

Spontaneous Abortion and Congenital Heart Defects

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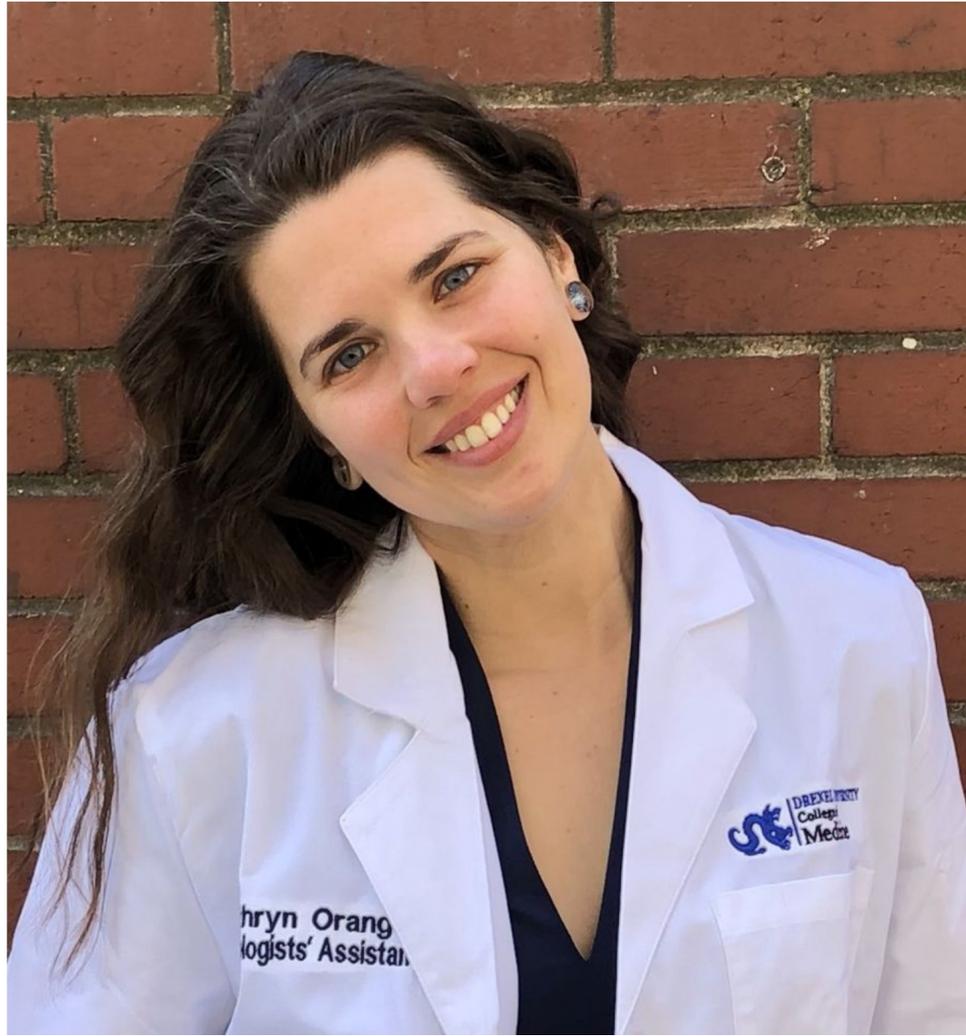
Spontaneous abortion, also known as miscarriage, is defined as the loss of pregnancy before 20 weeks gestation (Dugas, 2022). In most societies, miscarriage is a taboo topic that is overlooked and understudied, yet across all cultures, it is a commonly occurring, natural phenomenon. Estimates indicate that as many as 50% of pregnancies end in spontaneous abortion (Sadler, 2019, p. 17). That equates to an estimated 23 million miscarriages every year worldwide, translating to 44 pregnancy losses each minute (Quenby, 2021). In one study, approximately 43% of women reported having had 1 or more first-trimester spontaneous miscarriages (Cohain, 2017). Risk factors for miscarriage include very young or older female age (younger than 20 years and older than 35 years), older male age (older than 40 years), very low or very high body-mass index, Black ethnicity, previous miscarriages, smoking, alcohol, stress, working night shifts, air pollution, and exposure to pesticides (Quenby, 2021).

These factors likely cause chromosomal abnormalities, accounting for half of all spontaneous abortions (Sadler, 2019, p. 46). Most of these losses happen within the first 2–3 weeks of fertilization, before one may realize they are pregnant, and therefore easily go undetected. The first three weeks of gestation, called the early embryonic period, is considered an “all or nothing phase,” where any damage done will cause death to either all or none of the embryonic cells. From the third to ninth week of gestation, the later embryonic period, the cells begin differentiating into organ systems and are most susceptible to teratogens. The vascular system appears around this time in the middle of the third week, when the embryo can no longer satisfy its nutritional requirements by diffusion alone (Sadler, 2019, p. 179). From nine weeks gestation to birth is called the fetal period when these organ systems will mature. If at any point development is suspended, fetal demise begins, and the embryo is terminated.

If an abnormality is mild enough to support human life the fetus may continue to develop. Approximately 3% of all live-born infants will have a birth defect (Sadler, 2019, p. 143). Chromosomal abnormalities account for 10% of major birth defects and gene mutations account for an additional 8% (Sadler, 2019, p. 17). Heart and vascular abnormalities make up the largest category of human birth defects. It is estimated that 12% of babies with heart defects have a chromosomal abnormality and 33% of babies with a chromosome abnormality have a heart defect (Sadler, 2019, p. 195). Approximately 2% of heart defects are due to environmental agents, but most are caused by a complex interplay between genetic and environmental influences (Sadler, 2019, p. 195).

The most common heart defects compatible with life are often septal defects which can be repaired through surgery. Many congenital heart diseases may initially be suspected during a routine ultrasound. Fetal echocardiography, an advanced ultrasound, can be carried out at around 18 to 22 weeks of the pregnancy to confirm an exact diagnosis. In addition, cytogenetics and biochemical markers can be analyzed through the extraction of amniotic fluid, fetal blood from the umbilical cord, and maternal serum. This prenatal care is vital in understanding and treating chromosomal defects, especially when miscarriages are repeated. Recurrent miscarriage indicates a higher risk for obstetric complications, including preterm birth, fetal growth restriction, placental abruption, and stillbirth in future pregnancies (Quenby, 2021). It also predicts longer-term health problems, such as cardiovascular disease and venous thromboembolism.

Receiving prenatal healthcare services in the 21st century continues to be a challenge for people around the world, and in many countries, clinics are often under-resourced and understaffed. In addition, stigma, shame, and guilt emerge as common themes in pregnancy loss worldwide. Many women who lose a baby during pregnancy can go on to develop mental health issues that last for months or years— even when they have gone on to deliver healthy babies (Quenby, 2021). This indicates a need for physical health resources plus effective screening instruments and treatment options for the mental health consequences of miscarriage. With its prevalence, there is a continuous need for normalizing spontaneous abortion through the collection and reporting of data which may facilitate the improvement of patient care and policy development.



References

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