RISK FACTORS FOR THE DEVELOPMENT OF INTRAUTERINE ADHESIONS

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Background

Intrauterine adhesions (IUA) are a potential sequelae of procedures or infections that lead to trauma to the basalis layer of the endometrium [1]. Characterized by varying degrees of fibrosis within the uterine cavity, adhesions may lead to symptoms, such as menstrual irregularities, pelvic pain, and infertility [1].

Risk factors for IUA are currently not well characterized. Although prior uterine instrumentation has been identified as a risk factor for IUA [2], the role of other potential risk factors is less clear. Case studies have also raised the possibility that progestin-IUD use is associated with IUA, possibly due to endometrial trauma during IUD insertion and/or the progestin-effects on the endometrial lining [3,4]. However, there are no controlled studies that explore progestin-IUDs as a potential risk factor for IUA.

Objective

To identify risk factors for IUA development.

Materials and Methods

This is a retrospective case-control study of 324 patients who underwent a hysteroscopic procedure at the UCSF Center For Reproductive Health between January 2017 and December 2020. Demographic data, including age, BMI, and treatment history at time of hysteroscopy, were obtained. We used analysis of variance to compare patients whose indication was intrauterine scar (cases) to those whose indication was endometrial polyps using STATA v18.

Results

We identified 110 patients with IUA (cases) and 214 patients with endometrial polyps (control group). Baseline demographics were similar between groups, including age (39 years vs. 38.5 years, p-value 0.76) and BMI (24.6 vs. 23.9, p-value 0.16). Of the factors we assessed, there was a statistically significant difference between the groups in prior D&C procedures (49.1% vs. 8.4%, p-value <0.001), history of other uterine surgeries (15.5% vs. 1.9%, p-value <0.001), and prior progestin-IUD use (15.5% vs. 2.8%, p-value <0.001) [Table 1]. On average, patients with IUA had a history of more pregnancy losses (1.01 vs. 0.23, p-value <0.001) and more D&C procedures (0.59 vs. 0.05, p-value <0.001) vs. the polyp group. As a sub-analysis, we excluded patients with a history of uterine surgery to determine non-procedural risk factors. Here, a higher proportion of patients in the IUA group had previously used the progestin IUD vs. the polyp group (18.0% vs. 1.8%, p-value <0.001) [Table 2].

Table 1. Risk Factors for Intrauterine Adhesions

Potential risk factors for IUA in patients with IUA vs. endometrial polyps only (control), including prior uterine surgeries and contraception use. Values are reported as % (n). P-value <0.05 is considered to be statistically significant. *Other uterine surgeries include hysteroscopic myomectomy, laparoscopic myomectomy, and septoplasty.

Table 1
Risk Factors for Intrauterine Adhesions

	Asherman Syndrome (n=110)	Polyps Only (n=214)	p-value
Prior Uterine Surgery			
D&C or D&E	49.1% (54)	8.4% (18)	<0.001
Hysteroscopic Polypectomy	7.3% (8)	8.9% (19)	0.62
Other Uterine Surgery*	15.5% (17)	1.9% (4)	<0.001
Contraception Use			
Progestin IUD	15.5% (17)	2.8% (6)	<0.001
Copper IUD	1.8% (2)	1.4% (3)	0.77
Oral Contraceptives	75.5% (83)	65.0% (139)	0.054

Table 2. Risk Factors for Intrauterine Adhesions in Patients with No History of Prior Uterine Surgery

Contraception use in subgroup of patients with no history of prior uterine surgery and a diagnosis of IUA vs. endometrial polyps only (control). Values are reported as % (n). P-value <0.05 is considered to be statistically significant.

Table 2
Risk Factors for Intrauterine Adhesions in Patients with No History of Prior Uterine Surgery

	Asherman Syndrome (n=39)	Polyps Only (n=167)	p-value
Contraception Use			
Progestin IUD	18.0% (7)	1.8% (3)	<0.001
Copper IUD	5.1% (2)	1.2% (2)	0.11
Oral Contraceptives	82.1% (32)	62.9% (105)	0.022

Conclusions

Our data reaffirms that a history of uterine surgeries, including D&C procedures, is a prevalent risk factor for the development of IUA. These results underscore the importance of minimizing iatrogenic endometrial trauma. More notably, progestin-IUD use emerged as a risk factor for IUA. These findings highlight the need for additional research to further verify this association and explore its mechanistic basis.

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References

1. Sevinç F, Oskovi-Kaplan ZA, Çelen Ş, Ozturk Atan D, Topçu HO. Identifying the risk factors and incidence of Asherman Syndrome in women with post-abortion uterine curettage. J Obstet Gynaecol Res. 2021 Apr;47(4):1549-1555. doi: 10.1111/jog.14667. Epub 2021 Jan 18. PMID: 33462894.

2. Khan Z. Etiology, Risk Factors, and Management of Asherman Syndrome. Obstet Gynecol. 2023 Sep 1;142(3):543-554. doi: 10.1097/AOG.0000000000005309. Epub 2023 Jul 27. PMID: 37490750.
3. Abel MK, Wald K, Cedars MI, Noel M. Uterine synechiae after intrauterine device use: a case series. J Assist Reprod Genet. 2021 Oct;38(10):2625-2629. doi: 10.1007/s10815-021-02173-6. Epub 2021 Apr 8. PMID: 33830411; PMCID: PMC8581113.
4. Molkenboer, Jan & Hanstede, M. Asherman's Syndrome (AS) after Long Term Use of a Levenorgestrel Containing IUD, Cause or Coincidence?. Journal of Minimally Invasive Gynecology. 2021; 28. S89-S90. 10.1016/j.jmig.2021.09.689.