



SUPPLEMENTARY APPENDIX

Commercial Artificial Intelligence for Intracranial Aneurysm Detection on CT Angiography: A Systematic Review

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This Supplementary Appendix accompanies the main manuscript. It contains the complete electronic search strategies applied across four bibliographic databases (PubMed [broad and narrow searches], Scopus, and Web of Science) and a supplementary figure: a risk-of-bias traffic light plot for the eight included studies assessed using QUADAS-2.

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S1 Search Strategies

The following electronic search strategies were applied across four bibliographic databases. All searches were restricted to English-language publications from January 2017 onwards. Database-specific field tags and controlled vocabulary were used throughout. The total number of records retrieved from each database is indicated below each strategy.

S1.1 PubMed (Broad)

```
(
  ("Intracranial Aneurysm"[Mesh] OR intracranial aneurysm*[tiab] OR
  cerebral aneurysm*[tiab] OR brain aneurysm*[tiab] OR
  saccular aneurysm*[tiab] OR berry aneurysm*[tiab])
  AND
  ("Computed Tomography Angiography"[Mesh] OR "Angiography, X-Ray Computed"[Mesh] OR
  "CT angiography"[tiab] OR CTA[tiab] OR
  "computed tomography angiography"[tiab] OR "computed tomographic angiography"[tiab] OR
  MDCTA[tiab])
  AND
  ("Artificial Intelligence"[Mesh] OR "Machine Learning"[Mesh] OR
  "Deep Learning"[Mesh] OR "Neural Networks, Computer"[Mesh] OR
  "Diagnosis, Computer-Assisted"[Mesh] OR
  "artificial intelligence"[tiab] OR "machine learning"[tiab] OR
  "deep learning"[tiab] OR neural network*[tiab] OR "convolutional neural"[tiab] OR
  "automated detection"[tiab] OR "automated diagnosis"[tiab] OR
  "computer-aided detection"[tiab] OR "computer-aided diagnosis"[tiab] OR
  algorithm*[tiab] OR software[tiab] OR radiomics[tiab] OR "transfer learning"[tiab])
  AND
  (commercial*[tiab] OR "commercially available"[tiab] OR
  "FDA cleared"[tiab] OR "FDA-cleared"[tiab] OR "FDA approved"[tiab] OR
  "CE marked"[tiab] OR "CE-marked"[tiab] OR vendor[tiab] OR
  "clinically deployed"[tiab] OR "clinical deployment"[tiab] OR
  Aidoc[tiab] OR BriefCase[tiab] OR "Viz.ai"[tiab] OR
  "RAPID Aneurysm"[tiab] OR RapidAI[tiab] OR Avicenna[tiab] OR
  qER[tiab] OR Annalise[tiab] OR CINA[tiab] OR
  icobrain[tiab] OR MaxQ[tiab] OR Brainomix[tiab])
  AND 2017:3000[pdat]
)
```

PUBMED (BROAD) TOTAL: 194

S1.2 PubMed (Narrow)

```
(
  ("Intracranial Aneurysm"[Mesh] OR intracranial aneurysm*[tiab] OR
  cerebral aneurysm*[tiab] OR brain aneurysm*[tiab] OR
  saccular aneurysm*[tiab] OR berry aneurysm*[tiab])
  AND
  ("Computed Tomography Angiography"[Mesh] OR "Angiography, X-Ray Computed"[Mesh] OR
  "CT angiography"[tiab] OR CTA[tiab] OR
  "computed tomography angiography"[tiab] OR "computed tomographic angiography"[tiab] OR
  MDCTA[tiab])
  AND
  ("Artificial Intelligence"[Mesh] OR "Machine Learning"[Mesh] OR
  "Deep Learning"[Mesh] OR "Neural Networks, Computer"[Mesh] OR
  "Diagnosis, Computer-Assisted"[Mesh] OR
  "artificial intelligence"[tiab] OR "machine learning"[tiab] OR
  "deep learning"[tiab] OR neural network*[tiab] OR "convolutional neural"[tiab] OR
  "automated detection"[tiab] OR "automated diagnosis"[tiab] OR
  "computer-aided detection"[tiab] OR "computer-aided diagnosis"[tiab] OR
  algorithm*[tiab] OR software[tiab] OR radiomics[tiab] OR "transfer learning"[tiab])
  AND
  (commercial*[tiab] OR "commercially available"[tiab] OR
  "FDA cleared"[tiab] OR "FDA-cleared"[tiab] OR "FDA approved"[tiab] OR
  "CE marked"[tiab] OR "CE-marked"[tiab] OR vendor[tiab] OR
  "clinically deployed"[tiab] OR "clinical deployment"[tiab] OR
  Aidoc[tiab] OR BriefCase[tiab] OR "Viz.ai"[tiab] OR
```



```
"RAPID Aneurysm"[tiab] OR RapidAI[tiab] OR Avicenna[tiab] OR  
qER[tiab] OR Annalise[tiab] OR CINA[tiab] OR  
icobrain[tiab] OR MaxQ[tiab] OR Brainomix[tiab])  
AND 2017:3000[pdat]  
)
```

