

Balloon- Versus Self-Expandable Stents in the Endovascular Treatment of Adults with Aortic Coarctation: A Meta-Analysis

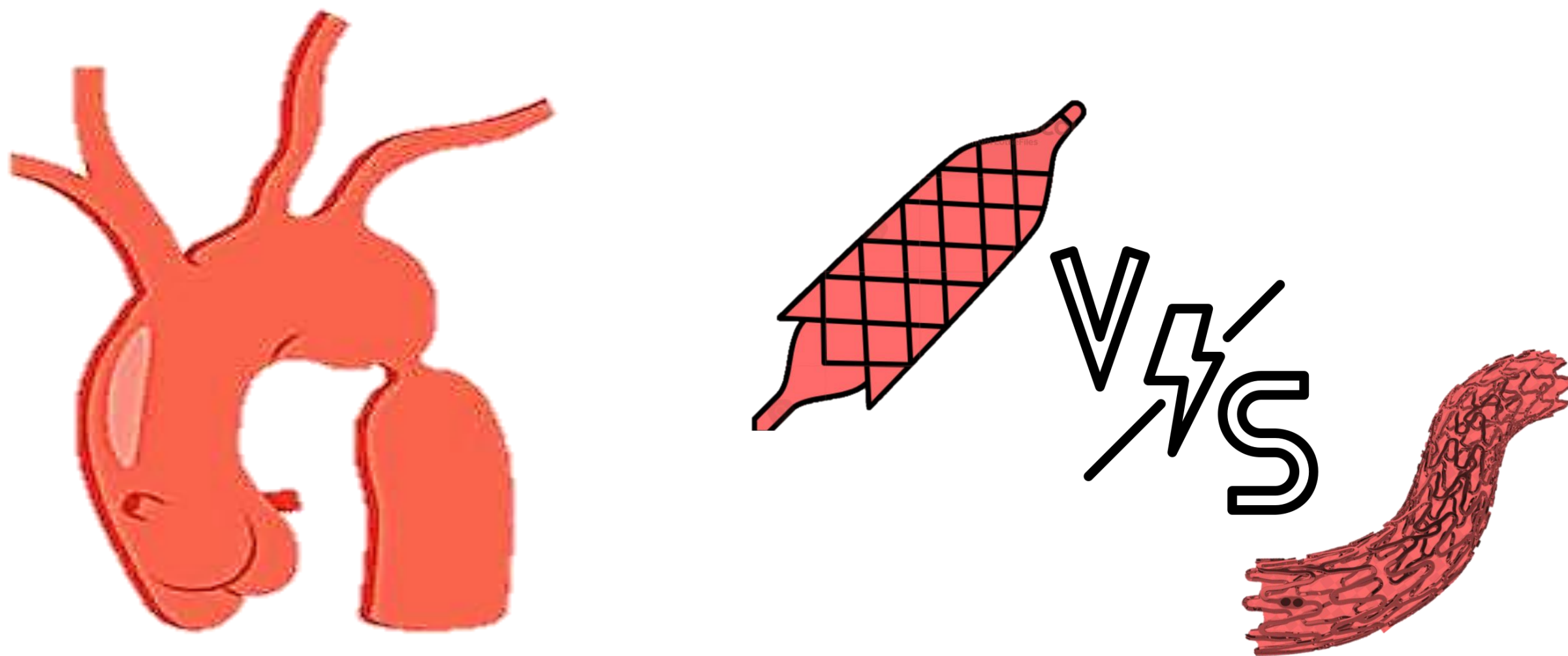


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BACKGROUND

Coarctation of the aorta (CoA) is a congenital abnormality characterised by a narrowing of the aorta often treated surgically or via endovascular techniques



Two stent-based strategies include **balloon expandable (BES)** and **self expandable stents (SES)**, but their relative merits remain debated

OBJECTIVE

Therefore, we conducted a **meta-analysis** using **RCTs** & **observational studies** to compare their outcomes

