

SELECTIVE REDUCTION IN MULTIPLE PREGNANCY

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ABSTRACT

The management and the genetic counseling of a multifetal pregnancy rouse very complex ethical medical and legal issues. Selective termination is a procedure performed in the first or second trimester of pregnancy in multiple pregnancies generally twins to prevent the birth of an abnormal child and to permit the birth of a normal one. This procedure has to be distinguished from "selective reduction" or "multifetal" pregnancy reduction" techniques used to describe a first trimester procedure to reduce the number of embryos in a multifetal pregnancy in order to improve perinatal outcome. The case selection is critical. We must make certain which one is the affected twin and sometimes identification of the abnormal twin is difficult in cases the abnormality involves metabolic disease or chromosomal aneuploidy without any structural malformations. It is necessary to perform a careful and detailed sonographic evaluation to determine the abnormal twin and to rule out any major structural anomalies in the normal twin. Extreme caution must be used in selective termination on monochorionic twins. The risks on the normal twin are increased. The mechanism of death of the co-twin has several explanations. 1) A twin - twin transfusion in which the healthy foetus essentially exsanguinates. 2) Evolution of fetal coagulopathy because of the release of tissue thromboplastin from the dead twin into the living fetus's circulation. 3) Thromboembolic phenomena between the circulatory systems of the co-twins. As with all procedures experience increases the degree of safety of the procedure and becomes more appreciated. Selective reduction to a singleton can be justified on the basis of a more favourable fetal outcome, particularly if there are circumstances that would make a twin pregnancy difficult for the mother to carry. The International Registry of Multi Fetal Pregnancy Reduction are suggestive of a slightly lower morbidity rate for multifetal pregnancies reduced to a singleton as apposed to twins. This difference alone might be sufficient to make fetal reduction to a singleton ethically appropriate unselected circumstances. Obviously it is also possible in higher order gestations to have more one fetus affected with malformations. In this case there are three major possibilities and each one involves harm

The management and the genetic counseling of a multifetal pregnancy rouse very complex ethical medical and legal issues.

Is selective reduction of triplets ethically justified and how ethical is the selective termination of an unaffected or an affected twin?

How feasible is the prevention of a multiple pregnancy in the treatment of infertility?

One of the most serious technical and ethical problems in the prenatal diagnosis of genetic disease is the case of binovular twins when one of the foetuses is shown to be affected while the other proves to be normal. In this case there are three major possibilities available and each one involves harm and carries serious maternal psychological problems. Interruption of the pregnancy and termination of the otherwise healthy and wanted fetus, to keep all fetuses and continuation of the pregnancy and commit oneself to carry of potentially severely handicapped infants or to selectively terminate only the affected foetus. The late diagnosis of the malformed twin usually during the second trimester of pregnancy makes the decision for termination of both twins more

difficult. But the fact that the pregnancy did not required special treatment to achieve it makes consideration of termination more acceptable.

Selective termination is a procedure performed in the first or second trimester of pregnancy in multiple pregnancies generally twins to prevent the birth of an abnormal child and to permit the birth of a normal one. This procedure has to be distinguished from "selective reduction" or "multifetal pregnancy reduction" techniques used to describe a first trimester procedure to reduce the number of embryos in a multifetal" pregnancy in order to improve perinatal outcome. Selective termination has been accomplished by several methods with different success. Exsanguination was used commonly in the early 1980's. There was a high rate of failure, and this technique has been abandoned. Air embolism was another technique for selective termination in the early 80's. The injected air profoundly obscures ultrasonic visualization thus making confirmation of cardiac arrest very difficult. Intracardiac injection of potassium chloride is a technique that involves the transabdominal insertion of a 20 gauge needle in the cardiac ventricle under ultrasound guidance followed by injection of 2cc potassium chloride into the ventricle. The needle should not be removed until the cardiac activity has ceased. Hysterotomy has been used rarely. Technically the procedure is difficult and should be performed by experienced teams.

