Poster #CO55

A Retrospective Real-World Data Analysis of Pregnancy Outcomes Among Women with a History of Hysteroscopic Intrauterine Adhesiolysis (HA), Other Intrauterine Surgery (IUs), or no Prior IUs

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Introduction

- Intrauterine adhesions (IUAs) commonly occur after uterine interventions such as dilation and curettage (D&C), hysteroscopic surgeries, myomectomy, and other abdominal or uterine procedures.
- While adhesiolysis is a standard treatment, it does not fully address trauma to the basilar endometrium, which may lead to complications during pregnancy due to impaired placental function and separation.
- A published model has associated adhesiolysis with increased rates of adverse clinical outcomes and higher healthcare costs.[1]

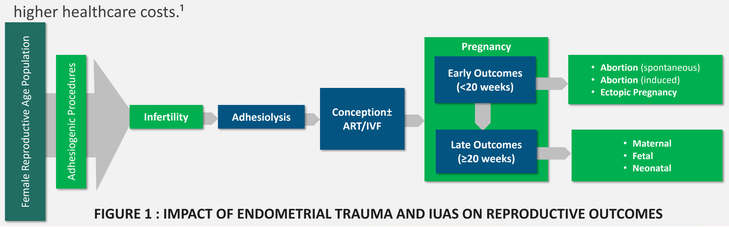


FIGURE 1 : IMPACT OF ENDOMETRIAL TRAUMA AND IUAS ON REPRODUCTIVE OUTCOMES

Objective

- The objective of this study was to compare the risk and types of adverse pregnancy outcomes between women with a history of hysteroscopic adhesiolysis and those without prior adhesiolysis, using real-world data.

Data and Methods

- **Study Design & Data Source:** Retrospective study for women within reproductive-age group (18–55 years) using the HealthVerity® Marketplace™ database with data from 150 U.S. payors, covering commercial, Medicaid, and Medicare plans
- **Study Population:** Infertility-related cost data analyzed from 2017 to mid-2023 with more than 6 years of continuous follow-ups, Limited to 8 U.S. states with mandates for coverage of in vitro fertilization-embryo transfer (IVF-ET) before 2017: Arkansas, Connecticut, Hawaii, Illinois, Maryland, Massachusetts, New Jersey, Rhode Island
- **Study Cohorts:** Three study cohorts (≥6 months of continuous data, Apr 2017–Dec 2019); Cohort 1: hysteroscopic adhesiolysis, Cohort 2: intrauterine surgery (excluding adhesiolysis), Cohort 3: No record of previous intrauterine surgery (random sample, N=10,000).
- **Statistical Analysis:** Propensity score matching applied based on comorbidities, age, race, payor type, and geographic location.

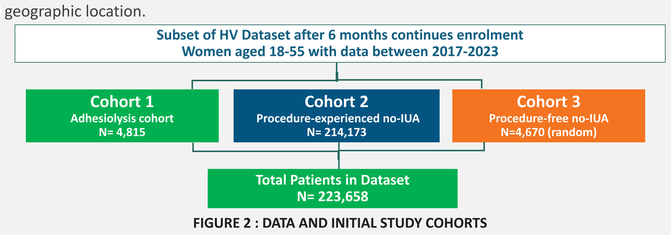


FIGURE 2 : DATA AND INITIAL STUDY COHORTS

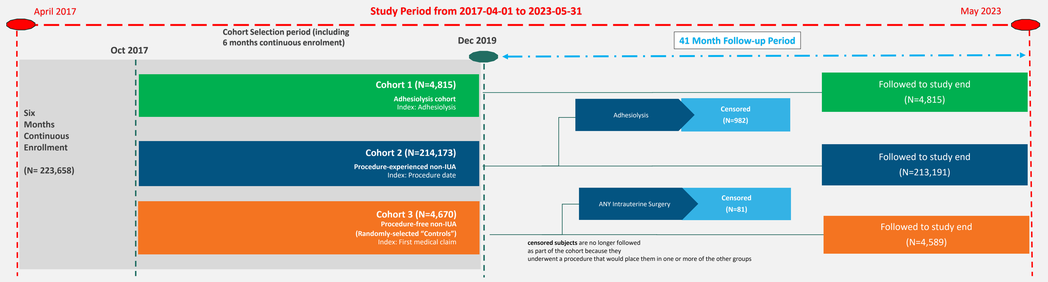
Strengths

- A large database enabled formation of three cohorts for two virtual case-control studies.
- A long observation window supported longitudinal follow-up, linking procedure history to pregnancy outcomes.
- Propensity score matching was used to reduce confounding

Limitations

- Severity of adhesions could not be assessed.
- Use of adjuvants (e.g., IUDs, balloon devices) to aid endometrial repair and prevent IUAs could not be identified due to lack of CPT codes.
- Prior procedures occurring before the study window may have been missed, affecting cohort classification.
- Care received outside the network was not captured.

