

Maternal and Fetal Best Interests in Day-to-Day Obstetrics

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Abstract

In medicine, it is the physician's obligation to promote and protect the patient's interest. In obstetrics, the ethical principles of beneficence and autonomy provide the fundamental framework which guides the management of all pregnant patients. As there is the need for consideration of the fetus, autonomy can become a complex issue giving rise to what is sometimes called "maternal-fetal conflict." In this paper, we aim to discuss some scenarios we encounter in our day-to-day obstetric practice such as pre-eclampsia, fetal growth restriction and labour induction when the best interests of the mother and fetus may be conflicted. We hope to illustrate that logical consideration for maternal and fetal best interests is only possible when there is adequate knowledge to support clinical practice. Certainly, with the rapid availability of newer knowledge and technology, it is the duty of the physician to be educated continuously so as to protect the patient from harm.

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Introduction

When we discuss maternal and fetal best interests in an ethical context, we have to deliberate on the morality of healthcare, including the morality of physicians, patients and the institutions that organise, deliver, pay for and make policies. It is the intention of this article to confine our discussion closely to the context of day-to-day obstetric practice. These discussions mostly concern beneficence and autonomy, 2 of the 4 principles in the common ethical framework.¹

In our daily practice of obstetrics, there are more ethical issues relating to fetal-maternal conflict than we perceive. When a woman is pregnant, she is expected to present herself to the healthcare provider. Urine and blood samples are expected to be taken. The consent to undergo these tests is often taken for granted, not the least regarded as an informed considered choice, multiple educational pamphlets and reading material notwithstanding. When there is a contemporary accepted care, there is the assumption of beneficence to mother and fetus without disclosure, deliberation, choice or explained purpose. A different management path is often considered 'out of the box'. It is also difficult for the woman to decline testing when acceptance seems to be the only option sanctioned

by relatives and peers alike, though not doing so is not necessarily ethically wrong. Prenatal screening tests exemplify this notion.

Status of the Fetus

There can be no conflict without rights. Any ethical discussion cannot ignore the rights of the fetus as a recognised entity, albeit its unsettled status. If the fetus is a patient, the fetus enjoys beneficence-based obligations of a doctor, that is, to protect and promote social role, subjective and deliberative interests of the fetus. However, the patient status of a fetus is not always absolute, depending on the prevailing authority taking theological, philosophical or simply a consequentialist consideration. It can change with the concept of if or when we consider the fetus to have achieved independent moral status which can be defined differently, for instance, by viability or religious belief. It may also depend on whether we consider the moral status of a fetus to be a dependent moral status provided by the autonomous decision of the pregnant woman to present herself (and her fetus) as a patient.² In Singapore law, the fetus does not have any separate legal interests capable of being taken into account by a court. The right to have a

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life protected by law does not legally extend to the unborn.

A Framework for Obstetric Ethics in the Conflict of Maternal and Fetal Best Interests

Obstetrics is unique as it involves care of the pregnant patient as well as the fetus. The moral status of the fetus changes according to the locality where the care is considered and differs at varying stages of a pregnancy. The construct of a framework for maternal and fetal best interests must give allowance for consideration of each case separately, adhering to the law of the land and for the benefit of society, appropriate to the viability and conditions of the fetus when the choice occurs, so as to allow the physician-patient relationship to exist as a moral relationship. The physician-patient relationship with the woman patient is best considered in terms of the ethical principles of beneficence and autonomy.

Autonomy

The fetus as a patient is a complex consideration of autonomy. The moral status of a fetus is considered dependent moral status afforded by viability. To the physician, there is no question of a fetus patient until the pregnant woman presents herself as a patient. The abortion law implies that viability is 24 weeks of amenorrhoea, before which the fetus has no rights. When it is law, pluralism ceases to be an issue.

