Multifetal Pregnancy Reduction

ABSTRACT: Although not all multifetal pregnancies occur after the use of assisted reproductive technology, fertility treatments have contributed significantly to the increase in multifetal pregnancies. In almost all cases, it is preferable to avoid the risk of higher-order multifetal pregnancy by limiting the number of embryos to be transferred or by cancelling a gonadotropin cycle when the ovarian response suggests a high risk of a multifetal pregnancy. When multifetal pregnancies do occur, incorporating the ethical framework presented in this Committee Opinion will help obstetrician–gynecologists counsel and guide patients as they make decisions regarding continuing or reducing their multifetal pregnancies.

Recommendations
On the basis of the principles outlined in this Committee Opinion, the American College of Obstetricians and Gynecologists (ACOG) makes the following recommendations:

- Fertility treatments have contributed significantly to the increase in multifetal pregnancies. Primary prevention strategies to limit multifetal pregnancies, especially higher-order multifetal pregnancies, can help to minimize the need for multifetal pregnancy reduction and should be practiced by all physicians who treat women for infertility.
- Obstetrician–gynecologists should be aware that multifetal pregnancies increase maternal and perinatal morbidity and mortality. Higher-order multifetal pregnancies present higher risks than do twin pregnancies.
- Obstetrician–gynecologists should be knowledgeable about the medical risks of multifetal pregnancy, the potential medical benefits of multifetal pregnancy reduction, and the complex ethical issues inherent in decisions regarding multifetal pregnancy reduction. They should be prepared to respond in a professional and ethical manner to patients who request or decline to receive information, or intervention, or both.
- Nondirective patient counseling should be offered to all women with higher-order multifetal pregnancies and should include a discussion of the risks unique to multifetal pregnancy as well as the option to continue or reduce the pregnancy. Resources for providing such counseling can include maternal–fetal medicine specialists, neonatologists, mental health professionals, child development specialists, support groups, and clinicians with procedural expertise in multifetal pregnancy reduction.
- When a patient’s request for information on multifetal pregnancy reduction is discordant with a physician’s values, the physician should refer the patient for consultation in a timely fashion and without judgment, explain to the patient the reason for the consultation, and provide all necessary information to the consultant.
- Obstetrician–gynecologists should respect patients’ autonomy regarding whether to continue or reduce a multifetal pregnancy. Only the patient can weigh the relative importance of the medical, ethical, religious, and socioeconomic factors and determine the best course of action for her unique situation.

Introduction
Multifetal pregnancy reduction is defined as a first-trimester or early second-trimester procedure for reducing the total number of fetuses in a multifetal pregnancy by one or more (1). In most cases, the involved gestations will be higher-order multifetal pregnancies, defined by the presence of three or more fetuses. Throughout the document, multifetal pregnancy reduction is used to refer to reduction of a higher-order multifetal pregnancy by
one or more fetuses. The special case of reduction from a twin gestation to a singleton gestation is addressed as a separate issue in the document. The ethical issues involved in multifetal pregnancy reduction are complex, and no one position reflects the variety of opinions within the membership of ACOG. The purpose of this Committee Opinion is to review the ethical considerations involved in multifetal pregnancy reduction, to analyze their role in decisions regarding multifetal pregnancy reduction, and to provide a framework that can be used by obstetrician–gynecologists in counseling patients who are considering multifetal pregnancy reduction.

**Background**

**Incidence**

Spontaneous multifetal pregnancies have always posed increased medical risks to pregnant women and their fetuses. Between 1980 and 2009, the increased use of assisted reproductive technology and controlled ovarian hyperstimulation with gonadotropins resulted in a dramatic increase in the incidence of multifetal pregnancies. More recently, advances in laboratory techniques and a national effort by professional groups have led to greatly improved live birth rates despite the transfer of fewer embryos, which has significantly reduced the incidence of twins and higher-order multiple births (2). As an example, between 1980 and 2009, the twin birth rate increased 76%, from 18.9 to 33.3 per 1,000 live births (3). It has since stabilized and is currently 33.5 twins per 1,000 live births (4). The birth rate for higher-order multiples increased more than 400% between 1980 and 1998, when it peaked at 1.935 per 1,000 births (3). Between 1998 and 2015, deliveries of higher-order multiples decreased by 46% to 1.036 per 1,000 births (4). Although these advances have reduced the rate of higher-order multifetal pregnancies after in vitro fertilization (IVF), the risk remains higher than with naturally achieved pregnancies. Unlike with IVF, fertility treatments that involve controlled ovarian hyperstimulation with gonadotropins do not control for the number of eggs fertilized or embryos implanted. As such, the risk of a higher-order multifetal pregnancy is increased compared with IVF. This risk is estimated to be 9% (5).

