Maternal-feto-fetal conflicts in multiple pregnancies

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Abstract

This paper discusses the complex relationship and conflict between the interests of the mother and her fetuses during a multiple pregnancy. In most cases, the inter-fetal conflicts derive from circumstances that are similar to the « lifeboat » situation, whereby excess of survivors in a lifeboat endanger the existence of all or some of the survivors. In contrast to singletons, where most maternal-fetal conflicts arise when the fetus is unwanted for some reason (which leads to abortion), the situation in a multiple pregnancy is more complex because only a part of the multiple pregnancy is unwanted (which leads to numerical or selective reduction). Often, an inter-fetal conflict exists in parallel with a maternal-fetal conflict. It is our obligation to consider the best of all circumstances rather than the least evil situation when such conflicts occur. When no clear-cut answers exist, one should exercise prudence when deciding what might be in the best interest of all components of the multiple pregnancy.

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Public declaration of interest

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INTRODUCTION

A maternal-fetal conflict may exist when maternal and fetal interests are in dispute. Whereas a mother is expected (and obliged) to do everything for her child, it is unclear, at least to me, how an unborn child can have any expectations from his mother. Thus, the equation in such a circumstance is that the existence of the fetus, who has no expectations from its mother is weighed against the expectations of the mother. It appears that what we conceive as expectations of an unborn child from its mother is utterly imaginary, and is entirely based of what we think a mother should provide for her fetus. At least one thing must be certain -the pregnancy (and the embryo-fetus) is wanted, that is, from the embryo-fetus point of view, its mother is expected to do everything to ensure the best of its intrauterine life and a safe passage to extrauterine existence.

One may assume that maternal-fetal conflicts may arise when the fetus is unwanted, endangers its mother or, for some maternal reason, does not meet the expectation of the mother (e.g. unwanted because of anomaly). Whereas little dispute may surround the first two reasons, the latter argument is vague and might be open to discussion.

A multiple pregnancy further complicates the maternal-fetal equilibrium and poses a new set of conflicts that arise from the mere fact that more than one fetus develops. In this paper I will discuss several situations that exemplify these conflicts.

I. MORE THAN ONE (TRIPLETS OR MORE)

It goes without saying that when a multifetal pregnancy is conceived, there is an increase of extremely (< 28 weeks) and very (29-31) preterm births, with the concomitant unavoidable increased mortality and morbidity attributed to prematurity. Hence, even if all embryos are perfectly formed, the risk of an adverse outcome is considerable. Because the complications increase with the number of fetuses, it is clear that twins will do better than triplets; triplets will do better than quadruplets, etc. It is therefore expected that multifetal pregnancy reduction (MFPR) will benefit the mother (who will have a greater chance of a better outcome), the remaining fetuses (who, as well, will have a greater chance of a better outcome), but certainly cause two conflicts: one maternal-fetal, between the mother and the reduced fetus(es); and a second conflict feto-fetal, between the reduced and non-reduced fetuses.

Chervenak *et al.* [1] maintained that MFPR could be ethically defended and presented 3 indications to justify the procedure, all for the purpose of improving outcome. None of these indications, however, were related to inter-fetal conflicts and the potential effect of this conflict on the mother.

Evidently, the issue of MFPR (as other scenarios in multiple gestations) may be classified as a « lifeboat » situation whereby excess of survivors in a lifeboat endanger the existence of all or some of the survivors. In this situation, a genuine concern exists regarding the permissibility to throw over the excess survivors into the ocean in order to save those remaining in the lifeboat. Further, even if it is permissible, who decides which survivor should be discarded? On one hand the strongest has the best chance to survive in the open ocean and is a suitable candidate to be discarded. On the other hand, the weakest might not endure the trip in the lifeboat and is also a suitable candidate to be discarded. Who should society protect the strongest or the weakest?

We, the caretaker of the maternal-fetal unit are supposed to acquire the role of society in such circumstances. However, we represent only the survivors and none of those who will not survive because of our action. In fact, those who advocate MFPR are certainly representing the surviving fetuses as if their plea is « get read of the others, because we need to survive ». Yet, nobody asked those fetuses about their real wish. It is just possible that the plea will be « leave us alone, we are brothers/sisters and we do not want to be separated, certainly not to live in expense of our own flesh and blood ».