Beneficence

The principle of procreative beneficence assumes that the couple has a moral obligation to strive to have disability-free children. This is a situation where the mother selects the child she best considers to have a good life, be it to herself, the child yet to be born or the people surrounding this child to be born.³ In this paper, we will not dwell on religious or deontological morality which cannot be resolved by medicine.

The decision made, whether action or inaction, depends on the pros and cons, including the opportunity costs and appropriateness to the context. This is consequentialism in practice. The context being obstetrics decision-making at prenatal screening, prenatal diagnosis, selective procreation, fetal therapy, multiple pregnancies, serious perinatal conditions such as pre-eclampsia toxemia (PET) and intrauterine fetal growth restriction (IUGR), induction of labour for fetal-maternal conditions, fetal monitoring, caesarean birth and a variety of other clinical scenarios which pervade our daily practice; the ethics and morality of which we habitually do not deliberate on.

In the day-to-day management of the woman patient

with a viable fetus, the rights of the yet to be born child becomes an issue and conflict in interest can arise. In most cases, weighing the risks/beneficence to the fetus against the risks/beneficence of surgery, continued pregnancy, caesarean birth or vaginal delivery, fetal beneficence is the issue. Much less frequently, the risks associated with continued pregnancy in a woman with medical disorder, abnormal fetus or conditions requiring difficult caesarean birth, beneficence to the woman comes into conflict with that of the yet-to-be born child.

When considering a framework to resolve fetal-maternal conflict in obstetrics, we have to be context sensitive. With each situation, there are many different permutations which encompass the physician's ability to counsel (competence, information), the woman's reasons (choice, autonomy) for the resolve, the significance to the life and health of the fetus/woman (beneficence), and the rights of both fetus and woman (moral protection from harm).⁴ We shall examine several common clinical situations with this framework. This paper will not discuss treatment refusal, brain-dead pregnant woman, lifestyle issue and exclusion of woman from the toxic workplace, which are less common and specifically defined and discussed in the literature.⁵⁻⁷

Birth Defect Screening

We shall take Down Syndrome screening as an example. Down Syndrome screening is offered to all pregnant women in accordance with the recommendation of COGS, ACOG and RCOG. Good practice in screening demands that the patient receives pre-test counselling and post-test counselling to ensure that she has adequate information which will enable an informed choice. The understanding should include that a diagnostic test will be offered should she be screened positive. The decision-making for a more invasive diagnostic test is based on the balance of risk between having a Down Syndrome child and the possibility of a miscarriage from the diagnostic test such as amniocentesis. A cut-off risk adopted for Down Syndrome screening in first trimester is 1 in 300.⁸

When the risk is calculated to be more than 1 in 300, the test is screened positive and hence, a diagnostic test is offered. The conflict in interest is between the choice (and assumed beneficence) of the pregnant woman and the miscarriage of a perfectly normal fetus. A fetus with a 1 in 50 risk has a 6 times higher risk than the 1 in 300 cut-off. In vast majority of the time (49 out of 50), the fetus is normal. The competency of the operator is often assumed. Should there be a miscarriage from the amniocentesis, 49 out of 50 times the miscarried fetus will be a normal fetus. That normal fetus has not chosen to bear the risk of being "collateral damage" consequent to the choice of

the pregnant woman. That is the reality of screening, the woman's autonomy over the rights of the "unborn child".

A value may be put on the number of Down Syndrome fetuses detected for each miscarriage. This is purely an argument from the consequentialist viewpoint. The same moral ethical standing is placed on most secondary prevention of birth defects. Screening for thalassaemia and for non-lethal major structural defects are other good examples. The pregnant woman's choice is central to the moral ethical conflict here, with education of the patient who is making the choice through adequate counselling morally and ethically crucial.

