IMPACT OF ENDOMETRIAL CAVITY FLUID ASPIRATION ON LIVE BIRTH DATES IN FROZEN EMBRYO TRANSFER CYCLES AS COMPARED TO SPONTANEOUS FLUID RESOLUTION: A RETROSPECTIVE COHORT STUDY

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Introduction

Endometrial cavity fluid (ECF) near or at frozen embryo transfer (FET) has been linked to lower implantation and pregnancy rates. The presence of ECF has been linked to several underlying conditions including tubal factor infertility, uterine infections, cervical obstruction, PCOS, endometriosis, or ovarian stimulation.

The management of ECF depends on persistence and cause—transient ECF may resolve on its own, while persistent cases may require medical or surgical intervention, FET protocol adjustments or cycle cancellation.

While ECF aspiration has not significantly improved implantation rates in fresh ET cycles, its effect on live birth rates (LBR) in FET cycles is unclear. This study compares LBR in patients undergoing ultrasound-guided aspiration versus spontaneous ECF resolution before FET, providing insights into ECF management in ART.

Material and Methods

- **Study Design**: Retrospective cohort study at a single academic center (March 2020–December 2022).
- **Eligibility**: Presence of ECF on ultrasound within five days before FET; excluded if no ECF during FET cycle, >1 embryo transferred, or persistent ECF at time of transfer.
- **Aspiration Procedure**:
  - Ultrasound-guided aspiration using an embryo transfer or IUI catheter.
  - Light suction applied; follow-up ultrasound before FET to check for re-accumulation.
- **Primary Outcome**: Compare LBR between spontaneous resolution and aspiration ($p<0.05$).
- **Statistical Analysis**: Mann-Whitney and Fisher's Exact tests.

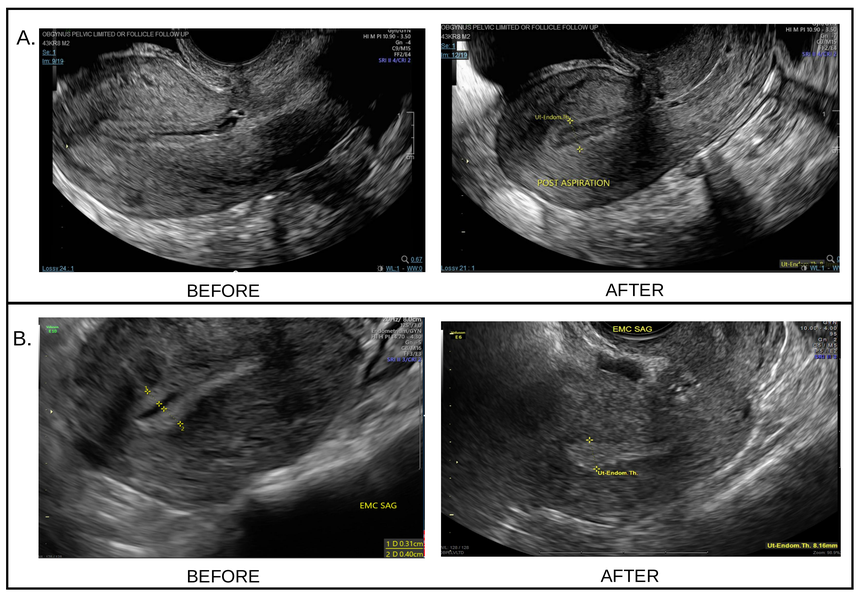

Figure 1: U/S images demonstrating uterine cavity fluid resolution. (A) Uterine cavity fluid that resolved following fluid aspiration. (B) Uterine cavity fluid that spontaneously resolved.

Results

Figure 2.