METHODS

Databases: PubMed, Scopus and Cochrane

Outcomes: peri-procedural complications, residual hypertension, stent migration

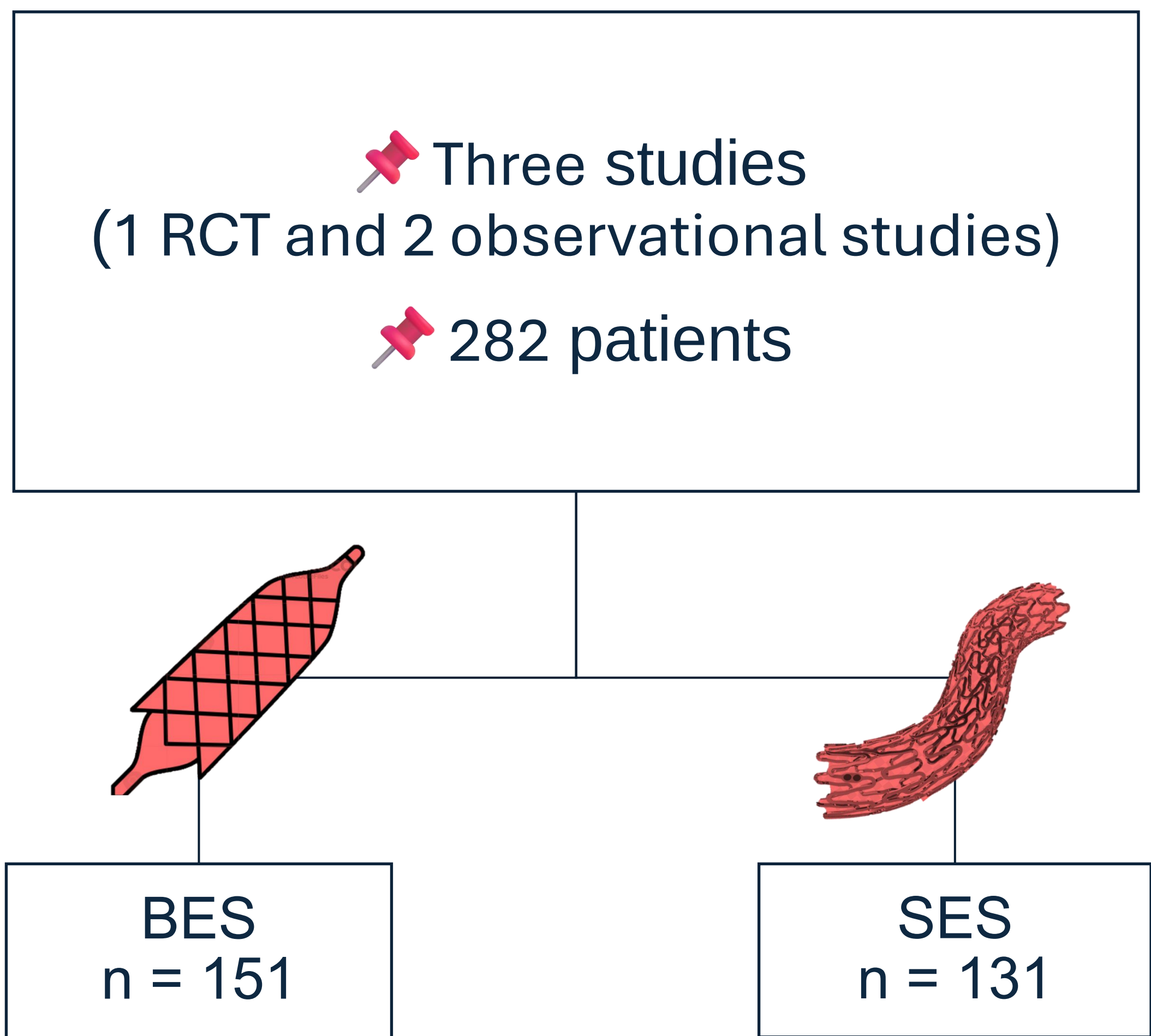
Statistical Analysis: Mantel–Haenszel random-effects model, RevMan version 8.12

