

Mothers' dilemma – conducting delivery on the limits of the foetus viability

Miloš VELEMÍNSKÝ, Jr.^{1,2}, Miloš Velemínský, Sr.²

1 Department of Obstetrics an Gynaecology, Hospital České Budějovice, JSC., České Budějovice, Czech Republic, Prim. MUDr. Petr Sák, PhD.

2 Faculty of Health and Social Studies, The University of South Bohemia, České Budějovice, Czech Republic

Correspondence to: Milos Velemínský, Jr., MD., PhD
Department of Obstetrics an Gynaecology, Hospital České Budějovice, JSC., B. Němcové 54, 370 01 České Budějovice, Czech Republic.
E-MAIL: veleminsky@volny.cz

Submitted: 2015-09-02 Accepted: 2015-10-29 Published online: 2015-12-18

Key words: **foetus viability; ILBW (Incredible Low Birth Weight); prenatal consultation; conducting delivery; assisted reproduction; informed consent**

Neuroendocrinol Lett 2015; **36**(6):524–528 PMID: 26812292 NEL360615C03 © 2015 Neuroendocrinology Letters • www.nel.edu

Abstract

Ethical questions concerning problems of conducting delivery of enormously immature foetuses are subjected to intensive discussion and call for a permanent and wide consideration with the participation of all specialists, who are involved in the problem. The discussions have persisted over tens of years and became intensive particularly at the moment of defining the foetus viability. In the present contribution, the author illustrates the discussion by two selected case reports exemplifying the practical impact of conducting deliveries of enormously immature foetuses on the physician and particularly on the family.

INTRODUCTION

The author points out a wide variety of problems associated with conducting the delivery of children with incredible low birth weight and based on the case reports presented below, he demonstrates a wide scale of problems from the point of view of the obstetrician and parents, particularly mother. The birth of a living child, regardless of its vitality, is classified as a delivery of the foetus having the birth weight of 500 g and above (Czech Republic. Law No. 372 dated November 6, 2011). The viability is understood as a capability of survival, growth and normal development of the foetus. In terms of the definition “to be born alive and to survive”, the limit currently ranges between weeks 22 and 23, the official limit in the Czech Republic being the achievement of the gestation age of 24+0. The period between weeks 22 and 25 of pregnancy is referred to as a “grey zone” with an unsure progno-

sis of the newborn mortality or morbidity (Czech Republic. Law No. 372 dated November 6, 2011, Zlatohlávková 2011).

Gross (2000) points out that the viability also depends on the family, which will take care of the child. Japanese authors define the viability limit between 24th and 28th weeks of pregnancy (Nishida & Sakuma 2009). Itabashi *et al.* (2009) mentions that in Japan, a proportion up to 50% of babies born in the 23rd week are able to survive. Pignotti and Donzelli (2008) report that in France, the palliative care is preferred in the 24th week of pregnancy, unless otherwise requested by the parents. The intensive care is introduced since the 25th week achievement. Hull *et al.* (2015) implemented an online study offering a survey of opinions concerning the definition of the foetus viability and description of the decision-making process and availability of the pregnancy termination beyond the foetus viability limit in Canada.

The survey was designed for an association of genetic consultants, for genetics from a further association and members of the Canadian Society for Foetomaternal Medicine. It was shown that in Canada, it is possible to terminate pregnancy beyond viability, the indication being severe disease of the foetus; 67% of subjects mentioned the 24th week of pregnancy as a viability limit; most of them tends to believe that the decision-making process is based on a multidisciplinary cooperation; most specialist would indicate the pregnancy termination beyond the foetus viability limit in severe and lethal defects, but not in moderate defects. There are also perinatal hospices as an alternative possibility. Differences in approaches between different parts of Canada are emphasized with taking into account individual attitudes towards each particular case. Doubilet *et al.* (2014) deals with special radiodiagnostic and sonographic examinations in the first trimester and suggests criteria of "nonviable" pregnancy in the first trimester.

Deliveries and newborns with ILBW (Incredible Low Birth Weight, less than 750 g) considerably affect decisions concerning the delivery conduction and influence the mental condition of the woman as well as father in the sense of stress, not only at the time after completing the delivery, but also as to the future of the child and family (Šimek 2015). First of all, the obstetrician in cooperation with the family and with appropriate specialists, must frequently make a decision within a short period of time, concerning particularly the method of the delivery. It is also to emphasize the fact that the conduction of the foetus delivery on the limits of the viability should be performed by an experienced obstetrician and requires not only his/her considerable professional capacity, but also psychological, social and ethical quality and experience. His/her decision is also considerably affected by the woman or by both parents as to their opinions and attitudes. The condition for managing this complex situation includes the intensive interdisciplinary cooperation, particularly between the obstetrician and neonatologist, the participation of a psychologist being also obviously necessary (Čepický 2011; Smith *et al.* 2012).

