Highlights From the ESVS 2024 Clinical Practice Guidelines on the Management of Abdominal Aortoiliac Artery Aneurysms

Selected new and revised recommendations from the updated AAA guidelines.

By Isabelle Van Herzeele, MD, PhD; Carlota F. Prendes, MD, PhD; Kevin Mani, MD, PhD; Nikolaos Tsilimparis, MD, PhD; Frederico Bastos Gonçalves, MD, PhD; and Anders Wanhainen, MD, PhD

The updated "European Society for Vascular Surgery (ESVS) 2024 Clinical Practice Guidelines on the Management of Abdominal Aorto-Iliac Artery Aneurysms" were published in February 2024.[1] The document was developed by an expert committee consisting of 16 aortic experts from 12 European countries and has undergone an extensive review by 24 international aortic specialists and guidelines experts. By summarizing and evaluating the currently best available evidence, 160 recommendations for the evaluation and treatment of patients have been formulated and graded according to a modified European Society of Cardiology grading system, where the strength (class) of each recommendation is graded from I to III and the letters A to C to mark the level of evidence (LoE). Compared to the 2019 version, 59 recommendations are completely new, 49 recommendations have been revised, and only 52 remain unchanged. This reflects the rapid development in the field and highlights the importance of updating the guidelines. Importantly, only 10/160 (6%) recommendations are based on level A evidence, while 112 (70%) are supported by level C evidence or based on consensus, illustrating lack of evidence in the aortic field.

Nevertheless, the ESVS 2024 guidelines provide the most comprehensive, up-to-date, and unbiased advice to clinicians and patients on the management of abdominal aortoiliac artery aneurysms. In the following sections, we present a selection of important news of relevance to vascular specialists as well as policymakers.

SCREENING FOR ABDOMINAL AORTIC ANEURYSMS

Although the four randomized trials evaluating population screening in men showed an overall reduction in abdominal aortic aneurysm (AAA)–specific mortality, there are several limitations in translating their results into contemporary practice. Most significantly, they were initiated during the last century when AAA prevalence ranged from 4% to 7%. As current rates of AAA detection have fallen to < 1% in many countries, AAA screening, formerly advocated for all men aged 65 years, is now only recommended for high-risk populations (class I, LoE A). The definition of high-risk population has been left open so that country-specific factors such as prevalence and smoking rates can be incorporated on an individualized basis.

SURVEILLANCE OF SMALL AAAs

There has been an increase in knowledge regarding the natural history of subaneurysmal aortas (25-29 mm), with long-term studies suggesting that 60% to 80% will progress to AAAs ≥ 30 mm within 5 years and approximately 30% will reach the repair threshold within 10 years. This has led to the incorporation of subaneurysmal aortas into AAA surveillance recommendations, suggesting ultrasound assessment every 5 years. Additionally, a new recommendation suggesting consideration of discontinuation of surveillance in patients unlikely to reach the repair threshold, either due to age, comorbidities, or patient preference, has been incorporated (class IIa, LoE C).

MEDICAL MANAGEMENT OF SMALL AAAs

Several studies have suggested an increased AAA risk from fluoroquinolone exposure. However, after evaluation

of available literature, there is currently insufficient evidence to support this claim. Thus, a new recommendation stating that small AAAs are not a contraindication for fluoroquinolone antibiotics (class III, LoE B) has been created.

Similarly, a recent randomized controlled trial (RCT) evaluating exercise in patients with AAAs found it to be safe, and without data suggesting that exercise is harmful in these patients, restricting exercise or sexual activity in patients with small AAAs is not indicated (class III, LoE B).

Finally, although a number of recent experimental studies and observational data have pointed to possible growth-inhibitory effects of metformin, there remains a lack of high-quality RCT-level data, and as a result, no recommendation regarding metformin can be made at present.

THRESHOLD FOR ELECTIVE REPAIR

The size at which an aneurysm should be repaired is based on the balance between aneurysm rupture risk and operative mortality risk of aneurysm repair. Hence, in line with the evidence, a negative recommendation for the repair of a fusiform, degenerative AAA < 55 mm in men and < 50 mm in women has been issued. The diameter threshold for when repair can be considered is maintained at 55 mm for men and 50 mm for women; however, the recommendations have been downgraded due to lack of supporting high-quality evidence. Furthermore, the diameter threshold for considering repair should be based primarily on ultrasound measurement, while CTA for treatment planning is only recommended when the diameter threshold has been met on ultrasound. Keep in mind that most available evidence relates to White men in highly developed socioeconomic societies.

ELECTIVE AAA REPAIR

The RCTs comparing open surgical repair (OSR) and endovascular aneurysm repair (EVAR) of AAAs are partly outdated. Therefore, more recent case series and registry studies were included in the consideration of recommended surgical technique, which led to the downgrading to LoE B. The latter suggests a significant short-term survival benefit of EVAR over OSR, with similar long-term outcomes up to 15 years of follow-up. In the 2024 ESVS guidelines, EVAR remains the preferred treatment modality for AAA in most patients.

Durability, life expectancy, quality of life after AAA repair, and patient preference should be considered in shared decision-making. Following reports of failing devices in EVAR, devices with proven durability should be used, and this guideline advises against EVAR outside the manufacturer's instructions for use in elective cases. Long-term follow-up including 10-year durability data of updated devices should be gathered in prospective registries. Routine preemptive coiling of side branches or nonselective aneurysm sac embolization before EVAR is not recommended due to lack of evidence of a clinically relevant benefit. In OSR, routine use of antimicrobial-coated grafts to prevent aortic graft infection is not recommended.