The case selection is critical. We must make certain which one is the affected twin and sometimes identification of the abnormal twin is difficult in cases the abnormality involves metabolic disease or chromosomal aneuploidy without any structural malformations. It is necessary to perform a careful and detailed sonographic evaluation to determine the abnormal twin and to rule out any major structural anomalies in the normal twin. If the placenta is shared, the demise of one twin puts the other at significantly increased risk. The potential risks of a second trimester selective termination to the mother is the post procedural amnionitis resulting in premature foetal loss and potential life-threatening maternal infection. Additional potential risks are the possibility of permanent drainage to the surviving twin, premature delivery and disseminated intravascular coagulopathy related to prolonged retention of the terminated twin. Extreme caution must be used in selective termination on monochorionic twins. The risks on the normal twin are increased. The mechanism of death of the co-twin has several explanations. 1) A twin - twin transfusion in which the healthy foetus essentially exsanguinates. 2) Evolution of fetal coagulopathy because of the release of tissue thromboplastin from the dead twin into the living fetus's circulation. 3) Thromboembolic phenomena between the circulatory systems of the co-twins. As with all procedures experience increases the degree of safety of the procedure and becomes more appreciated.

In societies in which abortion can be considered an acceptable option under a variety of circumstances, selective termination for a significant fetal abnormality is justifiable. It has been suggested that selective termination should only be considered in cases in which there are profound abnormalities. We believe that any aneuploid state is sufficient indication for selective termination. All couples should be allowed to make difficult choice for themselves based on known clinical facts. The fundamental tenet of genetic counseling is to be nondirective imposition of one's view of acceptable versus unacceptable abnormalities is not justifiable or ethical. There is the potential for ethical abuse of the procedure because of its potential use in prenatal diagnosis of a twin pregnancy specifically for the purpose of sex selection. Sex selection we believe that crosses the line between genetic diagnosis and eugenies. So in the first question if there is any place for selective termination of an abnormal twin the answer is without any doubt yes.

Is selective reduction in triplets ethically justified?

The improper use of fertility drugs and the associated reproductive technologies in the treatment of infertility have led to situations in which women previously infertile now bear three or more fetuses than they can carry to viability. The risks of iatrogenic multiple gestation have been reduced considerable over the past several years nevertheless the possibility of inducing triplets and higher vary from 1-5%. The incidence of multiple pregnancy is rising as a consequence of wide spread use of Assisted Reproductive Therapy. In multiple pregnancies perinatal mortality and morbidity are increased because of the large proportion of early miscarriages, late spontaneous abortions, increased risk of fetal growth retardation, malpresentation, cord accident and premature births. It is quite clear that perinatal mortality and morbidity increase with the number of embryos implanted and perinatal outcome for triplets is significantly poorer than that for singleton or even twins.

Perinatal mortality from prematurity in triplets are two to four times higher than this in twins and is 16,4% while the over all perinatal and infant mortality of triplets may exceed 30%. Mothers of triplets have a 20% possibility of preeclampsia and 35% risk of serious postpartum haemorrhage. To prevent complications in triplet pregnancies especially prematurity, selective reductions of the number of embryos is proposed in order to reduce the risk for the remaining embryos. This practice has been suggested by the fact that a pregnancy may develop normally after the spontaneous disappearance of one fetus in the case of triplets. Fetal reduction seems reasonable in cases with quadruplets and pregnancies with more than four fetuses. In case of triplets and especially in twins there are many ethical and medical dilemmas for the patient and her gynaecologist. The decision of both the patient and the physician have always been to leave twins because of the risk of losing the pregnancy if there is a problem with the only remaining embryo. Reducing below twins does not seem optimal and would strongly agree against routine reduction of twins to a singleton but can be justified in selected. Situations and the decision should be made on individual basis. In any case the parents should make the final decision.

Selective reduction to a singleton can be justified on the basis of a more favourable fetal outcome, particularly if there are circumstances that would make a twin pregnancy difficult for the mother to carry. As long the decision for a selective reduction to singleton is not based on convenience or sex selection we think that such a procedure must be considered ethical under appropriate circumstances. We do not believe that the differences in outcomes between twins and singleton pregnancies justify the utilization of this procedure in an effort to improve the favourable outcome by reduction of uncomplicated twin pregnancies to singletons. The transabdominal intracardiac or intrathoracic potassium chloride injection is the safest and quickest procedure but is technically difficult to perform, with high complication rate in inexperienced operator. The obstetric team must have ultrasound experience especially in centesis procedures. The overall abortion rate in cases of selective reduction in the different series is shown in the table. A number of recent articles has addressed the rapidly improving outcomes of multifetal gestations over the past decade. Advances in perinatal and neonatal management have improved the prognosis for triplets and various antenatal interventions have been suggested including routine hospitalization, frequent cervical examinations, cervical cerclage, prophylactic oral and intravercous tocolysis, bed rest in early pregnancy and home uterine contraction monitoring. In a recent report was shown that 60% of the patients with triplets delivered at >35 weeks' gestation and 40% completed 37 weeks, 33% received tocolytic therapy and the mean birth weight was 1957+458gr. while the 42% of the neonates were admitted to the Intensive Care Unit.