CASE REPORT 1

A patient aged 30 years was treated for a period of two years for primary sterility (ovarian factor, oligomenorrhoea). In her personal anamnesis, she experienced diagnostic laparoscopy with ovarian drilling and was a heterozygote carrier of the Leiden mutation. The treatment was performed in the Centre of Assisted Reproduction, where two embryos were transferred. Subsequent ultrasonic examination demonstrated intrauterine pregnancy with two foetal eggs. In the next control examination, in the 10th week of pregnancy, trigemini triamniati bichoriati were detected. Given a considerable hazard of the trifoetal pregnancy

with a monochorial component, the patient was sent to a higher medical institution, where after an analysis of the situation, she was recommended to consider a reduction in the monochorial component and she agreed with this suggestion after several days. After the intervention, which was implemented at this institution, the patient was without problem in the 14th week of her pregnancy and the ultrasonic examination demonstrated one living foetus.

In the course of subsequent controls in the prenatal consulting office, the clinical course was without complications and ultrasonic examination imagined prosperous singleton pregnancy. From about 18th week, intermittent spotting was described, other findings being within normal range including cervicometry. In the 21st week of pregnancy, a rather strong haemorrhage occurred, for which the patient was hospitalized. Haemorrhage stopped during conservative therapy, weak spotting was persisting and oligohydramnion diagnosis was established. The genetic ultrasonic examination of the foetus did not demonstrate any congenital defect of the development. At the gestation age of 23+1, uterine activity was encountered with a demonstration of premature amniotic fluid leakage. **After an analysis of the situation with the patient and with her husband, in the presence of a neonatologist, with respecting the request of the parents, the conservative attitude to the pregnancy was continued with an attempt to extend the pregnancy time as much as possible beyond the limits of the foetus viability.** However, an elevation of infectious markers was very rapidly encountered and thus, under assumption of the foetus weight above 500 g and breech position of the foetus, and with respect to the request of the patient, the delivery was **performed by Caesarean section**. The newborn of male sex with a birth weight of 650 g and Apgar score 4/5/5 died after 24 hours at the Neonatal intensive-care unit of the Department of Neonatology. Six days later the patient was discharged from the hospital.

CASE REPORT 2

A patient aged 28 years was transferred to the Perinatal Center with a diagnosis of uterine cervical incompetence at a gestation age of 23+3. Ten months ago, she experienced spontaneous abortion after premature rupture of membranes in the 22nd week of pregnancy. Other anamnestic data were unimportant.

During standard treatment, regular contractions occurred, tocolysis was unsuccessful, and vaginal finding exerted a progress. **After an analysis of the situation, the patient accepted possible Caesarean section only in the case of an indication for endangering her own health and refused it up to the completed week 25 based on indication for endangering the foetus.** The parents did not request starting the resuscitation care in severely immature newborn. **Spontaneous**

delivery started at the gestation age of 23+6, where amniotic fluid spontaneously leaked on not palpable orifice and spontaneous version of the foetus from the original longitudinal head-first position to the breech position occurred. The delivered foetus of the male sex, weight of 670 g, with terminal heart action, died after several min. On the second day after the delivery, the patient was discharged from the hospital.

DISCUSSION

When speaking about a group of babies with *extremely low birthweight (ELBW)*, newborns with a birth weight under 1000 g are considered. Deliveries of these newborns and subsequent short-term as well as long-term care involve a wide scale of problems. They concern the morbidity as well as mortality (Měchurová 2013; Romero *et al.* 2006).

As already mentioned, the delivery regardless of the child vitality can be considered if the foetus weight is of 500 g and above. The incidence of about 0.2% of these deliveries is reported (ÚZIS ČR 2013). Due to the necessary complex interdisciplinary approach, they are usually performed in Perinatal centres. Till 24th to 25th week, general recommendations put emphasize on the individual attitude with extensive information of parents concerning the foetus prognosis in terms of the mortality as well as long-term morbidity.