Figure 3 : Cohorts selected & analysis over 41 months



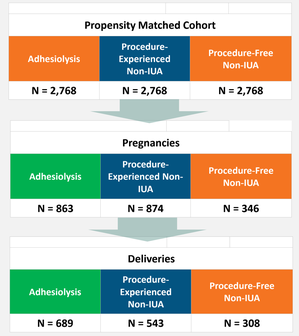
Result 1: Baseline characteristics of study population after matching

After applying propensity score matching on comorbidities, age, race, payer type, and geographic location, each cohort has 2,768 patients.

Baseline Characteristics	Matched Cohort (Using Propensity Score Matching)			
	Adhesiolysis (%)	Procedure-Experienced Non-IUA (%)	Procedure-Free Non-IUA (%)	SMD
	N = 2,768	N = 2,768	N = 2,768	
Age Group				
18-25	4%	4%	4%	0.025
26-45	71%	71%	73%	
46+	24%	24%	23%	
Unknown	0%	0%	0%	
Insurance Plan Types				
Commercial	75%	75%	75%	0.005
Medicaid	22%	22%	22%	
Medicare Advantage	1%	1%	1%	
Unknown	3%	3%	3%	
US Geographic Region				
Northeast	35%	35%	33%	0.029
Midwest	21%	21%	21%	
South	28%	28%	28%	
West	17%	17%	18%	
Charlson Comorbidity Index Score				
Very Mild: 0	82%	82%	84%	0.029
Mild: 1	16%	16%	14%	
Moderate or severe: 2+	2%	2%	2%	

By using propensity score matching (PSM) on these cohorts, the analysis ensured:

- Comparability among 3 study cohorts
- Balance between key factors influencing infertility-related costs through the matching of key confounding variables
- Reduced bias due to the balance of patient characteristics and
- Fair comparisons and enhanced accuracy of cost analysis by isolating surgical history effects
- Accurate, unbiased assessment of how different intrauterine surgical histories impact infertility-related healthcare costs



Result 2: Gestational age at delivery & delivery route

Pregnancy Outcomes	Adhesiolysis	Procedure-Experienced Non-IUA	Procedure-Free Non-IUA Cohort	P-Value
Patients with pregnancy	**N = 863** (31.2%)	**N = 874** (31.6%)	**N = 346** (12.5%)	**<0.05**
Miscarriages[1]				
1	22.7%	33.4%	13.3%	<0.05
>1	5.0%	8.9%	1.5%	<0.05

[1]These outcomes are among women with at-least 1 pregnancy in the follow-up period
Chi-squared. Difference significant p < 0.05 (i.e. <0.05)

- A higher proportion of patients in the adhesiolysis (31.2%) and procedure-experienced non-IUA (31.6%) cohorts had pregnancies during follow-up, compared to procedure-free non-IUA (12.5%) (p < 0.05).
- Among women who became pregnant : Miscarriage rates were significantly higher in both: Procedure-experienced non-IUA group (33.4%) Adhesiolysis group (22.7%)Compared to the procedure-free cohort (13.3%) (p < 0.05).
- Recurrent miscarriages (>1): Highest in the procedure-experienced non-IUA group (8.9%), followed by the adhesiolysis group (5.0%), and lowest in the procedure-free group (1.5%) (p < 0.05).

Delivery Outcomes	Adhesiolysis (%)	Procedure-Experienced Non-IUA (%)	Procedure-Free Non-IUA (%)	P-Value (adhesiolysis vs procedure-free)
	N = 689	N = 543	N = 308	
Gestational Age Category at Delivery				
Full term Delivery	85.5%	89.9%	91.6%	<0.05
Preterm Delivery (Any Trimester)	**14.5%**	**10.1%**	**8.4%**	**<0.05**
Second Trimester Preterm	1.5%	1.1%	0.3%	0.290
Third Trimester Preterm	11.6%	7.9%	7.1%	<0.05
Unspecified (Preterm)	1.5%	1.1%	1.0%	0.774
Delivery Route				
Vaginal Delivery	30.6%	54.5%	57.1%	<0.05
Caesarean Delivery	45.3%	26.7%	22.1%	<0.05
Unknown Delivery Type	24.1%	18.8%	20.8%	0.074

