

# Pregnancy-related complications and incidence of atrial fibrillation: a systematic review and meta-analysis

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**Background:** Pregnancy-related complications have been previously associated with incident cardiovascular disease. However, data are scarce on the association between pregnancy-related complications and incident atrial fibrillation (AF). This systematic review examines associations between pregnancy-related complications and incident AF.

**Methods:** A systematic search of the literature utilising MEDLINE and EMBASE (Ovid) was conducted from 1990 to 6 April 2020. Observational studies examining the association between pregnancy-related complications including hypertensive disorders of pregnancy (HDP), gestational diabetes, placental abruption, preterm birth, low birth weight, small-for-gestational-age and stillbirth, and incidence of AF were included. Screening and data extraction were conducted independently by two reviewers. Inverse-variance random-effects models were used to pool hazard ratios.

**Results: Six observational studies met the inclusion criteria:** one case-control study and five retrospective cohort studies, with four studies eligible for meta-analysis. Sample sizes ranged from 1,839-1,303,365. Mean/median follow-up for the cohort studies ranged from 7-36 years. Most studies reported an increased risk of incident AF associated with pregnancy-related complications. The pooled summary statistic from four studies reflected a greater risk of incident AF for HDP (hazard ratio (HR) 1.47, 95% confidence intervals (CI) 1.18-1.84; I<sup>2</sup> = 84%) and from three studies for pre-eclampsia (HR 1.71, 95% CI 1.41-2.06; I<sup>2</sup> = 64%; Figure).

**Conclusions:** The results of this review suggest that pregnancy-related complications particularly pre-eclampsia appear to be associated with higher risk of incident AF. The small number of included studies and the significant heterogeneity in the pooled results suggest further large-scale prospective studies are required to confirm the association between pregnancy-related complications and AF.

Abstract Figure.

Figure. Forest plot depicting the association between pre-eclampsia and risk of incident atrial fibrillation, with subgroup analyses based on median time of follow up (A) Longer follow-up (> 28 years).

