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Early Outcomes from pcfDNA Screening at 8-10 weeks Gestation for Samples with Additional Findings

Sarah Hash[1] and Carly Hammer[1]

1 Myriad Genetics, Inc., Salt Lake City, UT

Background

- Historically, prenatal cell-free DNA (pcfDNA) screening has been available starting at 10 weeks gestation
- Recent advancements have enabled screening as early as 8 weeks gestation (8w0d–9w6d)
- This study evaluates early pregnancy outcomes associated with “Additional Findings” results in pcfDNA samples collected during this earlier gestational window

Methods

- Data from January 2025 to October 2025 were analyzed to identify trends in early pregnancy outcomes
- Laboratory genetic counselors contacted ordering providers for all pcfDNA samples collected between 8w0d–9w6d gestation that resulted with “Additional Findings”:
  - Suspected interfering maternal findings
  - Rare autosomal trisomies (RATs; trisomies in autosomes other than 21, 18, and 13)
  - Other complex findings
- Genetic counselors documented:
  - Panel utilization
  - Details of the abnormal result and gestational age at collection
  - Pregnancy viability at the time of sample collection
  - Viability at follow-up phone call (~10–11 weeks gestation)
  - Presence of a reported vanishing twin

Table 1. Additional Findings in case set

Maternal Chromosome Findings	**17**
Maternal Mosacism for XO	8
Maternal Mosacism for XXX	2
Maternal chromosome 22 duplication	6
Maternal chromosome 22 deletion	1
Multiple Chromosome Findings	**18**
Multiple Trisomies	5
Multiple Monosomies	0
Monosomies and Trisomies	6
Partial deleton and duplication suggestive of a translocation	7
Singular Chromosome Finding	**85**
Single Trisomy	73
Single Monosomy	0
Mosaic or Ring X chromosome	3
Single Deletion	5
Single Duplication	4

Results

- A total of 120 early gestational age (EGA) pregnancies with “Additional Findings” were identified (**Table 1**).
  - 17 cases (14%) resulted with maternal chromosomal findings, most commonly maternal mosaicism for monosomy X or a maternal chromosome 22q duplication
  - 18 cases (15%) showed multiple chromosomal abnormalities, most frequently involving partial deletions and duplications suggestive of a derivative chromosome inherited from a parent with a reciprocal translocation
  - 85 cases (71%) revealed a single chromosomal abnormality (**Figure 1**).
    - 73 identified as RATs, with the most prevalent being:
      - Trisomy 15 (21/73)
      - Trisomy 22 (13/73)
- Optional panel utilization varied. Expanded Aneuploidy Analysis (EAA) was included in 68% of orders (82/120). Nearly half of individuals (48%, 57/120) received all three optional panels; Sex Chromosome Analysis (SCA), EAA, and Microdeletions (**Figure 2**).

Figure 1. Most prevalent whole chromosome RATs identified

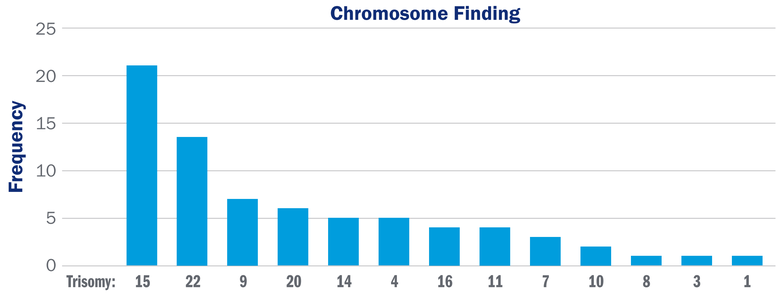
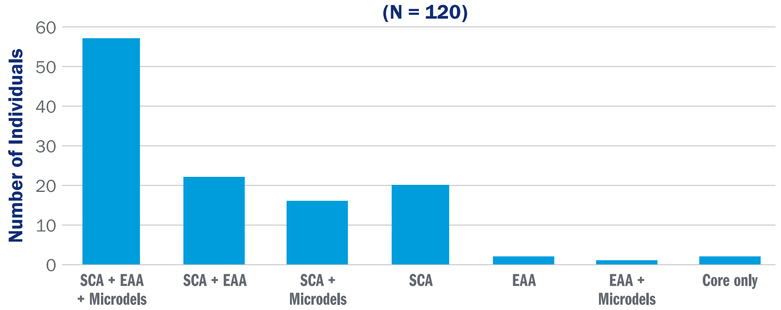


Figure 2. Distribution of optional add-on panel combinations (N = 120)



All ordered panels automatically include the core chromosomes 21, 18, and 13.