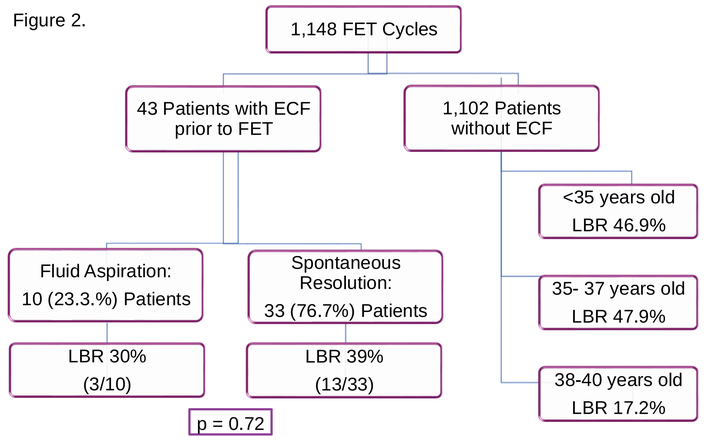

Table 1. Clinical Features for Patients with ECF who Underwent Fluid Aspiration vs Those Who Underwent Spontaneous Resolution

	Spontaneous Resolution (n=33)	Fluid Aspiration (n=10)	P-Value
BMI	27.3 (23.18, 30.85)	25.66 (24.31, 33.97)	0.920
Age At Time Of FET	35 (33, 38)	37.5 (32, 39)	0.908
Age At Which Embryo Created	34 (32, 37)	35 (29, 39)	0.790
Prior Live Birth (Yes)	15 (45.45)	10 (100.00)	**0.002**
History Of Uterine Surgery	24 (72.73)	10 (100.00)	0.089
C/S	12 (36.36)	9 (90.00)	**0.004**
D&C	9 (27.27)	4 (40.00)	0.458
Myomectomy	5 (15.15)	0 (0.00)	0.320
LOA	6 (18.18)	0 (0.00)	0.309
Polypectomy	10 (30.30)	1 (10.00)	0.409
None	25 (75.76)	9 (90.00)	
Primary Infertility	15 (45.45)	0 (0.00)	**0.008**
Infertility Diagnosis			
Diminished Ovarian Reserve	4 (12.12)	1 (10.00)	1.000
Infertility Of Tubal Origin	5 (15.15)	0 (0.00)	0.320
Male Infertility	4 (12.12)	0 (0.00)	0.558
Unexplained Infertility	9 (27.27)	3 (30.00)	1.000
Elective For PGT	3 (9.09)	2 (20.00)	0.575
PGT Status			0.305
Untested	16 (50.00)	3 (30.00)	
Euploid	16 (50.00)	7 (70.00)	
Embryo Transfer Protocol			
Oral Estrace	17 (51.52)	9 (90.00)	0.388
Modified Natural Cycle	1 (3.03)	0 (0.00)	
Lupron Downregulation	5 (15.15)	0 (0.00)	
Natural Cycle	0 (0.00)	0 (0.00)	
Vaginal Estrace	6 (18.18)	0 (0.00)	
Letrozole	1 (3.03)	0 (0.00)	
Low Dose Gonadotropins	2 (6.06)	1 (10.00)	
Letrozole + O/V Estrace	1 (3.03)	0 (0.00)	
Endometrial Thickness Prior To Progesterone Start	8.8 (7.7, 10.3)	7.6 (7.3, 8.1)	**0.044**
Amount of ECF Aspirated (mL)	N/A	0.021 (0.001, 0.120)	

DATA: Median (IQR) or N (%)

Results Summary

- Live birth rates are not statistically different whether ECF resolves spontaneously or through aspiration prior to ET, with LBR of 39%, and 30% respectively (p=0.72) . ECF Aspiration can still be used to resolve persistent ECF prior to transfer.
- When compared to cycles with no ECF present on ultrasound, live birth rates are lower in both spontaneous resolution and aspirated groups.
- Prior live birth and C/S rates are statistically significantly higher in the fluid aspiration group as compared to the spontaneous resolution group.
- Endometrial thickness prior to progesterone start and rates of primary infertility were statistically significantly higher in the spontaneous resolution group as compared to the fluid aspiration group.

Conclusions

- Though no statistically significant difference in LBR, both SR and FA groups exhibited lower LBR compared to patients without ECF (Figure 2), suggesting that the presence of ECF, regardless of resolution method, may negatively impact outcomes. These findings should be considered when counseling patients regarding the management of ECF and the decision to undergo aspiration.
- The contribution of obstetrical history in ECF formation and need for subsequent aspiration remains unclear and requires further exploration.

Future Directions

- Larger-scale prospective studies to substantiate results
- Assess cancellation rates of FET due to endometrial fluid persistence before and after Fluid Aspiration
- Alternative interventions for ECF Resolution prior to FET

Acknowledgements

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