Other commonly encountered clinical situations include fetal anomalies discovered after 24 weeks, the gestation of assumed viability. Whether lethal fetal anomaly (FA) diagnosed after 24 weeks should always be deliberated on a case-by-case basis by the ethics committee when the diagnosis of FA is made with certainty or whether a fetus with severe irreversible deficit of cognitive developmental capacity has lost its moral rights to be protected from harm are just 2 of the endless possibilities encountered in prenatal screening. With increasing expectations brought about by the advances in genetics, it is inevitable that the situation will be more complicated when there is demand for testing of the "unborn child" for less severe conditions or the presence of certain genetic traits for the purpose of selective procreation.⁹

Inducing Labour for Suspected Placental Insufficiency

Suspected placental insufficiency is the commonest indication for induction of labour. These include scenarios such as post-term pregnancies, pregnancies complicated by IUGR or PET, maternal medical disorders and small for gestation pregnancies. There is a steady increase in induction of labour rate over the years and it is not uncommon to find a 20% induction rate in contemporary obstetrics.¹⁰ Induction of labour in a pregnancy with unfavourable cervix has a 35% to 40% risk of caesarean section which may jeopardise the future reproductive performance of the mother.¹¹ The compromise to maternal interest is obvious and must be balanced against a reasonable benefit for the fetus.

Preterm Births

The well-being of the normally formed fetus in-utero depends on the adequacy of the placenta. The timing of delivery for the benefit of the fetus depends on balance of risk between asphyxiation from placental insufficiency in-utero (delivering too late) and asphyxiation as a neonate from immaturity of the lungs (delivering too soon). In a very premature fetus before 27 weeks, there is a 2% increase in survival for each day of continued gestation.

This advantage persists with a 1% improvement in survival with each additional day of gestation up to 32 weeks. In IUGR pregnancies, fetal survival until 27 weeks and intact survival until 29 weeks are most significantly determined by gestational age. Apart from the increased mortality, there is a 3-fold increase morbidity for a fetus born before 27 weeks compared with birth between 27 and 32 weeks.¹² This improvement in gestation-dependent survival is also observed in a community-based survey from Shelby County, Tennessee¹³ and in our institution (unpublished data) (Fig. 1).

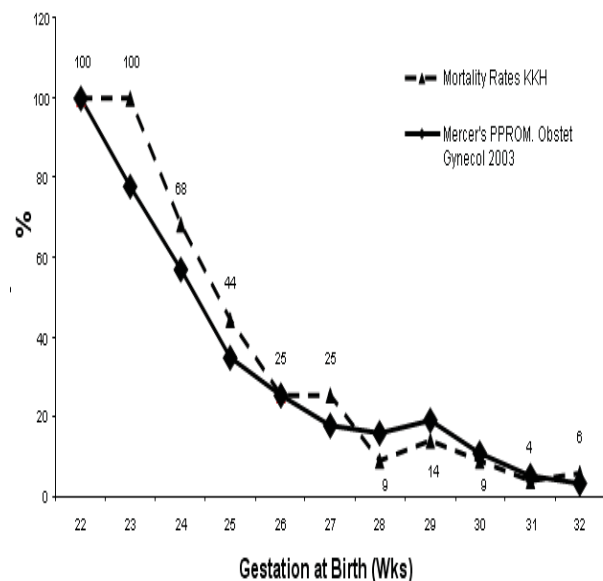


Fig. 1. Survival by gestational age among live-born resuscitated infants showing KKH deliveries for period 1994 to 1998, superimposed on graph depicting findings of survey from Shelby County, Tennessee.⁹

In a pregnancy complicated by severe early-onset PET, while a normally formed fetus may remain well within the uterus, the woman may continue to suffer its consequences such as renal impairment. In the case of a preterm premature rupture of membranes, the woman must be prepared to risk serious sepsis and puerperal infection in exchange for gain in neonatal survival. With the knowledge of a final survival for the fetus of 1% with every 1 to 2 days of continued pregnancy, the maternal-fetal conflict is complicated because of the physician's obligations to both the pregnant woman and the unborn child.

