

A Review and Comparison of the Efficacy of Prophylactic Interventional Radiological Arterial Occlusions in Placenta Accreta Spectrum Patients: A Meta-analysis

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Background

Placenta accreta spectrum (PAS) disorders are increasingly common and associated with significant maternal and neonatal morbidity and mortality due to the associated risk of massive haemorrhage. Currently prophylactic interventional radiology (IR) arterial occlusion is being performed occluding either the internal iliac artery (IIA), abdominal aorta (AA) or uterine artery (UA) in order to prevent this blood loss

The aim of this meta-analysis is to identify whether these IR procedures are effective in reducing estimated blood loss (EBL) and hysterectomy rates and if so which method achieves the optimal results

Methods

A literature search was conducted to acquire case-control studies assessing EBL and hysterectomies performed following IR arterial occlusion in PAS patients, yielding 16 results. Studies were analyzed together and later split into groups dependent on the artery occluded. The results of these were then inputted into forest plots to identify their overall estimated effect with confidence intervals

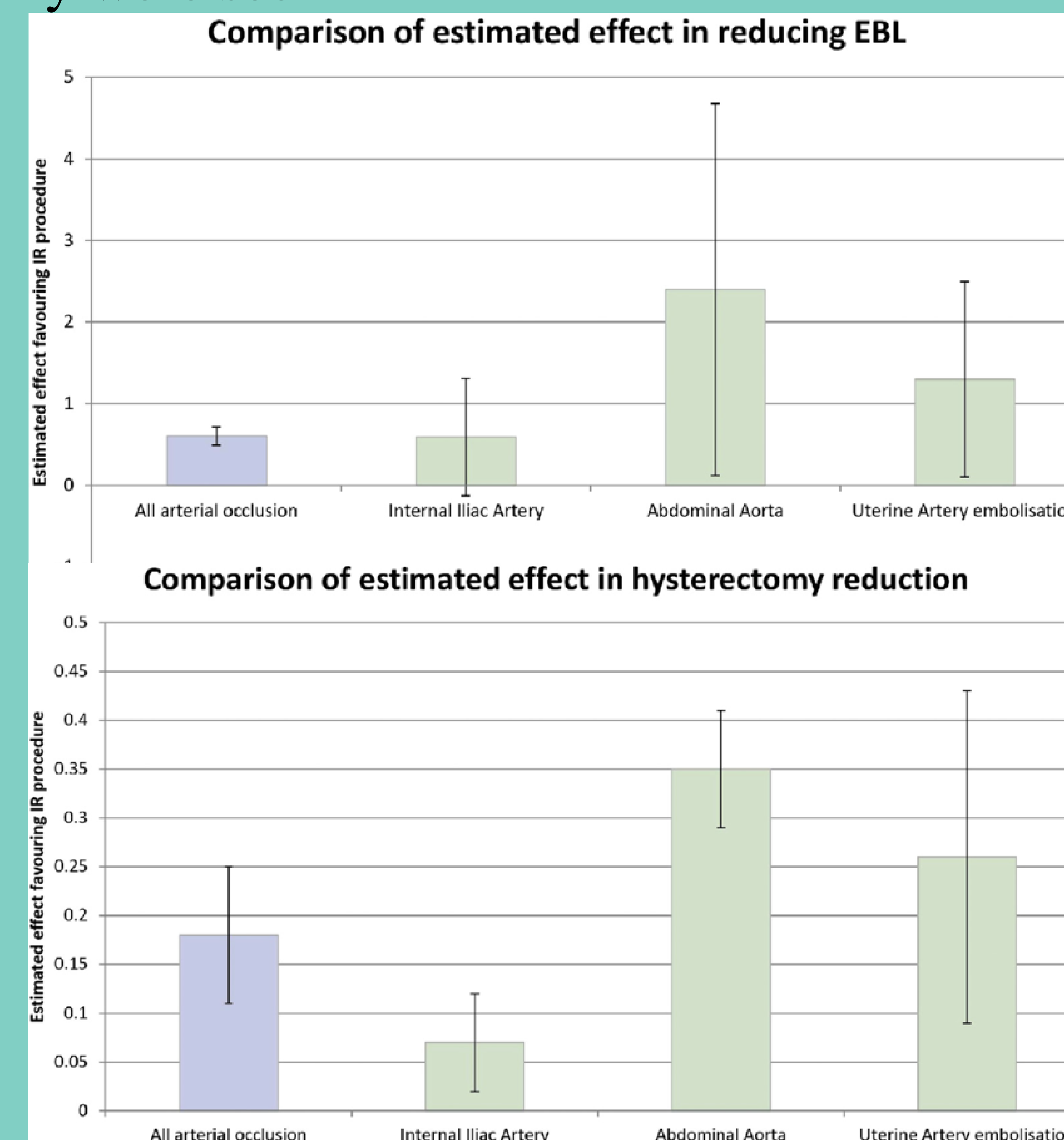
Results

A total of 20 studies were included for review. 12 investigating IIA catheterisation; 5 reviewing AA catheterisation and the remaining 3 reviewing UA embolisation

		Total Participants	Mean Maternal age (y)	Mean Gestational age (w)	Mean Maternal Gravity	Mean EBL (ml)	Mean Hysterectomy rate
Internal iliac balloon catheterization	Intervention	478	33.2	36.2	3.5	1666	0.19
	Control	424	33.4	36.4	3.6	2351	0.23
Abdominal aorta balloon catheterization	Intervention	463	30.8	35.7	3.7	1284	0.04
	Control	257	32.5	35.5	3.4	2786	0.43
Uterine artery balloon catheterization	Intervention	65	33.2	35.6	3.4	1570	0.26
	Control	51	33.6	34.8	3.1	3734	0.41

Abbreviations: EBL, estimated blood loss.

When combined varying estimated effects on reducing EBL and hysterectomy were seen



Discussion

Prophylactic IR arterial occlusion was proven to reduce both EBL and hysterectomies. When separated by artery, IIA achieved the worst outcomes with no proven effect on EBL and a minimal reduction in hysterectomies. UA scored in the middle with a modest reduction in both outcomes, whilst AA occlusion had the most significant reduction in both EBL and hysterectomies

Conclusion

Prophylactic IR arterial occlusion should be routinely considered in PAS patients to reduce both EBL and rates of hysterectomies. Current literature promotes the use of IIA occlusion; however the findings of this analysis propose that AA and UA occlusion should be favoured