



**AMERICAN SOCIETY FOR  
REPRODUCTIVE MEDICINE**



**American Society for Reproductive Medicine 2014 Annual Meeting**  
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**Title:**

EMBRYO SELECTION VERSUS NATURAL SELECTION: HOW DO COMPREHENSIVE CHROMOSOME SCREENING (CCS) OUTCOMES COMPARE TO ANALYSIS OF PRODUCTS OF CONCEPTION (POC) FROM EARLY PREGNANCY LOSS (D&C)

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**Objective:**

Since the advent of preimplantation genetic screening (PGS), clinicians have questioned its use, as most numeric chromosome abnormalities (NCA) are considered to be lethal and without reproductive potential. The objective of this study was to assess the prevalence of all NCA reported after PGS compared to those reported after cytogenetic analysis from D&C.

**Design:**

Retrospective analysis

**Materials and Methods:**

Cytogenetic reports of patients who underwent an IVF cycle with CCS of  $\geq 1$  biopsied embryo were compared to cytogenetic analysis from patients who had a D&C after ART. Only conclusive results were included in the study. Frequencies for every numerical abnormality were compared.

**Results:**

A total of 1046 NCA were reported after CCS (monosomy, 47.1%; trisomy, 52.9%) and 444 after D&C (monosomy, 6.3%; trisomy, 82.6%, polyploidy 11.0%). The top five most frequently affected chromosomes were 15, 16, 18, 21 and 22 in both, PGD and D&C. Interestingly, after D&C, monosomies were rarely observed. All abnormalities per chromosome are reported below.

**Conclusions:**

Our analysis presents descriptive data of the most common abnormalities seen after PGS and D&C. PGS helps patients by eliminating most of the NCA and avoiding early pregnancy loss. Overall, the same common numerical alterations were observed. Although our data suggested that monosomies do not implant, they account for almost 50% of all anomalies. As the use of IVF has evolved, so too has genomic



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assessment. Our study demonstrated the comparability in chromosomal abnormalities of naturally conceived fetuses; and highlights embryo selection of know euploid embryos offer the possibility to patients to avoid invasive and potentially harmful procedures. As we move forward with CCS technology, patients will be courteous to its' capabilities. In respecting our current technologies' evolution, miscarriages due to chromosomal abnormalities could be minimized.

**Support:**

None.

**Table:**

Chromosome	PGD		D&C	
	Monosomy (%)	Trisomy (%)	Monosomy (%)	Trisomy (%)
1	0.29	1.2	0	0.5
2	1.3	2.2	0	1.8
3	0.1	1.2	0	1.3
4	1.3	0.7	0	3.5
5	1.1	1.3	0	1.8
6	1.1	0.9	0	1.0
7	1.3	1.3	0.3	3.3
8	1.1	2.3	0	2.0
9	0.6	2.8	0	3.8
10	1.2	1.3	0.3	3.3
11	0.8	1.1	0	0.8
12	0.4	1.1	0	1.0
13	2.1	1.2	0	5.1
14	1.7	1.6	0	2.5
15	3.0	5.6	0	10.9
16	5.5	5.9	0	15.9
17	1.2	1.6	0	1.8
18	3.3	2.9	0	3.8
19	2.7	2.9	0	0
20	1.1	2.2	0	4.6
21	5.4	4.1	2.0	8.1
22	9.3	6.7	0	15.4
X	1.1	0.7	4.3	0.5
Y	0	0.1	0.3	0.3
Triploid	0		26	
Tetraploid	0		23	