

How can Doppler Ultrasound and Contrast-Enhanced Ultrasound be used in the diagnosis and management of women suffering from Post-Partum Haemorrhage and its causes?

Introduction

Current standard imaging pathways for the diagnosis and management of Post-Partum Haemorrhage (PPH) and its causes are limited in published guidance and they vary globally. The aim of this systematic review was to determine how Doppler Ultrasound and Contrast-Enhanced Ultrasound can be used in the diagnosis and treatment of women suffering from PPH and its causes.

Methodology

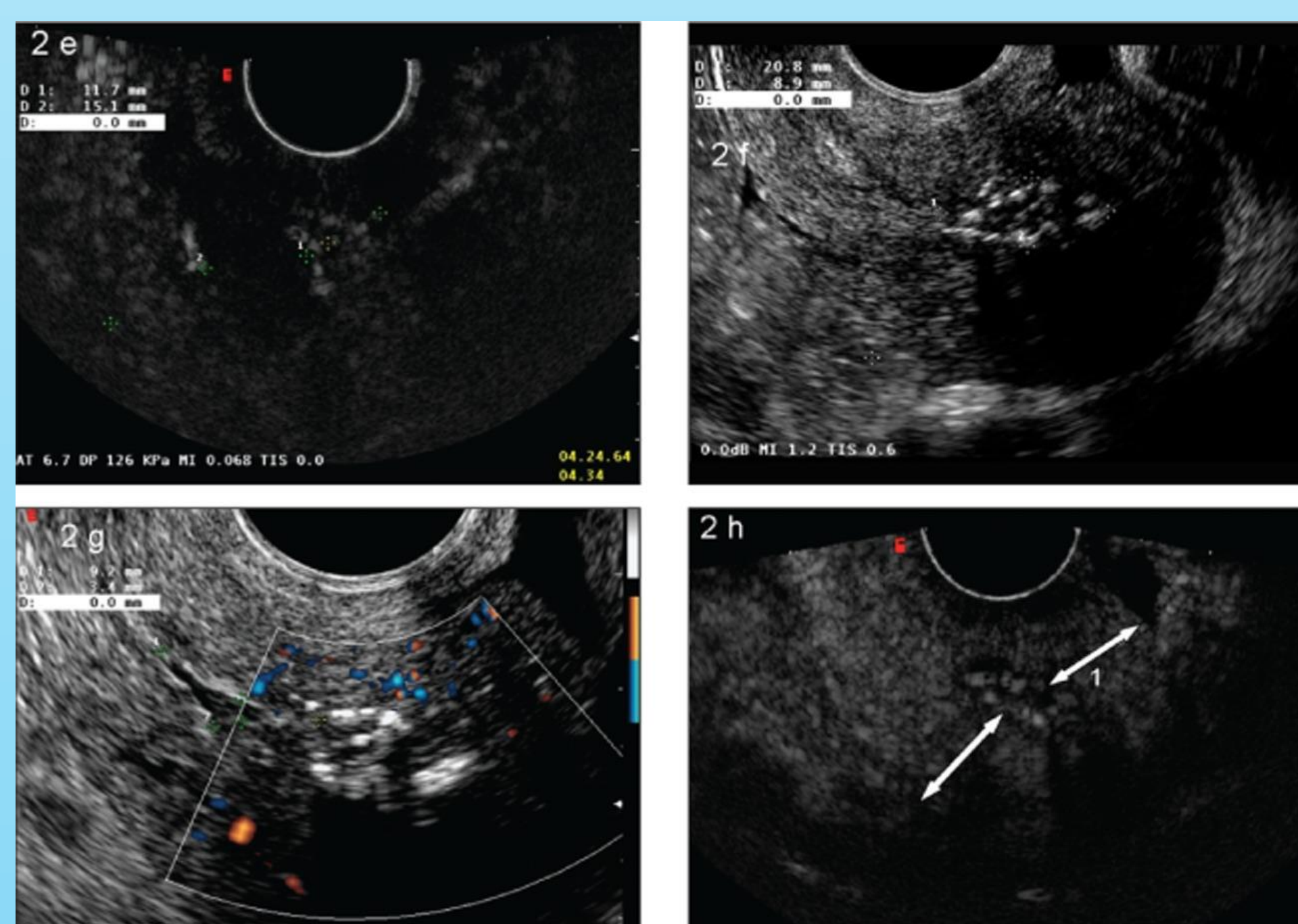
A preliminary search was completed to identify any existing literature answering the review question. Inclusion and exclusion criteria were determined. Resultant citations from this search went through a screening process before being compared against the inclusion/exclusion criteria. Included sources underwent a critical appraisal and risk of bias assessment before being deemed eligible for inclusion. Data relevant to the study was then extracted.