Caesarean Section

Caesarean section is a good example of maternal-fetal conflict. The ethical consideration is unique for the attending physician who has to balance an obligation to the best interests of 2 interdependent individuals. A case from Pennsylvania illustrates this well.¹⁴ The hospital caring for a pregnant woman with presumed macrosomia obtained a court order to perform a caesarean delivery against the

wish of the pregnant woman. The woman subsequently had an uncomplicated vaginal delivery of a healthy 11-pound infant in another hospital. In this clinical scenario, the risk of caesarean section to the mother has to be weighed against the potential benefit to be gained by the fetus from avoidance of a vaginal delivery. There are many possible complications associated with caesarean section; torrential bleeding, complicated lower segment tears and difficult intubation being not infrequent encounters. Many of these mothers subsequently conceive again with not inconsequential risk of uterine rupture in labour (0.15% to 1.9%),¹⁵ placental praevia (0.8% to 4.2%)¹⁶ or pathologically adherent placenta (12%).¹⁷ In contrast, vaginal delivery predisposes a macrosomic baby to morbidity such as brachial plexus injury, asphyxia and clavicular fracture.¹⁸

Apart from making a difficult clinical judgement on the best timing or mode of delivery in the interest of both the woman and the fetus, the physician's role includes appropriate communication to the woman who acts as surrogate for the unborn child and making judgement on whether the woman is an adequate representation of the fetus. Clearly, the physician needs help here. There is no standard protocol to deal with such situations as each case has its own peculiar circumstance, including the legal and social political standing of the society. The ACOG Committee on Ethics takes a stance which is in favour of the woman's rights and autonomy, notwithstanding harm to the fetus as a consequence of the woman's action. The recommendation made includes: "In caring for pregnant women, practitioners should recognise that in the majority of cases, the interests of the pregnant woman and her fetus converge rather than diverge. Promoting pregnant women's health through advocacy of healthy behaviour, referral for substance abuse treatment and mental health services when necessary, and maintenance of a good physician patient relationship is always in the best interest of both the woman and her fetus".¹⁴

Surrogacy of Fetal Rights to the Pregnant Woman

While the fetus can arguably be treated as a separate entity, independent from the pregnant woman, protection of the fetus from harm is usually surrogated to the actions of the mother. There are rare instances when the court has to intervene such as in cases where the pregnant woman is incapable of making decisions due to substance abuse or mental illness.^{7,19} At other times, the woman's choice (for the interest of the fetus) is compromised due to the lack of adequate healthcare information relating to her high-risk pregnancy. Endangerment is thus inflicted onto the fetus because the pregnant woman is unaware of potential complications. Not uncommonly, this ignorance is attributed to the inadequacy of the physician in healthcare education.

Multiple pregnancy is an example where a well-informed physician can do much by educating the pregnant woman to protect the fetuses against harm.

Multiple Pregnancy

Adverse pregnancy outcomes are much higher in multifetal than singleton pregnancies. In a multifetal pregnancy, the substantial risk extends to both mother and fetuses, increasing the maternal and perinatal morbidity and mortality. The subfertile woman often exercises her autonomy in seeking artificial reproductive treatment (ART), notwithstanding physician's caution on multiple pregnancy risks. Often, the risks are not completely evaluated in her despair to get pregnant. Conflict between the best interests of the woman and the fetuses can be very complicated in the field of high-order multifetal pregnancy, particularly in the domain of terminating a fetus in order to protect its co-twin.²⁰

Chorionicity, Multifetal Pregnancies and Fetal Reduction

When a twin pregnancy develops complication, there can be conflict of interest between the 2 fetuses. In the case of a dichorionic twin (DCT), one twin can be abnormal and may threaten the continuity of the whole pregnancy. In DCT, either twin can continue to develop and grow perfectly independently when the other in the same womb fails; this is often the rule than exception. When a growth restricted fetus in a severely preterm pregnancy shows non-reassuring status due to placental insufficiency, delivery may be the only recourse to save that fetus. In order to protect that twin, the normally nourished co-twin is harmed by early birth with its corresponding mortality and morbidity. Alternatively, the woman may choose to continue with the pregnancy to term with the consequence of harm/demise of the IUGR twin.