It appears that the existence of multiples undergoing numerical reduction (as opposed to selective reduction of a malformed fetus) might cause serious maternal-fetal conflict following decision-making of the expecting mother. At times, MFPR may be performed after early genetic diagnosis, i.e. chorionic villus sampling (CVS). In a multizygotic pregnancy, the mother (or the parents) may wish to have 'one of each' or even to select the gender of their fetus(es). This situation definitely discriminates the normal fetus of the wrong gender and thus, its existence is against maternal expectations and creates a serious conflict. Proponents of sex selection during MFPR hold that in the absence of other specific argument to select a fetus for reduction, it is the parents' prerogative to choose the gender of the surviving fetuses. Opponents will reject any possibility of sex-selection, as there is no real difference between sex selection during MFPR and performing abortion in singletons when the fetal gender is not that which is expected. One of the solutions is to perform CVS on two embryos only, and if normal, to reduce the others without knowing their gender. In analogy to the « lifeboat » situation, it means selecting the survivors at random (the least evil choice). Obviously, nobody knows the preference of a fetus about the gender of its co-twin.

A final conflict may arise regarding the actual risk of triplets. One may argue [2] that despite the obvious disadvantage of triplets compared to twins (or singletons), modern obstetrics and especially modern neonatology, are expected to produce better results for triplets than those quoted in the literature when MFPR started to bloom. In the absence of randomized trials and the fact that recruitment to such a trial may prove exceptionally difficult, there are insufficient data available to support a policy of MFPR [3]. Moreover, Dimitriou *et al.* [4] showed that MFPR of triplets actually did not significantly reduce the risk of neurological morbidity when they found that the cerebral palsy prevalence of children from trichorionic triplet pregnancies reduced to twins was similar to that of children from trichorionic triplet pregnancies with no loss.

II. MORE THAN ONE (TWINS)

Many consider twins as a normal outcome of natural reproduction which appears to carry an acceptable risk to the mother with a relatively favorite outcome of the pregnancy. Thus, arguments about

numerical reduction of normal twins to singleton cannot be defended, as the outcome of pregnancy (from the maternal point of view) cannot be as bad as to justify a 2 to 1 reduction. The conflicts start when the number of embryos is not what the woman expected to have: she wished for a singleton and conceived twins. Then, those who believe in maternal right of numerical reduction from 1 to 0 (i.e. abortion of a singleton) would maintain that this right exists also for reducing twins to a singleton.

Chervenak and his co-workers [5] rejected in 1992 the consensus which opposes selective termination to a singleton because the arguments made in defense of it were deficient. They showed that the arguments rely on the indefensible assumption that the previable fetus possesses independent moral status and conclude that a pregnant woman's request for selective termination to a singleton from twins or a higher-order multiple gestation should be respected and implemented.

Similar arguments discussed above regarding MFPR of higher order also pertain for twins. In the case of twins, however, a « lifeboat » situation is hardly present, and thus it appears that the decision of the woman, might be considered by many as self-interestedly, creates an unsolvable conflict between the mother and her unborn twins.

III. DISCORDANT NON-FATAL ANOMALY

A non-fatal anomaly may exist in only one fetus among a multiple pregnancy. In such a case, the mother may wish to reduce the anomalous fetus and leave the others. However, the situation is further complicated according to chorionicity. Because all monochorionic (MC) twins share a common placenta and invariably have inter-twin anastomoses, simple selective reduction by introducing KCl into the heart of the anomalous twin is not possible (because both twin may die or if one survives, it might become seriously handicapped). Therefore, one should use sophisticated invasive techniques to severe the blood supply (cord ablation) to the anomalous twin. The latter method is not without risk to the entire pregnancy, and hence a conflict is created between the normal fetus(es) and the mother: her wish to selectively reduce one fetus jeopardize the existence of the others. In the « lifeboat » analogy, it means the action of getting read of the excess endangers the rest of the survivors.