Results

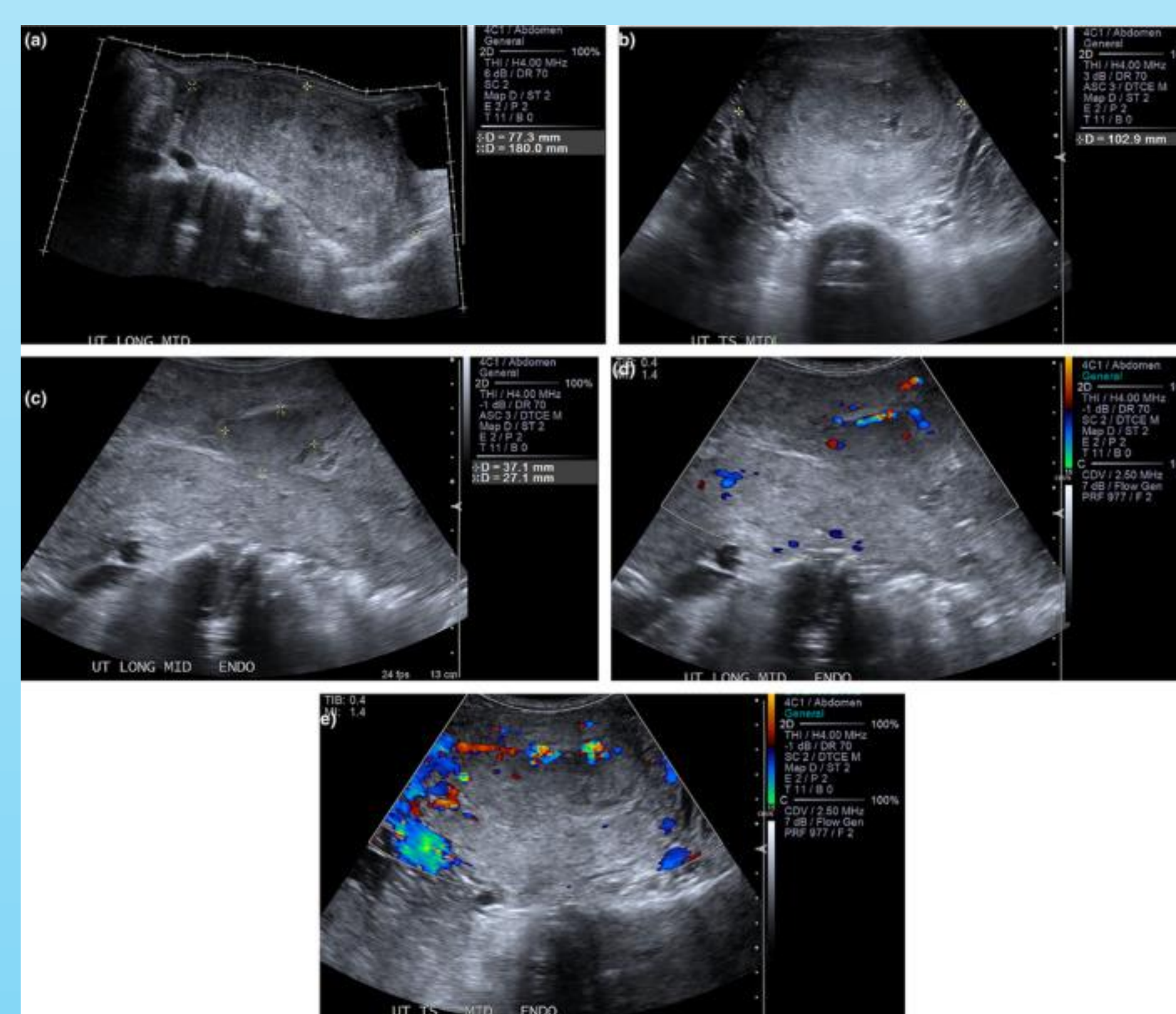
The comprehensive search returned 1255 sources which was refined down to 10 included studies. Five case reports, one case series and four cohort studies were included, and data such as study characteristics, interventions, outcomes, arguments, and conclusions were tabulated for comparison. From this process, key themes arose for the utility of the two modalities in each stage of the imaging pathway, from predictive imaging and diagnosis to treatment and continued management.

