

Pregnancy outcomes in a recurrent miscarriage population after common uterine surgeries: A multicentre cohort study

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Introduction:

- Recurrent miscarriage affects 1–2% of reproductive-age couples, and latest ESHRE guidance calls for better patient information.
- Maternal age is strongly linked to chromosomally abnormal losses, especially over age 45; recurrent euploid losses are less well understood and may involve multiple risk factors.
- Intrauterine adhesions often follow uterine surgeries like curettage, occurring in up to 20% of cases after surgical management of miscarriage.
- Other surgical impacts on fertility include disruption of the endometrial microbiome and caesarean section niche formation.
- Women with multiple miscarriages are more likely to have had prior surgical interventions.
- Current UK guidance emphasises shared decision-making for miscarriage management (expectant, medical, or surgical), balancing risks and benefits.
- Surgical management achieves better complete evacuation rates but carries potential long-term risks, including adhesion formation.
- Cesarean sections may also contribute to future miscarriage risk, but current research is inconsistent and underpowered.

Results:

Primary Outcome:

- No clear association between SMM and miscarriage (RR 1.03, 95% CI 0.89–1.2, p=0.661).
 - No clear association between CS and miscarriage (RR 1.17, 95% CI 0.95–1.4, p=0.138)
- Subgroup Analysis:
- Three or more SMMs showed a higher risk of miscarriage (RR 1.5, 95% CI 1.2–1.8, p=0.001).
 - In women with three or more baseline miscarriages, both ≥ 3 SMMs and any CS were associated with higher miscarriage risk.