PUBMED (NARROW) TOTAL: 15

S1.3 Scopus

```
TITLE-ABS-KEY(  
  "intracranial aneurysm" OR "cerebral aneurysm" OR  
  "brain aneurysm" OR "saccular aneurysm" OR "berry aneurysm"  
)  
AND  
TITLE-ABS-KEY(  
  "CT angiography" OR CTA OR  
  "computed tomography angiography" OR  
  "computed tomographic angiography" OR MDCTA  
)  
AND  
TITLE-ABS-KEY(  
  "artificial intelligence" OR "machine learning" OR  
  "deep learning" OR "neural network" OR "neural networks" OR  
  "convolutional neural" OR "automated detection" OR  
  "automated diagnosis" OR "computer-aided detection" OR  
  "computer-aided diagnosis" OR algorithm OR software OR  
  radiomics OR "transfer learning"  
)  
AND PUBYEAR > 2016
```

SCOPUS TOTAL: 418

S1.4 Web of Science

```
TS=(  
  "intracranial aneurysm*" OR "cerebral aneurysm*" OR "brain aneurysm*" OR  
  "saccular aneurysm*" OR "berry aneurysm*"  
)  
AND  
TS=(  
  "CT angiography" OR "CTA" OR "computed tomography angiography" OR  
  "computed tomographic angiography" OR "MDCTA"  
)  
AND  
TS=(  
  "artificial intelligence" OR "machine learning" OR "deep learning" OR  
  "neural network*" OR "convolutional neural*" OR "automated detection" OR  
  "automated diagnosis" OR "computer-aided detection" OR  
  "computer-aided diagnosis" OR "algorithm*" OR "software" OR  
  "radiomics" OR "transfer learning"  
)  
AND  
TS=(  
  "commercial*" OR "commercially available" OR "FDA cleared" OR  
  "FDA-cleared" OR "FDA approved" OR "CE marked" OR "CE-marked" OR  
  "vendor" OR "Aidoc" OR "BriefCase" OR "Viz.ai" OR  
  "RAPID Aneurysm" OR "RapidAI" OR "Avicenna" OR  
  "qER" OR "Annalise" OR "CINA" OR  
  "icobrain" OR "MaxQ" OR "Brainomix"  
)  
AND PY=(2017-2026)
```

WEB OF SCIENCE TOTAL: 18

Database	Date restriction	Records retrieved
PubMed (Broad)	January 2017-present	194
PubMed (Narrow)	January 2017-present	15
Scopus	January 2017-present	418
Web of Science	January 2017-present	18
Total		645

Table S1. Summary of database search yields. All searches restricted to English-language publications from January 2017 onwards. Duplicates were removed prior to title and abstract screening. Total records retrieved: 645.

S2 Supplementary Figures

Figure S1 presents the QUADAS-2 risk of bias assessment for the eight included studies, displayed as a traffic light plot across the four evaluated domains.

		Risk of bias domains				
		D1	D2	D3	D4	Overall
Study	Heit et al. 2022					
	Wei et al. 2022					
	Colasurdo et al. 2023					
	De Toledo et al. 2024					
	Shen et al. 2024					
	Akinpelu et al. 2025					
	Hu et al. 2025					
	Sobeh et al. 2025					
		Domains: D1: Patient selection. D2: Index test. D3: Reference standard. D4: Flow & timing.				Judgement High Some concerns Low

Figure S1. Risk-of-bias assessment of the eight included studies using QUADAS-2. Four domains were evaluated: D1, patient selection; D2, index test; D3, reference standard; D4, flow and timing. Judgements are classified as low risk (green, +), some concerns (yellow, -), or high risk (red, x). Overall risk of bias was determined by the highest-concern domain for each study.