Although not all multifetal pregnancies occur after the use of assisted reproductive technology, fertility treatments have contributed significantly to the increase in multifetal pregnancies. Primary prevention strategies to limit multifetal pregnancies, especially higher-order multifetal pregnancies, can help to minimize the need for multifetal pregnancy reduction and should be practiced by all physicians who treat women for infertility. These strategies include canceling an ovulation induction cycle when it places the patient at high risk of a multifetal gestation, limiting the number of embryos transferred during IVF (6), and using IVF instead of ovarian hyperstimulation with gonadotropins when there is an increased risk of multifetal pregnancy.

**Risks**

Obstetrician–gynecologists should be aware that multifetal pregnancies increase maternal and perinatal morbidity and mortality. Higher-order multifetal pregnancies present higher risks than do twin pregnancies. Infants born after a multifetal pregnancy are at increased risk of prematurity, cerebral palsy, learning disabilities, slow language development, behavioral difficulties, chronic lung disease, developmental delay, and death (7–9). Compared with singleton pregnancies, multifetal pregnancies are associated with an approximately fivefold increased risk of stillbirth and a sevenfold increased risk of neonatal death. These adverse outcomes are primarily due to complications of prematurity, the risk of which can be lowered by reduction of the number of fetuses (8, 10). In addition, the relative risk of cerebral palsy in twins and triplets compared with singletons is 4.9 and 12.7, respectively (11). Despite technologic advancements in neonatology, reports vary regarding whether there has been an improvement in outcomes for infants born before 26 weeks of gestation over the past decade (12–14), and optimal neonatal care is not available equally to all pregnant women and their newborns, even in the United States.

The risks of perinatal morbidity and mortality increase with the presence of each additional fetus. For example, the risk of spontaneous loss of the entire pregnancy is 25% for quadruplets, 15% for triplets, and 8% for twins (15). Reducing the pregnancy by one or more fetuses decreases the spontaneous pregnancy loss rates for all multifetal pregnancies, with the most dramatic survival benefits seen with reductions from higher initial starting numbers of fetuses in higher-order multifetal pregnancies (16).

Maternal risks of multifetal pregnancies include hypertension, preeclampsia, gestational diabetes, and postpartum hemorrhage (17). Patients should be counseled that reduction to a lower-order pregnancy (triplet to twin or twin to singleton) reduces the risk of medical complications associated with maintaining a higher-order multiple pregnancy. However, the risks remain somewhat increased in higher-order pregnancies that are reduced to twin or singleton compared with pregnancies that started out as twin or singleton (8, 18, 19).

**Economic and Quality of Life Challenges**

Medical costs to parents and society are quadrupled for twins and 10-fold higher for triplets (20). Additional economic challenges include a need for additional child care, greater household and medical expenditures, and the possibility that one of the parents will be unable to return to the workforce (21).

**Parenting**

Parents of multiples are at an increased risk of severe stress and a compromised quality of life (22, 23). Higher rates of maternal depression and child abuse also have
been reported in families raising multiples, particularly when one or more of the children has special needs (24), and rates of divorce among parents of multiples also may be increased (21, 25, 26).

Ethical Considerations

Ethical principles serve to illustrate the moral complexities inherent in decisions pertaining to multifetal pregnancy reduction, and they offer guidance to obstetrician–gynecologists as they counsel patients regarding the management of these pregnancies. Moral, religious, social, cultural, and economic factors all play a role in how these ethical principles are understood and weighed by a given woman in her unique decision-making process. A more detailed discussion of the role of ethical principles and other ethical perspectives in decision making can be found elsewhere (27).

Autonomy, Beneficence, and Nonmaleficence

Respect for patient autonomy acknowledges a woman’s right to hold views, make choices, and take actions related to her pregnancy management based on her personal values and beliefs and free of coercion. The principles of beneficence and nonmaleficence are particularly complex when applied to the context of multifetal pregnancy. On the one hand, multifetal pregnancy reduction may maximize the woman’s health and the health of her surviving neonates. On the other hand, multifetal pregnancy reduction does cause the loss of one or more fetuses and, in rare cases, may result in the loss of the entire pregnancy. Therefore, a patient’s values may lead her toward either reducing or maintaining a multifetal pregnancy. The number of fetuses, the patient’s clinical history, the woman’s own values, and her particular economic and social situation may appropriately shift the balance regarding such decisions. This complex balance of relative risks and benefits compels the availability of factual and comprehensive counseling regarding selective fetal reduction for women with multifetal pregnancies.