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Since early 80's 1984 we have established a philosophy of performing selective termination to prevent the birth of an abnormal child and to permit the birth of a normal one. This approach might be lifesaving to the normal twin of the parents would effect otherwise for abortion of both twins carries maternal psychological problems. It s technical and ethical problem when counselling the patient with one normal and abnormal fetus. Selective termination has been accomplished by several methods with different success. In the past the only options were to keep all fetuses and commit oneself to care of potentially severely handicapped infants or to abort all fetuses and terminate the otherwise healthy and wanted fetus. The development of the selective termination haw allowed couples to attempt to have a presumably healthy infant while being spared the emotional and financial trauma incurred with a severely handicapped infant. First attempt used as a justification that they were blackmailed by the parents who threatened to proceed with termination of both fetuses unless the novel technique of selective termination was attempted. Mother of triplets have a 20% of preeclampsia and 35% risk of serious postpartum haemorrhage. Multiple gestations were complicated by severe prematurity with high perinatal mortality and morbidity in increased risk of malpresentation, cord accident, premature rupture of the membranes. It is quite clear that perinatal mortality and morbidity increase with the number of embryos implanted and Obstetric outcome for triplets is significantly poorer than that for singleton or even twin

pregnancies. Perinatal mortality from prematurity are two to four times higher than these same risks in twins and premature labour in triplets is the commonest complication responsible for most of the perinatal losses and associated with higher rates of intraventricular hemorrhage, chronic lung disease, necrotising enterocolitis and handicap. The overall perinatal and infant mortality of triplets may exceed 30%. To prevent complications in triplet pregnancies especially prematurity and toxemia selective reduction is proposed. Fetal reduction was utilized as a partial solution to the problem of pregnancies with multiple gestation. The decision of both the patient and the physician have always been to leave twins does not generally seem optimal but can be justified should be made by the parents. The ethical aspects of selective reduction procedures are certainly complicated. In triplets the risk benefit ratio is unclear until one adds to the equation the quality of the offsprings' life and the cost. Those who think abortion may be appropriate under special circumstances must wrestle with the concept of sacrificing some fetuses so that others can survive.

The legal aspects are not complicated. Most of the transabdominal cases reported to date have been performed at 10 to 12 weeks of pregnancy. The chance of a spontaneous loss beyond 12 weeks is minimal. Although the obstetric outcome for twins is not quite as good for that of singleton it is considerably better than for triplets or more the decisions of both the patient and physician have almost always been to leave twins because of the risk of losing the pregnancy if there is a problem with the only remaining embryo. Ethics evolve with technology. the obstetric management of twins is well known and does not in general present major difficulties reducing the number of fetuses below twins does not generally seem optimal. It should be possible to define more accurately both the risk of performing or not performing selective reduction. Only with such data it will be possible to determine the exact risks and benefits of the procedure and whether twins correct and point for the procedure.

Selective reduction is ethically controversial for many reasons. The directions of the procedure that destroys the fetus is more objectional. Some may see a precedent for practicing euthanasia at later stages of life. The safety and accuracy of any procedure to reduce multiple fetuses was originally improved. Those with the view that abortion under any circumstances is wrong will find selective reduction ethically unacceptable.

Those who think that abortion may be appropriate under special circumstances must wrestle with the concept of sacrificing some fetuses so that others can survive. The legal aspects of selective reduction are not complicated and any women who wishes to interrupt her pregnancy before the fetus are viable can do so whatever her reasons. The procedure represents a variation of first-trimester termination of pregnancy. The potential benefit of embryo reduction in triplets in the first trimester is an increase in gestational age at birth and a decrease in perinatal mortality and mortality. However the risk of miscarriage involved with selective reduction is of concern and there has been much debate about to whom this procedure should be offered since modern management of triplets is associated with improving outcome. We investigated selective reduction in 34 women with triplets in the first trimester following induction of ovulation. The control groups consisted of 19 patients with triplets who declined selective reduction, and 22 patients with nonreduced twins. In twins deducted from triplets as compared with non reduce triplets the mean gestational age at birth differed 5 weeks (30,9 versus 35,6) and the mean gestational birth weight differed 600gr. (1641gr. versus 2217gr.). Triplets required at longer average stay in intensive care Unit. There are no difference between twins selectively reduced and non reduced twins in gestational age at birth and birth weight. Multifetal pregnancy reduction for triplet pregnancy improve pregnancy outcome though it may be offered as an alternative option.