In contrast, a monochorionic twin pair (MCT) shares a single placenta with vascular anastomosis in the placenta. When one fetus dies, the other has a 30% chance of serious damage including developmental delay and cerebral palsy. One third of MCT develop specific serious complications which the DCT does not. Twin-to-twin transfusion syndrome (TTTS) is a well-known complication in MCT. Due to the shared vascular circulation, when a twin dies, the other suffers hypovolaemic shock from transfusion into the dead twin via vessels connecting the two fetuses. In TTTS, the treatment is fetoscopic LASER coagulation of vessels. This is often a desperate surgery to save the fetuses at the expense of the woman's health. The mortality and morbidity of the affected fetuses themselves are substantial. The prospect of substantial (in order of 10% to 20% or more) risk of single or double fetal death is daunting to the informed woman.²¹

Many surviving children from TTTS suffer life-time handicap despite the best available treatment. TTTS often presents itself before legal viability. Many women cannot accept the substantial residual risks of LASER treatment and would choose to terminate a complicated MCT pregnancy. Accordingly, it can be argued that if a physician does not determine chorionicity and offer information to facilitate the woman's choice, his actions could be regarded as being unethical.

There are yet more complex combinations of complications such as those encountered in triplets which are difficult to discuss in detail without a context. With the proliferation of ART, however, these conditions will be seen more commonly in contemporary obstetrics. Essentially, in trichorionic triplets, almost 25% suffer early preterm delivery with significant complications to the surviving fetuses. In contrast, fetal reduction from a triplet to a singleton pregnancy reduces the risk of early preterm delivery rate to 5%²² (Table 1). In dichorionic triamniotic triplet, the scenario is different with the presence of a MCT pair. The corresponding risks for a reduction of a triplet to twin is higher.

Table 1. Fetal Reduction in Trichorionic Triplets

	Miscarriage	Delivery
	12 to 23 wks	24 to 32 wks
Expectant	3.2%	25%
ER 3 to 2	8.3%	15%
ER 3 to 1	13.6%	5%

Fetal reduction is already an established practice following ART.²⁰ As the considered choice of the woman and following approval from the ethics committee, fetal reduction is practised in Singapore to allow a multifetal pregnancy the best chance of continuing to term. The accompanying ethical dilemma and required technical competence are demanding to say the least.

Problems of Putting Substantial Emphasis on Fetal Rights

In some context, ethicists had argued on the rights of the fetus as the unborn child and calling upon the duty of the physician to protect this unborn patient from harm. There are situations when the autonomy of the woman can be challenged, that is, the bodily rights of a woman are decided upon by a body of people in the name of protecting her fetus from harm. When the fetus is treated as an individual patient independent of the pregnant woman,

the framework tends to add divergent interests between these 2 patients. It is further complicated by circumstances such as viability and normality. More importantly, it is lacking in the emotional intimacy of the would-be mother and child. Ethics committee in many instances concede that a critical component of ensuring the health of the newborn is the provision of comprehensive care for their mother. The extension of this care to the fetus removes much conflict between maternal and fetal interests.

