) and Type III (sHR 2.12, 95%CI:1.36–3.32, p=0.001). *Graft configurations:* equivalent incidences of peri-operative complication (p=0.1), although all SCI cases (1.0%) occurred in the 4-fenestration group; equivalent rates of reintervention over follow-up. *Secondary rupture:* n=36, 83.3% with detected endoleaks, 50.0% with reintervention preceding rupture.

Conclusions

Age alone should not be used to preclude patients from FEVAR, effective case selection can yield good outcomes for octogenarians. Significantly worse peri-operative outcomes for women suggests better pre-operative investigation/optimisation is required. Higher rates of reintervention and graft-related endoleak for secondary FEVAR may justify more aggressive surveillance.