A possible argument might further complicate the discussion if one considers another potential benefit of reducing an anomalous fetus, that is, the advantage of a lower number of fetuses. However, reductions carry a lower risk to the entire pregnancy when performed as early as possible, and the diagnosis of an anomaly is sometimes done only after 20 weeks' gestation, when the risk of procedure-related abortion is higher than before 16 weeks.

IV. DISCORDANT FATAL ANOMALY

The difference between fatal and non-fatal discordant anomaly is the wisdom behind reducing a fetus that will anyway die after birth. Obviously there is no conflict when the risk of continuing the intrauterine life of the anomalous twin exceeds the risk related to the pregnancy following the reduction procedure. Some examples are the case of anencephalus associated with polyhydramnion (and eventually the risk of preterm birth) or the case of the twin reversed arterial prefusion (TRAP) sequence, also known as acardiac-acephalic twin, that impose remarkable additional load on the heart of the normal (« pump ») twin. In these cases, the reduction of the anomalous twin is probably the best option. The inter-twin conflict is such a pregnancy is similar to the « lifeboat » situation in which one is an obvious threat to the other survivors and discarding this threat is beneficial to all other survivors.

V. COMPLICATIONS OF MONOCHORIONICITY

Twin-twin transfusion syndrome (TTTS) and selective growth restriction (sIUGR) are but two examples of serious complications of MC twins associated with a high risk of adverse outcomes of one or both twins. It appears that in MC twinning an inter-fetal conflict exists not because of a discord but because of their unity (sharing the same placenta).

Because of the relative high risk of such twins [6], as well as the unexpected intrauterine death of one or more fetus even in uncomplicated cases [7], the idea of termination of all MC twin

pregnancies may seem reasonable, i.e. termination of pregnancy before the complex situations (and the maternal-fetal conflicts) occur. This idea was examined and rejected by an ad hoc committee on the management of MC twins [8].

The complications of MC placentation are not specific to twins, and might complicate also triplet pregnancies (i.e. bichorionic triplets). Most authorities would apply logic and suggest reduction of the MC set in order to minimize two potential complications: that of triplets and that of monochoronicity. This logic, however, has not been supported by solid data.

In analogy with the lifeboat situation, termination of an uncomplicated MC twin gestation is similar to the decision not to sail in the first place and thus to avoid altogether being a survivor.

VI. DISCORDANT OBSTETRICAL COMPLICATIONS

In any multiple pregnancy, obstetrical complications may affect only one fetus. Such complications include very early preterm birth, preterm rupture of the membranes, severe growth restriction, selective fetal distress, etc.

These situations are rather common. In the case of very early preterm birth (or late abortion) of one fetus, the mother may choose to continue the pregnancy (interval delivery) or to terminate the pregnancy because of the risk of serious infection to the remaining fetus(es). The decision to abort the pregnancy is obviously not in the best interest of the remaining fetus(es) whereas the decision to leave the remaining fetuses *in utero* increases the risk chorioamnionitis and is also not in the best interest of the remaining fetus(es). Thus, a decision in such cases is between two evils, in hope to choose the least evil decision.

Another clinical example is the case of a multiple pregnancy remote from term in which one fetus demonstrate signs of distress. The decision to deliver both twins might save the distressed fetus but conflicts with the best interest of the other (non-distressed) fetus(es) being born preterm because its co-twin. This inter-fetal conflict creates a maternal-fetal conflict because whatever is the maternal choice, it is obviously against one of the fetuses. Even a non-decision (« let nature do its deed ») may be considered as violation of the maternal-fetal relationship.

VII. EPILOGUE

This paper, by way of discussing clinical examples, demonstrates the interrelated complex maternal-fetal situations in a multiple pregnancy. In many situations there are no evidence-based answers for the ensuing conflicts. In fact, almost each of the potential solution to a clinical dilemma that arises from the maternal-fetal or feto-fetal conflict is by and large controversial. Hence, when no clear-cut answers exist, one should exercise prudence when deciding what might be in the best interest of all components of the multiple pregnancy.

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