Justice

When assisted reproduction in the United States is viewed through the lens of justice, inequities become apparent. Women who live in states that mandate insurers to cover infertility treatment have better access to fertility services, as do women of higher socioeconomic status. Such women often can avoid treatments such as controlled ovarian hyperstimulation in favor of more expensive treatments such as IVF, which is associated with a lower risk of higher-order multifetal gestations. When cost is less of a concern, for example, women are more likely to limit the number of embryos transferred in a given IVF cycle, knowing that they have the resources to attempt another treatment cycle if needed. Indeed, a review of IVF cycles across the country found that there was a significant decrease in the percentage of triplet pregnancies in states with comprehensive insurance coverage for fertility treatments (28).

Some individuals may apply the concept of justice by suggesting that multifetal pregnancy reduction should be a covered medical service. Others may feel that better insurance coverage for IVF and a limit on the number of embryos transferred, while limiting patient and physician autonomy, would lead to maximal justice by significantly reducing the incidence of multifetal pregnancies and the need for multifetal pregnancy reduction. Ideally, access to infertility treatment and multifetal pregnancy reduction should be equitably distributed.

Nondirective Counseling and Informed Consent

Nondirective patient counseling should be offered to all women with higher-order multifetal pregnancies and should include a discussion of the risks unique to multifetal pregnancy as well as the option to continue or reduce the pregnancy. Resources for providing such counseling can include maternal–fetal medicine specialists, neonatologists, mental health professionals, child development specialists, support groups, and clinicians with procedural expertise in multifetal pregnancy reduction.

Obstetrician–gynecologists who have the appropriate clinical knowledge and expertise to discuss the risks of higher-order multifetal pregnancy and options for continuation of the pregnancy or multifetal pregnancy reduction may provide this counseling. Alternatively, obstetrician–gynecologists may refer to other specialists such as maternal–fetal medicine physicians. It is important to note that there is a narrow window of time during which multifetal pregnancy reduction can be performed. As such, it is critical that referral for counseling occur in a timely manner in order to ensure that women are able to benefit from the full range of options regarding continuing or reducing their multifetal pregnancies.

Counseling Content

Counseling should consider the patient’s health, the number of fetuses that are present, and the risk of maintaining (compared with reducing) the pregnancy. The potential medical, psychological, economic, and social risks specific to multifetal pregnancies and to the patient’s individual health status should be addressed. The probability of specific adverse outcomes should be discussed, and it is the counseling physician’s ethical obligation to provide adequate information regarding diagnosis, prognosis, and alternative choices, including the option of no intervention. Such information should be presented in a manner understandable to the patient (29).

It is often particularly difficult to convey the risks of a multifetal pregnancy to patients with a history of infertility, many of whom fear that they might never bear children. For some patients with a history of infertility, the arrival of twins or more may be perceived as a positive outcome, and the physician must convey the risks to patients who are willing, and even eager, to carry a multifetal pregnancy. Understanding the unique
viewpoint of the infertility patient is crucial to help her make an informed decision. When possible, social workers or other mental health professionals with experience in this arena should be incorporated into the patient care team.

Patients being counseled regarding multifetal pregnancy reduction should be made aware that the technology exists to test the fetuses for aneuploidy and morphologic and genetic anomalies before the reduction is performed. The results of such tests may assist patients in making their decisions about intervention.

The Decision-Making Process
Once the physician provides medical recommendations, the patient should then be given space to assess her personal value system and determine a course of action. Physicians can serve as guides and resources, helping each individual patient explore her values when faced with carrying a multifetal pregnancy. Understanding these values will help the patient make the decision most appropriate for her.

Obstetrician–gynecologists should respect patients’ autonomy regarding whether to continue or reduce a multifetal pregnancy. Only the patient can weigh the relative importance of the medical, ethical, religious, and socioeconomic factors and determine the best course of action for her unique situation. These are decisions that only the woman can make. She may wish to consult with others whose advice and counsel are important to her (30). Her reproductive liberty, as defined by respect for her autonomy, should be at the center of the ethical decision-making process.

