# Single Center Retrospective Study on the Efficacy of Contrast Enhanced Ultrasound for Detection of Endoleak after Endovascular Aortic Repair

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#### **Results/Discussion**

- Out of 35 imaging combinations, endoleak was detected in 24 cases by CTA and in 23 cases by CEUS.
- Conventional angiography was also performed in 16 of the 35 events.
- There were 23 cases of endoleak detection by both CEUS and CTA.
- CEUS yielded a 96% sensitivity, 100% specificity, 100% PPV, and 92% NPV compared to CTA as the reference standard.
- CEUS discerned the correct endoleak type in 23 of 23 events.

An example of discordance between imaging modalities

> A) **CT:** Filling of the aortic sac externally to endograft believed to be from a feeding artery supplying the aneurysm posteriorly (arrow).

B) **CEUS:** Filling of the sac via the left common iliac artery through the graft, consistent with a type 3 endoleak (arrow).





CTA v. CEUS Ref Standard: CTA		CEUS v. CA Ref Standard: CEUS				
Sensitivity	96%	Sensitivity		86%		
Specificity	100%	Specific	Specificity		50%	
PPV	100%	PPV		92%		
NPV	92%	NPV		33%		
CTA v. CA Ref Standard: CTA			Corree endole detecti	ct ak on	Incorrect endoleak detection	
Sensitivity	87%		type		type	
Specificity	100%	CEUS	23		0	
PPV	100%	СТА	20		3	
NPV	33%				p=0.233	

## Conclusions

Contrast-Enhanced Ultrasound (CEUS) is a safe and accurate imaging modality for evaluation of endoleak post-EVAR. Additionally, CEUS is equivalent to CTA in identifying endoleak type. Given its reliability and lack of radiation or nephrotoxic contrast agents, CEUS is a viable and cost-effective option for long-term surveillance post-EVAR.

# Background

- Surveillance for endoleak after endovascular aortic repair (EVAR) with CT angiography (CTA) commits patients to lifelong radiation exposure and nephrotoxic contrast agents.
- The purpose of this study was to evaluate the performance of contrast enhanced ultrasound (CEUS) in the detection of endoleak post-EVAR

### Methods

- A single-center retrospective cohort study was performed evaluating patients with abdominal aortic aneurysm (AAA) treated with EVAR between 2017-2021 and follow-up imaging with both CTA and CEUS.
- The sample included 35 imaging combinations in 28 patients. Results for detection of endoleak by CEUS were tabulated as true positive, false positive, true negative and false negative compared to CTA and conventional angiography (CA). Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of CEUS were calculated.
- In cases of endoleak detection by both CEUS and CTA/CA, endoleak type was compared between imaging modalities and evaluated for accuracy.