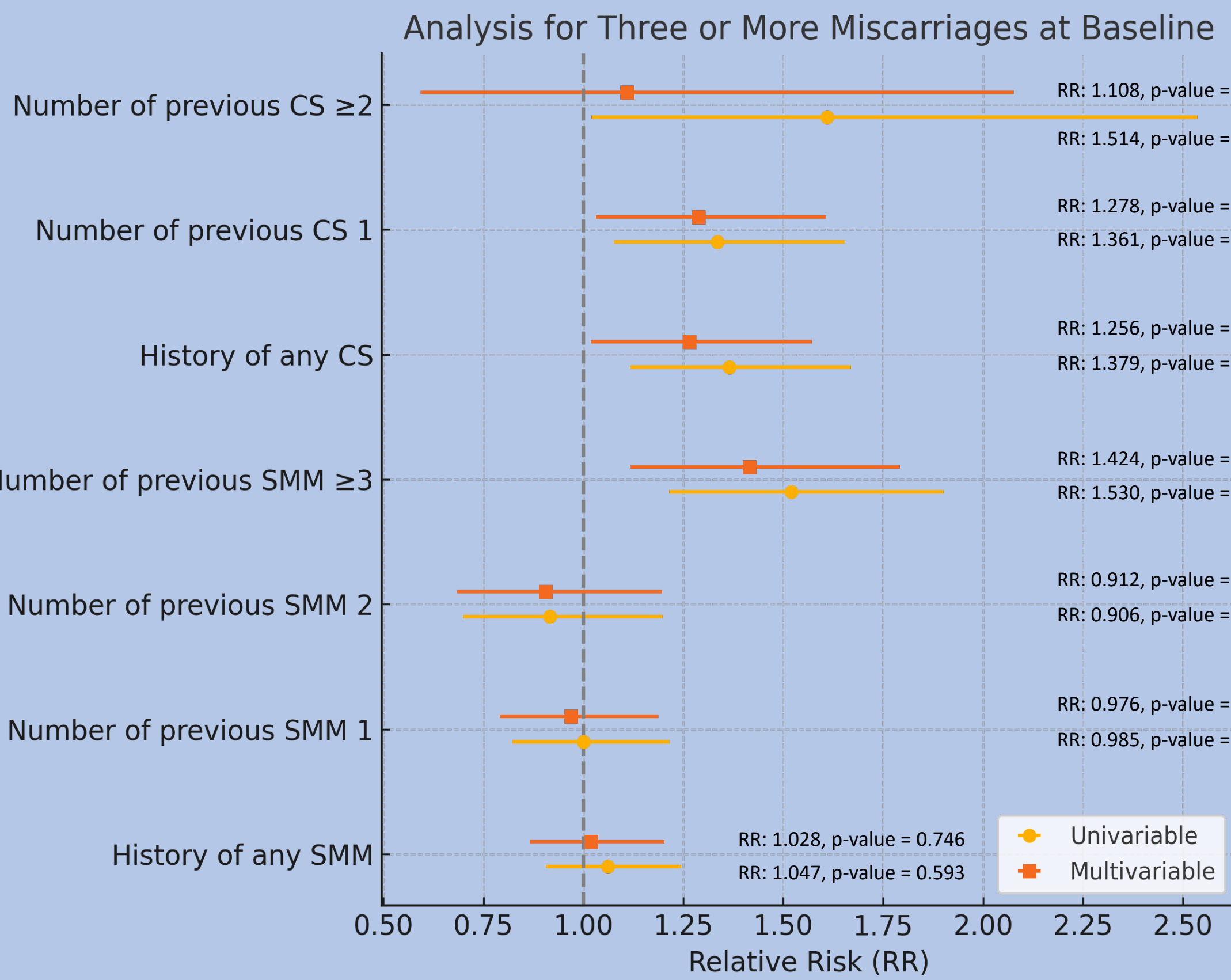
Poisson regression analysis for risk of miscarriage following previous SMM or CS					
		Univariable		Multivariable*	
		RR (95% CI)	p-value	RR (95% CI)	p-value
History of:	SMM	1.106 (0.964 - 1.269)	0.151	1.033 (0.892 - 1.195)	0.661
	CS	1.202 (0.990 - 1.458)	0.063	1.166 (0.952 - 1.428)	0.138
. Subgroup analysis for risk of miscarriage following graded <i>number</i> of previous SMM/CS					
		Univariable		Multivariable	
		RR (95% CI)	p-value	RR (95% CI)	p-value
Number of previous SMM	1	1.052 (0.890-1.243)	0.554	0.981 (0.820-1.173)	0.833
	2	0.969 (0.769-1.220)	0.786	0.959 (0.753-1.221)	0.732
	≥ 3	1.685 (1.366- 2.077)	0.000	1.469 (1.176-1.836)	0.001
Number of previous CS	1	1.205 (0.982- 1.478)	0.074	1.200 (0.975- 1.478)	0.085
	≥ 2	1.181 (0.701- 1.991)	0.531	0.947 (0.518- 1.731)	0.858
*Multivariable analysis has adjusted for confounding factors of maternal BMI, maternal age, number of miscarriages at baseline and smoking status.					
SMM = surgical management of miscarriage, CS = caesarean section, RR = relative risk, CI = confidence interval					

Aims:

- To identify if there is any association between method of miscarriage management and subsequent pregnancy outcome
- To understand if there is any link between previous caesarean section and subsequent pregnancy outcome

Methods:

- Prospective cohort study using Tommy’s Net
- Eligibility: Women aged over 18 with ≥ 2 previous pregnancy losses;
- Exposures: Primary — previous surgical management of miscarriage (SMM); Secondary — prior caesarean section (CS), both self-reported at baseline.
- Primary Outcome: Miscarriage in the first pregnancy post-registration; Secondary outcomes: stillbirth and live birth.
- Statistical Analysis: Poisson regression for; models adjusted for maternal age, BMI, smoking, and number of previous miscarriages.
- Subgroup Analysis: Examined miscarriage outcomes based on the *number* of previous SMMs and CS exposures.
- Missing Data: Addressed using multiple imputation as >10% of key variables were missing (mostly maternal BMI); complete case analysis used for sensitivity.



Conclusions:

In women with **two previous miscarriages**:

- Exposure to CS or SMM has **no effect** on the risk of future miscarriage.

In women with **three or more SMMs**:

- There is a **higher risk** of subsequent miscarriage.

In women with a **previous CS and three previous miscarriages**:

- There is also a **higher risk** of subsequent miscarriage.