Conscience-Based Referral for Consultation
When a patient’s request for information on multifetal pregnancy reduction is discordant with a physician’s values, the physician should refer the patient for consultation in a timely fashion and without judgment, explain to the patient the reason for the consultation, and provide all necessary information to the consultant. If a patient is in a clinical situation in which discussion of the option of multifetal pregnancy reduction is appropriate and her physician is not comfortable providing information regarding the medical risks of a multifetal pregnancy, the potential medical benefits of multifetal pregnancy reduction, and the complex ethical issues inherent to multifetal pregnancy reduction, then the physician should provide referral in a timely fashion to a physician experienced in counseling about multifetal pregnancy reduction, or performing multifetal pregnancy reductions, or both. Conversely, situations may arise in which a woman decides against multifetal pregnancy reduction despite her physician’s recommendation that she consider this option. In these instances, referral also may be warranted if a viable patient–physician relationship cannot be established. For more information, see Committee Opinion No. 385, The Limits of Conscientious Refusal in Reproductive Medicine (31).

Special Cases: Selective Reduction, Reduction When Fetal Sex Is Known, and Reduction to a Singleton

Selective Reduction
Selective reduction is somewhat different than multifetal pregnancy reduction. In multifetal pregnancy reduction, the fetus(es) to be reduced is (are) chosen based on technical considerations, such as which is most accessible to intervention. In selective reduction, fetuses are chosen based on health status. As with all pregnancies, when a woman with a multifetal pregnancy has ultrasonography or genetic evaluation that identifies a fetus with an abnormality or disease risk, patient counseling should include the most current knowledge regarding the abnormality or disease risk as well as information about the available management options, thus allowing a woman to make the decision that is best for her. Although some will critique the appropriateness of selective reduction based on potential future disability, an analysis of such considerations is beyond the scope of this Committee Opinion (32). Physicians should be aware that state and federal laws may affect the provision of selective reduction and should consult legal counsel for the facility at which they provide care.

Reduction When Fetal Sex Is Known
Before multifetal pregnancy reduction, some patients will undergo chorionic villus sampling or amniocentesis. In such cases, information on the sex of the fetuses will be available. This information should not be withheld from the pregnant woman who requests it. The patient may not wish to know the sex of the fetus or fetuses that will be reduced. This preference should be respected whenever possible. When two or more fetuses are equally accessible and there is no medical benefit to reducing one over another, the physician should randomly select the fetus to be reduced, therefore eliminating physician bias or subtle discrimination in making this determination. The use of sex alone as a consideration in determining which fetus to reduce, poses ethical challenges that are beyond the scope of this Committee Opinion and are discussed by others elsewhere (33).

Reduction to a Singleton
Historically, controversy has surrounded decisions regarding reduction of twin or higher-order multifetal pregnancies to a singleton. For some women, a multifetal pregnancy reduction to a singleton may be an appropriate or desired option for medical reasons or nonmedical reasons, such as financial, social, or emotional concerns (15). Certain medical or obstetric considerations can significantly increase the risks of carrying even a twin pregnancy compared with a singleton pregnancy. Specific examples include a müllerian anomaly, a history of cervical insufficiency, or preeclampsia with severe features in a previous pregnancy. During patient counseling, physicians
should consider discussing reduction to a singleton pregnancy based on their understanding of the particular patient, her unique medical situation, and her values. When a woman with a twin gestation requests such information, whether for medical or nonmedical reasons, it should be provided in a timely manner and without bias.

**Conclusion**

Obstetrician–gynecologists should be knowledgeable about the medical risks of multifetal pregnancy, the potential medical benefits of multifetal pregnancy reduction, and the complex ethical issues inherent in decisions regarding multifetal pregnancy reduction. They should be prepared to respond in a professional and ethical manner to patients who request or decline to receive information, or intervention, or both. Multifetal pregnancies should be prevented whenever possible. In almost all cases, it is preferable to avoid the risk of higher-order multifetal pregnancy by limiting the number of embryos to be transferred or by cancelling a gonadotropin cycle when the ovarian response suggests a high risk of a multifetal pregnancy (4). When multifetal pregnancies do occur, incorporating the ethical framework presented in this Committee Opinion will help obstetrician–gynecologists counsel and guide patients as they make decisions regarding continuing or reducing their multifetal pregnancies.

**References**


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