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## Maternal Abortions and Birth of Down Syndrome Offspring

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Various studies have shown a relationship between maternal history of spontaneous abortion and still births of unknown karyotype and the risk of a subsequent Down Syndrome (DS) live birth(1,2). However, the results of these investigations have been inconclusive(3-6). The present study was, therefore, conducted to evaluate the association between the history of spontaneous abortion and birth of DS offspring.

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*Manuscript received: April 25, 1996;  
Initial review completed: June 19, 1996;  
Revision accepted: January 14, 1997*

### Methods

Four hundred and seventeen cytogenetically confirmed DS cases were identified from those registered over a period of 23 years starting from 1972. All pregnancies reported by the DS patients mothers were considered. Families with phenotypically normal children but who had abortions served as controls.

### Results

Of the 417 DS families studied, spontaneous abortions were observed in 48 families (11.5%). On analysing the spontaneous abortions in relation to the birth order of the proband, either before or after DS child, it was observed that spontaneous abortions occurred frequently (78.9%) before the birth of a DS child. However, the frequencies of one or two or three pregnancy losses with reference to the parental age showed that single pregnancy loss was prevalent either before or after DS births and occurred to mothers in the age group 21 to 34 years and to fathers from 25 to 39 years. The reported abortions in the different maternal age groups in DS and controls are depicted in *Table I*. A higher percentage of abortions was documented in DS families (18.9%) in comparison to control families (14.5%). This difference was statistically significant ( $p < 0.02$ ); the odds ratio for the birth of DS offspring with a history of spontaneous abortion was 1.8 (1.44 for abortion before

TABLE I—Comparison of reported Abortions.

Maternal age(yr)	Control		DS	
	n	%	n	%
15-19	-		6	7.6
20-24	5	17.2	19	24.1
25-29	8	27.6	23	29.1
30-34	6	20.7	16	20.3
35-39	7	24.1	8	10.1
40-44	3	10.3	7	8.9
Total	29	14.5	79	18.9

DS birth and 0.36 for abortion after DS birth).

### Discussion

Buck *et al.*(7) were the first to point out that "if a group at risk for nondisjunction existed, then one might find an increased incidence of fetal loss in their obstetric history". They also observed highest fetal loss in pregnancies occurring closest to DS births(7). In the present study too, the abortions clustered nearer to DS births.

The relative risk to produce a DS child is associated with an increase in the number of abortions in younger women(2). A history of spontaneous abortion may identify a group of women at risk to get a trisomy child. In the present study the high risk group seems to be women whose age ranges from 25-29 years.

The most known etiology in DS is the maternal age and the influence of maternal age exists at two levels: (i) maternal age dependent group, namely, older women; and (ii) maternal age independent group, namely, younger women below 35 years

age and women with translocation carrier status. The highest percentage of abortions is seen before DS births in younger women and after DS births in older women. In the present study, both the age dependent as well as the age independent groups were involved.

In conclusion, the results of the current investigation support a positive association between maternal history of abortions and birth of a DS offspring.

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