Discussion

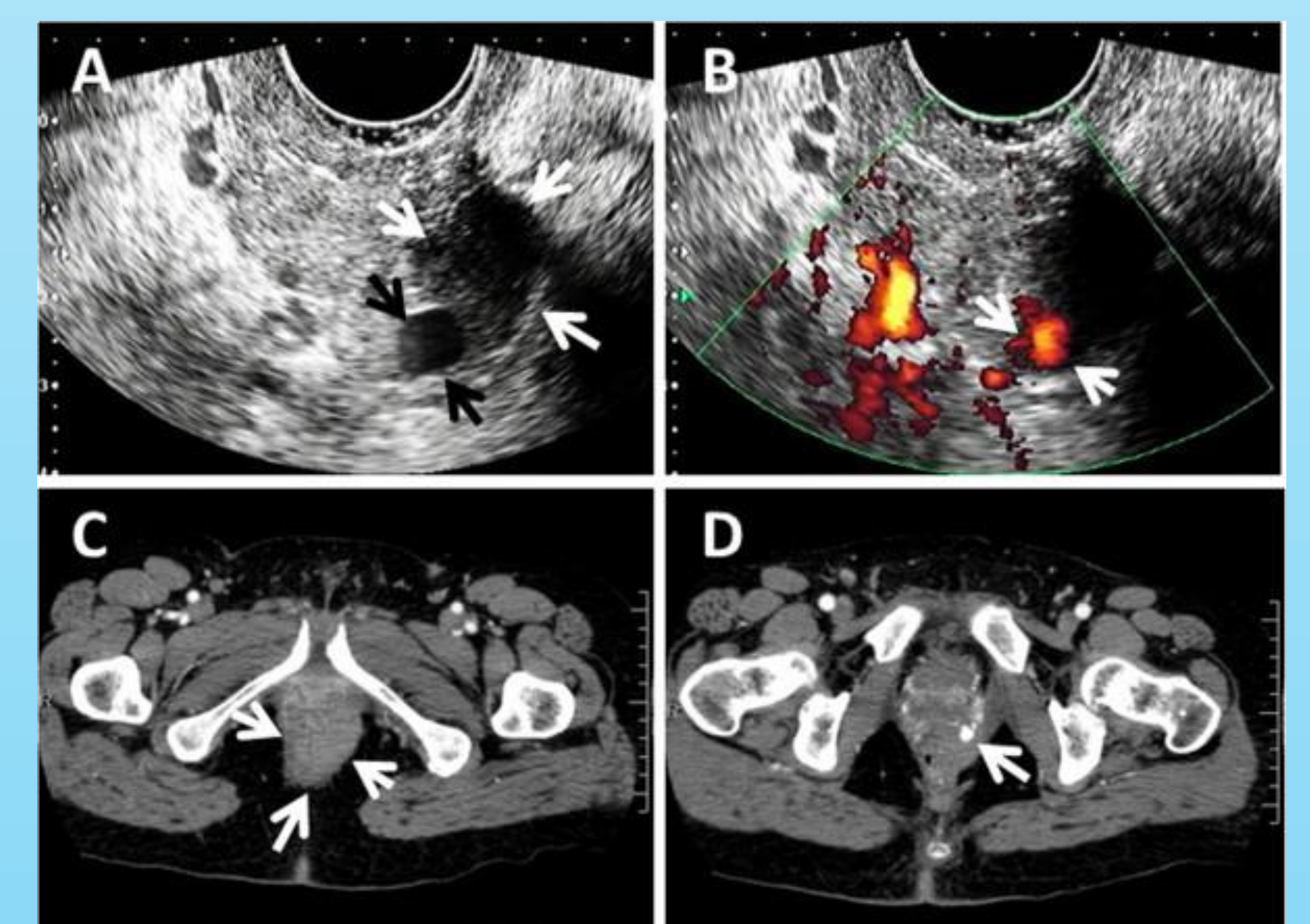
Key themes found in the literature included the use of Doppler and CEUS for detecting potential pseudoaneurysms, prediction of PPH, the guidance of treatment procedures and ongoing management. Analysis of the experiences described in the case reports and results from the cohort studies overturned common benefits and limitations of the modality.



Power doppler and Contrast-enhanced ultrasound demonstrating revascularisation and reduction of central necrosis post embolization. (Desille, Ouldamer et al. 2013).



Colour Doppler showing the vascularity of retained products of conception (Omakwu, Uppal et al. 2016)



(A) pseudoaneurysm (black arrows) and adjacent hematoma (white arrows) in B-mode (B) pseudoaneurysm in power-Doppler mode (Gondo, Urushiyama et al. 2014)

Conclusion

The present research concluded that Doppler US and CEUS have utility in every phase of the diagnostic and management pathway of PPH and have clear advantages over conventional methods of imaging and treatment. However, more extensive research needs to be completed to assess the efficacy of these modalities over a larger, more representative population

References

Schiraldi, Calderon et al. 2014. Matsubara, Nakata et al. 2014. Gondo, Urushiyama et al. 2014. Omakwu, Uppal et al. 2016. Gupta, Sagili et al. 2021. Desille, Ouldamer et al. 2013. Sonehara, Nakamura et al. 2022. Imai, Kotani et al. 2016. Baba, Matsubara et al. 2014. Takeda, Makino et al. 2019.