

Extended Intrauterine Balloon Retention Reduces Adhesion Recurrence After Hysteroscopic Adhesiolysis: A Meta-analysis of Randomized Controlled Trials

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Introduction

Asherman syndrome is a rare, acquired uterine condition characterized by intrauterine adhesions, most commonly following instrumentation of a gravid uterus, and associated with infertility, miscarriage, and menstrual abnormalities. Despite hysteroscopic adhesiolysis, adhesion recurrence remains common, and the optimal duration of intrauterine balloon placement is unclear.

Objectives

To evaluate whether prolonged intrauterine balloon placement reduces adhesion recurrence compared with short-duration placement following hysteroscopic adhesiolysis.

Methods

- Systematic review and meta-analysis of randomized controlled trials
- Search: PubMed, Embase, Cochrane (n=337)
- Selection: Two independent reviewers
- Included: 3 RCTs
- Outcome: Adhesion recurrence (hysteroscopy)
- Random-effects model used to calculate pooled risk ratios (RR)

Study	Design	Age (years)	Severity	N, extended/short	Technique	Duration (days)	Balloon	Antibiotics/Hormones
Luo, 2025	RCT	33.2 ± 3.9	Severe*	69/67	Bipolar electrode needle and loop	56 vs 7	Heart-shaped balloon stent	Yes/Yes
Qu, 2021	RCT	33.5 ± 3.0	Moderate-severe	49/49	Cold scissors	37 vs 7	Cook balloon stent	Yes/Yes
Yang, 2020	RCT	31.8 ± 3.2	Severe*	45/40	Bipolar electrode needle and loop	28 vs 7	Cook balloon stent	Yes/Yes

Results

- 60% relative reduction in adhesion recurrence
- RR 0.40 (95% CI 0.28-0.57)
- $p < 0.00001$, $I^2 = 0\%$
- Consistent effect across all included trials
- No statistical heterogeneity

Conclusions

Prolonged intrauterine balloon placement significantly reduces adhesion recurrence after hysteroscopic adhesiolysis.

Limitations

- Small number of RCTs
- Variation in balloon types and duration protocols
- One study used adjunct IUD after short duration arm
- Limited reporting of reproductive outcomes

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Effect of Prolonged Balloon Retention on Adhesion Recurrence (Risk Ratio, 95% CI)