RESULTS

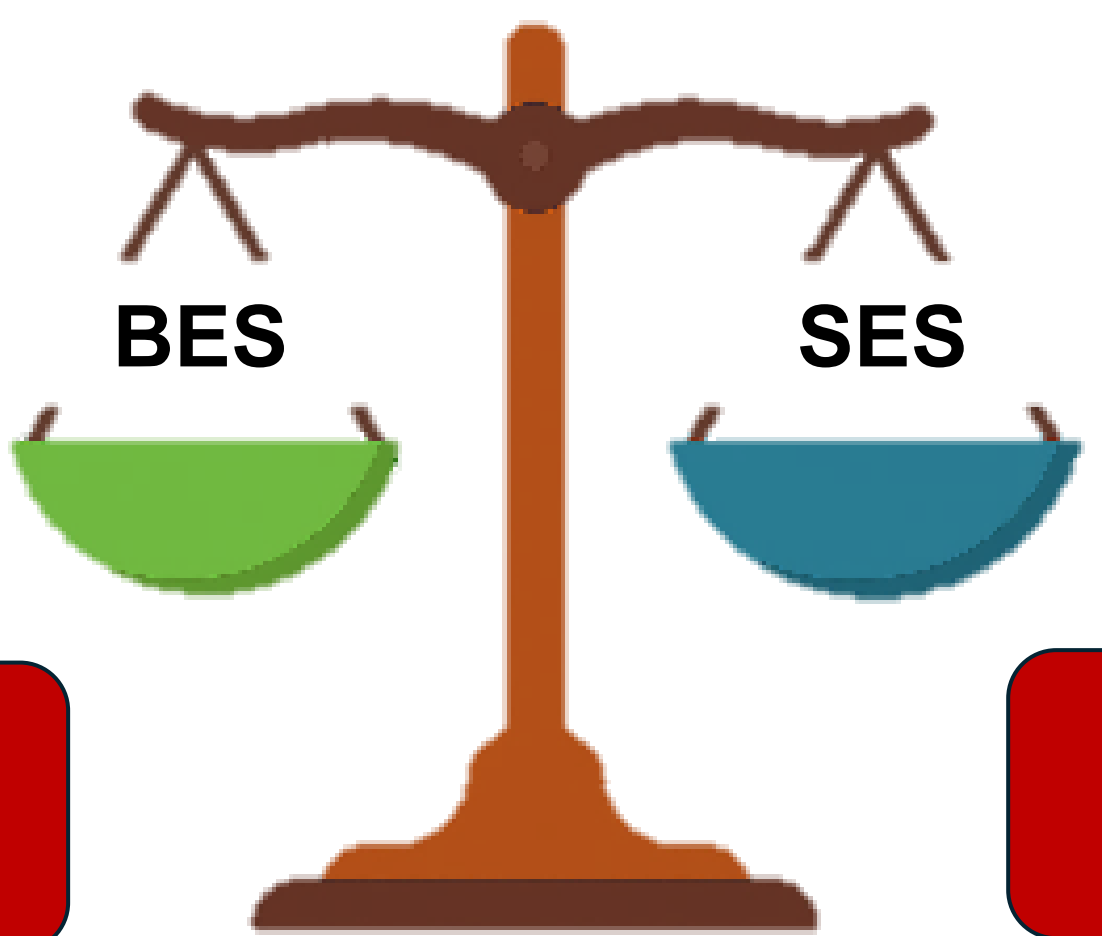
Peri-procedural complications

BES and SES had comparable rates of peri-procedural complications

Study or Subgroup	BES		SES		Weight	Odds ratio		Odds ratio
	Events	Total	Events	Total		IV, Random, 95% CI	IV, Random, 95% CI	
Firoozi 2018	14	100	6	69	71.3%	1.71 [0.62 , 4.69]		
Sadeghipour 2022	5	46	1	46	19.8%	5.49 [0.62 , 48.95]		
Tyagi 2003	1	5	0	16	8.8%	11.00 [0.38 , 318.61]		
Total (HKSJ^a)		151		131	100.0%	2.54 [0.35 , 18.19]		
Total events:	20		7					
Test for overall effect: Z = 1.79 (P = 0.07)								
Test for subgroup differences: Not applicable								
Heterogeneity: Tau ² (REML ^b) = 0.11; Chi ² = 1.77, df = 2 (P = 0.41); I ² = 9%								



Peri-procedural complications



Residual HTN

Stent migration

CONCLUSIONS

BES and SES exhibit comparable safety and efficacy in the endovascular management of adult CoA

Limitations: Study heterogeneity, small sample size, and predominance of retrospective data

Future directions: Multi-centre RCT with long term follow-up



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