Chi-squared. Difference significant p < 0.05 (i.e. <0.05)

- Preterm delivery was significantly higher in the adhesiolysis group (14.5%) compared to the procedure-free group (8.4%), particularly in the third trimester (11.6% vs. 7.1%) (p < 0.05).
- Full-term deliveries were lowest in the adhesiolysis group (85.5%) compared to 91.6% in the procedure-free cohort (p < 0.05).
- Cesarean delivery rates were notably higher among women with prior adhesiolysis (45.3%) versus the procedure-free group (22.1%) (p < 0.05).Vaginal deliveries were significantly less common in the adhesiolysis group (30.6%) than in the procedure-free group (57.1%) (p < 0.05).

Result 3 : Placental and peripartum outcomes

Outcomes	Adhesiolysis (%)	Procedure-Experienced Non-IUA (%)	Procedure-Free Non-IUA (%)	P-Value
	N = 689	N = 543	N = 308	
Placenta Accreta Spectrum	**4.6%**	**0.9%**	0.0%	<0.05
Placenta Previa	**13.5%**	**10.1%**	3.9%	<0.05
Postpartum Hemorrhage	**17.7%**	**25.0%**	7.8%	<0.05

Chi-squared. Difference significant at p < 0.05 (i.e. <0.05)

- Placenta accreta was most frequent in the adhesiolysis group (4.6%), with no cases in the procedure-free cohort (p < 0.05).
- Placenta previa occurred more often in both adhesiolysis (13.5%) and procedure-experienced non-IUA (10.1%) groups vs. procedure-free (3.9%) (p < 0.05).
- Postpartum hemorrhage was highest in the procedure-experienced non-IUA group (25%), followed by adhesiolysis (17.7%) and lowest in procedure-free (7.8%) (p < 0.05).

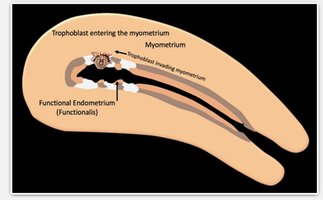
Summary

Women who underwent **hysteroscopic adhesiolysis** showed **higher risks** compared to those with **no uterine surgery**, including:

- **Miscarriage** (<20 weeks)
- **Preterm delivery**
- **Placenta accreta spectrum**
- **Postpartum hemorrhage**
- **Cesarean delivery**

Patients with **other intrauterine surgeries** (without adhesiolysis) also had elevated risks, though generally of **lesser magnitude**.

- The intact endometrial basalis acts as a barrier, preventing trophoblast invasion into the myometrium.
- IUAs reflect trauma to the basalis layer of the endometrium.



- Even after adhesion removal, the underlying basalis defects often persist.
- These defects may allow trophoblastic invasion into the myometrium, increasing the risk of abnormal placentation

CONCLUSIONS

- These real-world findings reinforce existing evidence linking intrauterine surgery–induced IUAs to persistent pregnancy complications, even after adhesiolysis.
- Women undergoing intrauterine procedures without diagnosed IUAs may also face elevated risks of adverse pregnancy outcomes.
- Such risks likely stem from surgically-induced damage to the endometrial basalis that remains inadequately repaired.
- Future efforts should focus on developing and using effective IUA prevention strategies that also promote functional endometrial healing.
- Additional studies are needed to evaluate the impact of these complications on neonatal outcomes, especially in preterm births.

REFERENCES

1. Schmerold et al (2024). A cost-effectiveness analysis of intrauterine spacers used to prevent the formation of intrauterine adhesions following endometrial cavity surgery. Journal of Medical Economics, 27(1), 170-183.
2. Mortimer et al (2024). Treatment of intrauterine adhesions and subsequent pregnancy outcomes in an in vitro fertilization population. American Journal of Obstetrics and Gynecology, 231(5), 536-e1.
3. Hong et al (2025). Intrauterine adhesions treated with hysteroscopic adhesiolysis and subsequent obstetric outcome: A retrospective matched cohort study. BJOG: An International Journal of Obstetrics & Gynaecology, 132(2), 155-164.
4. Charlson et al (1987). A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. Journal of chronic diseases, 40(5), 373-383.

DISCLOSURES

- CM, MPB, JK, JM, RW are employees of Axtria.
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