

## Association between prolonged second stage of labour, hypertensive disorder of pregnancy and major postpartum haemorrhage

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**Objective.** Hypertensive disorders of pregnancy (HDP) and prolonged second stage of labour are known risk factors for major post-partum haemorrhage (PPH). The study aim was to investigate the relationship between these three conditions.

**Materials and Methods.** Women who delivered vaginally at Careggi University Hospital between January and December 2023 were enrolled. Four groups were identified: women with HDP who pushed less than 2 hours (A), women with HDP who pushed more than 2 hours (B), women without HDP which pushed less than 2 hours (C) and women without HDP who pushed more than 2 hours (D). The rate of major PPH (blood loss > 1,000 ml) was compared among the groups. The other known risk factors for PPH such as BMI, induction of labour, augmentation, foetal macrosomia,

fibroids and multiparity were included in the multivariate analysis.

**Results.** 1,047 women were included: 31/1,047 (3.9%) included in the group A, 3/1,047 (0.4%) in the group B, 709/1,047 (88.5%) in the group C, 58/1,047 (7.2%) in the group D. The rate of major PPH was higher in group B than in group D (3/58 5.17% vs 2/3 66%,  $p = 0.008$ ) as when compared to group A (3/31 9.6%,  $p = 0.032$ ). In the multivariate analysis prolonged second stage in HDP group resulted to be significantly associated with PPH ( $p < 0.041$ ), as well as BMI ( $p < 0.028$ ) and induction ( $p < 0.049$ ).

**Conclusions.** Prolonged second stage of labour in women with HDP is associated with a higher risk of major PPH and this should be a warning for clinicians.