Fetal Surgery

The physician owes a duty to be cognizant of emerging new medical knowledge for the informed consideration of the woman patient. Novel procedures tend to evolve through a phase of elated claims of success followed by a phase of relative disrepute when undiscovered complication emerged. The true worth often reveals itself through extensive collated experience. Two good examples would be open fetal surgery for spina bifida and diaphragmatic hernia. These invoke serious conflict in maternal-fetal interest and can only exist in experimental/research situation.²³ These procedures were performed with the sole objective of beneficence for the fetus. The risk to the mother of continuing such a pregnancy post-hysterotomy with prolonged tocolysis is not insignificant, with complications such as pulmonary edema in as many as 30% of the pregnant women.²⁴

“Falsehood Flies and Truth Comes Limping after”

When a treatment is not supported rigorously with evidence, is it then morally right to adopt in clinical practice? Emerging knowledge constantly modifies management options available to the pregnant woman. This applies even to the bulk of daily obstetrics including common disorders such as birth defect, preterm labour, IUGR and PET. Keeping up with evidence-based practice on issues such as timing of delivery and mode of delivery for these clinical scenarios enables the physician to provide choices to the informed woman where appropriate. However, clinical situations are so diverse that it is not practical to wait for evidence-based medicine in most situations. In many circumstances, expert-based medicine becomes the practice.

When an expert-based practice emerges as evidence-based after rigorous trial, it could be regarded as common sense living up to expectation. In the meantime, when treatment is withheld because of the lack of evidence-based medicine, many ‘child-to-be’ would have died because of the lack of evidence to treat. Emergency cervical cerclage is a common example. The cervical suture may provide a median 4-week prolongation of gestation for the fetus (possibly at a 1% to 2% improved survival per day, Fig. 1). The possible cost is a small but significant risk to the mother of cervical tear

or complication from prolonged bed rest post-procedure.

Conversely, when a test is supported by adequate evidence, is it morally right not to offer the test? The College of Obstetricians and Gynaecologists recommends offering Down Syndrome screening to all pregnant women. For a fixed amniocentesis rate between 6.5% and 16.7%, serum screening would be able to detect 71% and 85% Down syndrome pregnancies respectively²⁵ (Fig. 2). With the first trimester combined risk screening, an 89%-detection rate at 5% test positive is expected.²⁶ These screening tests are far more superior than the age alone screening (detection rate of 35% at a 5% test positive rate) and should be offered to all pregnant women. In accordance, using age alone as a means of screening for Down syndrome would be considered unethical.

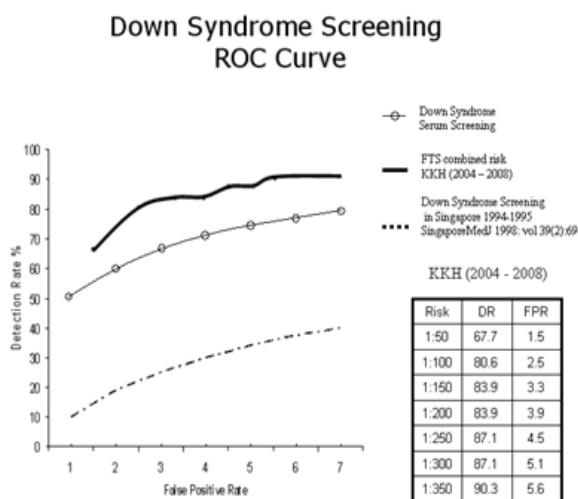


Fig. 2. Receiver Operator Curves (ROC) illustrating superiority of first trimester combined risk screening (KKH) over "age only" screening policy for Down Syndrome in Singapore.

*data presented at invited lecture titled "First trimester screening experience in Singapore" at WFUMB 2009 Congress: Nuchal Translucency Program, Sydney (unpublished data).

Conclusion

A woman and her fetus are most vulnerable to the physician's knowledge or the lack of it. In high-risk obstetrics, the interest of the fetus often comes at a measured risk to the woman.

The challenge of ethical dilemmas is best addressed by a framework which encompasses the principles of beneficence and autonomy. Moral obligation requires the physician to apply medical knowledge when counselling the pregnant woman so that a deliberated choice can be facilitated for the best interests of the woman patient and her fetus. Correspondingly, the most rewarding perinatal research are those that improve the outcome by adding

to existing knowledge so that the physician can practise without compromising ethics for both the pregnant woman and the fetus.

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