- Excluding those results with maternal findings, 103 cases with Additional Findings were assessed for early pregnancy outcomes (**Figure 3**).
  - 66% (68/103) pregnancies viable at collection
  - 12% (12/103) pregnancies not viable at collection
  - 22% (23/103) with unknown viability at collection
- Follow-up data showed that of the 68 initially viable pregnancies:
  - 54% (37/68) remained viable
  - 41% (28/68) resulted in miscarriage
  - 4% (3/68) viable with a vanishing twin identified via ultrasound
- Among the 80 pregnancies with known follow-up data, 40 (50%) experienced miscarriage between 8- and 11-weeks’ gestation (**Figure 4**).

Figure 3. Early outcomes from pcfDNA screening at 8-10 weeks gestation for samples with Additional Findings

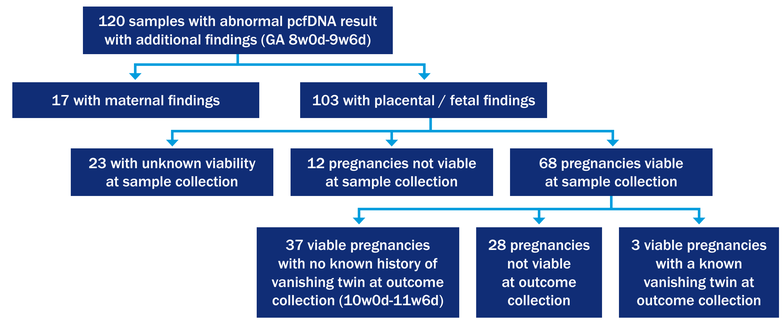


Figure 4. Early pregnancy outcome data for EGA samples with Additional Findings

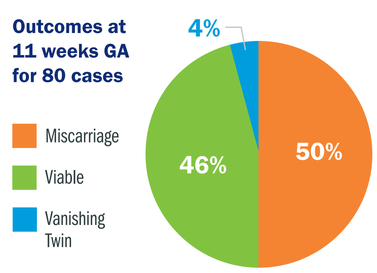
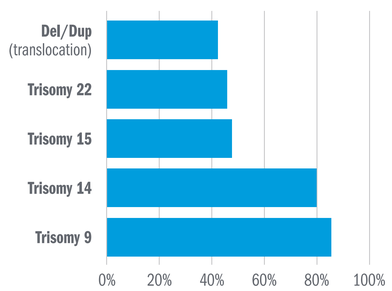


Figure 5. Rate of pregnancy loss at outcome collection by chromosome finding



Conclusions

- pcfDNA screening at EGA provides clinically meaningful information for patients and providers
- Analysis of all chromosomal aneuploidies, rather than only the common trisomies, in pcfDNA screening performed at EGA may provide insight into the causes of early pregnancy loss
- Abnormal findings may:
  - Offer insight into potential etiologies of pregnancy loss
  - Facilitate targeted genetic counseling
  - Guide follow-up testing for both the pregnancy and the parents
  - Inform recurrence risk assessment for future pregnancies
- Many pregnancies with abnormal results experienced miscarriage before the gestational age at which pcfDNA screening has traditionally been available, identifying a population that previously could not benefit from this technology
- Utilization of pcfDNA screening between 8w0d-9w6d gestation can complement traditional diagnostic pathways to improve understanding of the genetic landscape of early pregnancy loss

Disclosures: All authors were employees of Myriad Genetics, Inc. at the time of this study and received salary and stock as compensation.

Email for questions: Sarah.Hash@myriad.com