CENTRALIZATION

The relationship between volume and outcome in aortic surgery has been extensively studied. Many studies indicate an established relationship where outcome for OSR and EVAR is improved with increasing surgical volume. In the 2024 guidelines, the recommendation regarding volume threshold for aortic centers has been raised to a minimum caseload of 30 AAA repairs annually (up from 20 cases previously), with a minimum of 15 each by open and endovascular methods. A key concept in the ESVS guidelines is that centers offering aortic repair should have dual experience in open surgery and endovascular repair. Similarly, for centers performing complex aortic repair, the guidelines recommend a minimum annual caseload of 20 complex AAA repairs with open and fenestrated/branched endovascular repair combined. Less common aortic diseases such as mycotic aneurysms, graft infections, and aneurysms in patients with connective tissue disease should be managed at specialized centers with specific competence in these pathologies.

COMPLEX AAAs

Complex AAA, defined as short-neck, juxtarenal, suprarenal, and type IV thoracic AAAs, are for the first time included in the ESVS AAA guidelines as a separate chapter. The threshold of repair for these pathologies should be > 55 mm for male and 50 mm for female patients, taking into account fitness for repair, aneurysm anatomy, and patient preferences. Endovascular treatment with fenestrated and branched devices is considered first-line therapy for high-risk patients, while standard-risk patients should also be considered for open repair (especially short-neck and juxta/pararenal aneurysms), depending on patient fitness, anatomy, and patient preference. In the emergent setting, use of less-proven technologies, such as off-the-shelf branched stent graft, physician-modified endograft, in situ fenestrations, or parallel grafts, may be justified while trying to manage a life-threatening condition. Renovisceral debranching combined with thoracoabdominal stenting (hybrid procedure) is not recommended as the first-line treatment for complex AAA, and new techniques and concepts are not recommended in routine clinical practice but should be limited to studies approved by research ethics committees with patients' informed consent, until adequately evaluated. Regarding organ protection in complex AAA repair, preservation of accessory renal arteries should be considered during endo-

vascular repair, and cold renal perfusion should be considered with a suprarenal clamp time > 25 minutes during OSR.

NEW EVAR FOLLOW-UP ALGORITHM

The purpose of routine imaging follow-up after EVAR is to detect asymptomatic complications leading to secondary interventions to prevent rupture. However, there is no agreement on the optimal strategy, owing to low capacity to effectively improve rupture rates and reduced influence on survival. The new guidelines reinforce the role of the 30-day CTA as a surrogate of success and suggest restriction of imaging during the first 5 years for patients who are considered low risk (ie, no endoleak is visible and component overlap and sealing zones are considered adequate). Importantly, and following new evidence on anatomic risk factors, even low-risk patients with high-risk anatomic features (proximal neck diameter > 30 mm, proximal neck angulation > 60°, iliac diameter > 20 mm, investigational/new device) should be considered for routine (annual) imaging. However, when favorable sac dynamics are observed, annual exams may be safely waved. Conversely, due to the continued risk of progression of disease, even low-risk patients should be considered for lifelong image surveillance, especially once the first 5 years have passed.

Another important suggestion of the new guidelines is the stepwise approach to patients in which an endoleak is presumed but cannot be visualized or adequately characterized. In these cases, and when both CTA and duplex ultrasound are inconclusive, the following step is proposed to perform contrast-enhanced ultrasound/three-dimensional contrast-enhanced ultrasound, dynamic CTA, or MRI with a blood pool agent. When this is still not sufficient for a definitive diagnosis, exclusion of infection through 18-fluorodeoxyglucose positron emission tomography/CT, white blood cell scintigraphy, or even direct sac puncture should follow. If infection is excluded, diagnostic angiography with temporary proximal and/or distal balloon occlusion is advised. If diagnosis is still evasive and after careful risk/benefit evaluation, stent graft relining or conversion to OSR should be considered. ■

1. Wanhainen A, Van Herzeele I, Bastos Goncalves F, et al. Editor's Choice—European Society for Vascular Surgery (ESVS) 2024 clinical practice guidelines on the management of abdominal aorto-iliac artery aneurysms. Eur J Vasc Endovasc Surg. 2024;67:192-331. doi: 10.1016/j.ejvs.2023.11.002

Isabelle Van Herzeele, MD, PhD
Co-Chair, ESVS Guideline Writing Committee
Department of Thoracic and Vascular Surgery
Ghent University Hospital
Ghent, Belgium
isabelle.vanherzeele@uzgent.be
Disclosures: FWO-PhD Fellowship fundamental research, Medtronic.

Carlota F. Prendes, MD, PhD
Department of Vascular Surgery
Ludwig-Maximilians University Hospital
Munich, Germany
Disclosures: None.

Kevin Mani, MD, PhD
Department of Surgical Sciences
Uppsala University
Uppsala, Sweden
Disclosures: None.

Nikolaos Tsilimparis, MD, PhD
Department of Vascular Surgery
Ludwig-Maximilians University Hospital
Munich, Germany
Disclosures: Proctor for and institutional funds from Cook Medical and Bentley; consultant to Siemens and Medtronic; speaking fees from Terumo Aortic.

Frederico Bastos Gonçalves, MD, PhD
NOVA Medical School
Universidade NOVA de Lisboa
Hospital de Santa Marta, Centro Hospitalar Universitário de Lisboa Central, and Hospital CUF Tejo
Lisbon, Portugal
Disclosures: None.

Anders Wanhainen, MD, PhD
Chair, ESVS Guideline Writing Committee
Department of Surgical Sciences, Vascular Surgery
Uppsala University
Uppsala, Sweden
Department of Surgical and Perioperative Sciences, Surgery
Umeå University
Umeå, Sweden
anders.wanhainen@uu.se
Disclosures: None.