

Kusha Shirani, BSc (Candidate); Mehrnoosh Faghih, MD; Shilpa Amin, MD; Stacy Deniz, MD; Megan F. Karnis, MD; Michael S. Neal, MSc
McMaster University, Hamilton, Ontario, Canada, One Fertility, Burlington, Ontario, Canada

Background

Multiple gestation pregnancies remain a significant contributor to maternal and neonatal morbidity. Although advanced assisted reproductive technologies (ART) are often implicated, multifetal gestations may also arise from lower-intensity treatments and spontaneous conception [1].

Understanding how treatment modality and patient-specific factors interact is essential for improving counseling and prevention strategies.

Objective and Study Methods

To identify fertility treatment modalities associated with multiple gestation pregnancies at a university-affiliated fertility clinic (January 2023 – June 2025).

Study Design: Retrospective longitudinal cohort study

Population: 60 patients with multiple gestation pregnancies 2,453 total known treatment cycles

Time Frame: January 1, 2023 – June 1, 2025

Setting: University-affiliated fertility clinic

Data Collected: Treatment preceding conception, infertility diagnosis, chronicity, age, and hormonal parameters.

Table 1. Summary Of Multiple Gestation Outcomes

Category	Key Findings
Total cycles analyzed	2,453
Twin rate	2.45%
Triplet rate	0.08%
Most common diagnosis	PCOS (23.3%)
Patients <40 years	91.4%
Dichorionic twins (DD)	70%
Monochorionic twins (MD)	20%

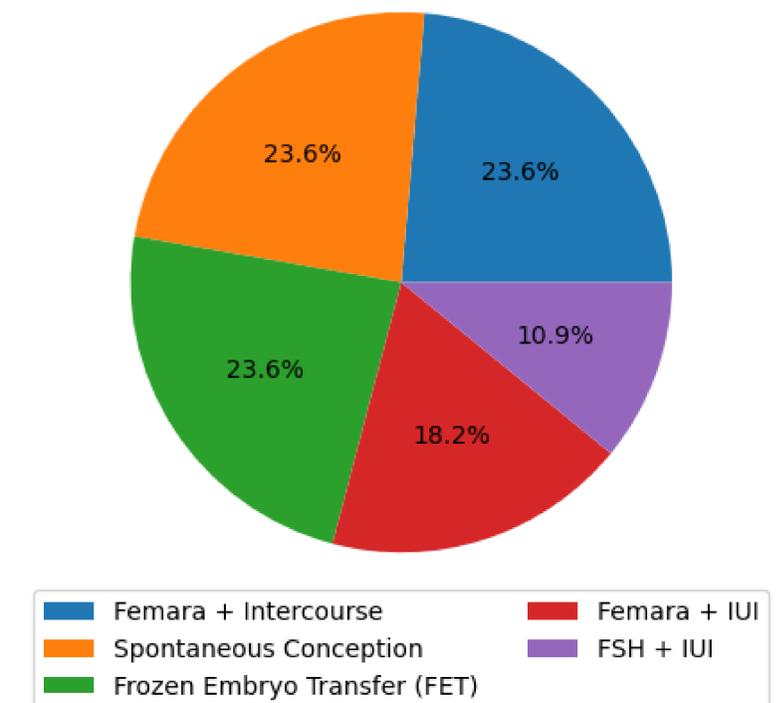
Results and Interpretation

Across 2,453 treatment cycles, the overall twin rate was 2.45%, and the triplet rate was 0.08%. Twin pregnancies were not confined to advanced ART. Femara with intercourse, spontaneous conception, and frozen embryo transfer each accounted for 21.7% of twin cases, demonstrating that multifetal gestation occurred across both lower-intensity and advanced treatment modalities.

Most patients were under 40 years (91.4%), with nearly half under 35. PCOS (23.3%) was the most common diagnosis, followed by diminished ovarian reserve (13.3%). Elevated estradiol was observed in 79.2% of Femara-based twin cases, suggesting ovarian response may be an important contributor to multifetal risk. Dichorionic twins comprised 70% of cases, while 20% were monochorionic, with monochorionic twins occurring after spontaneous conception and FET.

Overall, these findings suggest that patient characteristics and hormonal response may play a greater role in multifetal risk than treatment intensity alone.

Figure 1. Distribution of Fertility Treatments Prior to Twin Pregnancy (n=60)



Conclusion and Future Steps

Multiple gestation pregnancies were not limited to advanced ART, as a substantial proportion of twin cases followed lower-intensity treatments and spontaneous conception. The predominance of younger patients and PCOS suggests that patient-specific factors and ovarian response may influence multifetal risk more than treatment intensity alone. The occurrence of monochorionic twins after spontaneous conception and FET further challenges traditional assumptions about chronicity, underscoring the need for individualized counseling and risk assessment in fertility care.

Key Recommendations:

- Incorporate patient characteristics (age, diagnosis) into risk discussions
- Consider hormonal response when counseling patients undergoing ovulation induction
- Further evaluate predictors of multifetal gestation in larger cohorts

Acknowledgements

The authors gratefully acknowledge the support of the allied health professionals at ONE Fertility.

References

1. Velez MP, Soule A, Gaudet L, Pudwell J, Nguyen P, Ray JG. Multifetal pregnancy after implementation of a publicly funded fertility program. JAMA Network Open [Internet]. 2024 Apr 25;7(4):e248496. Available from: <https://doi.org/10.1001/jamanetworkopen.2024.8496>