The discipline obstetrics takes care of two individuals, i.e. mother and child. During this, the woman is a “person” – patient, the “foetus” is not a person *de jure* and thus, other people make decisions about its future. In the field of the philosophic attitude, there are two different concepts of the approach to the foetus. The *ontological personalism* is supported by an argument of the genome identity, thus considering the moral statute of the foetus as soon as from the moment of the conception. The *empiric functionalism* recognizes a moral value, which depends on the degree of the development. It is based on the gradualism, i.e. opinion that the foetus is no person. Based on these approaches, there are two concepts: “Sansity of life” and “quality of life”. The first of them considers the human life as sacred and in accordance with this, it must not be interrupted under any circumstances; the second one considers the life value depending on its quality (Křepelka 2011). The second approach is frequently adopted in medicine (Hrubý & Fedor-Freybergh 2014). The foetus viability is delimited and defined by a thesis that the foetus is able to autonomously survive beyond the mother organism. There are two types of viability: independent, where the foetus is able to autonomously live without the mother organism but on account of a technological support, and factual, where the autonomous existence of the foetus is independent of the mother organism even without any technical support. The product viability is stepwise shifted to earlier gestation weeks just due to the technological development (Zlatohlávková 2011).

The viability can be characterized by biological limits, which are particularly defined by the maturity and thus by the gas exchange. Of course, immaturity of other organs is also of importance. In the evaluation of the social limit, it is necessary to take into account “survival without severe involvement”.

The assisted reproduction (AR) has already become a common part of the therapy of infertile pairs. Their representation in the population is reportedly between 10 and 15%. The highest success of the treatment by AR methods (30–40%) is considerably promising for infertile pairs as to solving their problems with pregnancy. Deliveries of newborns from the assisted reproduction were previously very hazardous. Thus, introduction of only one embryo became very beneficial over recent years. This is a way, which can not only positively affect the success of the intervention but also reduce negative effects of the perinatal mortality. Premature deliveries, mother morbidity in association with more frequent deliveries by the Caesarean section and newborn morbidity and mortality are only further small fragments in the mosaic of adverse results of the assisted reproduction methods (Velemínský & Velemínský 2010). The decision about conducting the foetus delivery on the limits of the foetus viability belongs to an experienced obstetrician and requires a high professional but also psychological, social and ethical capability. After that, the decision is considerably affected by the woman or by both parents based on their opinions and attitudes. Basic condition for managing this complex situation is intensive interdisciplinary cooperation, particularly of the obstetrician and neonatologist, the participation of a psychologist being also obvious. Till the 24th to 25th weeks, in general, it is recommended to put emphasize on the individual attitude with extensive information of parents about the foetus prognosis from the viewpoint of mortality as well as long-term morbidity (Gothová 2013; Měchurová 2013).

The “institute of prenatal consultation” is an important part of making decisions about conducting deliveries of IBLW newborns. During this, the physician or possibly physicians intervene in a very sensitive and serious area of problems, where the result can affect lives of the whole family. In the course of prenatal consultations, the fact should be kept in mind that the results of negotiations between the physician and parents must be legally justified, i.e. an Informed Consent should be conclusively signed. Any decision without the Consent is not only non-ethical, but also illegal. The consulting physician must acquaint the parents with risks associated with performing possible surgical intervention to the foetus, family, but also to the health of the mother (see different attitudes of the family in the case report mentioned above). The Informed Consent actually demonstrates an agreement between two autonomous persons – participants, i.e. the physician and the mother or possibly also the father. Several variants of the solution of the existing

situation should be proposed. The parents can rightfully refuse the medical proposals, but on the other hand, the physician has no right of intervention unless the woman life is endangered. In the course of consultations, the physician should be aware of the above mentioned theoretical facts. However, the physician cannot only execute the patient's request. Prenatal consultations are a very important component for the obstetrician's work when making decisions about the method of conducting the delivery. The physician is frequently forced to solve the problem acutely, being pressed for time, which is a considerable drawback of these negotiations (Hrubý & Fedor-Freybergh 2014; Křepelka 2011; Romero *et al.* 2006; Smith *et al.* 2012). Kett (2015) emphasizes the importance of prenatal consultations and describes three areas, in which the current practice is ethically problematic: (1) risks to competence, (2) risks to information, and (3) risks to trust. The two case reports presented here shows two situations, in which the women chose uttermost solutions in a certain sense of the word. In the first case, the woman attempted to save the foetus, where she, after experiencing considerable several-month mental and somatic stress, decided to take advantage of an imaginary hope, or chose the surgical intervention to terminate the pregnancy; the second woman preferred avoiding a damage to her health and thus endangering possible success of a future pregnancy, and agreed with vaginal delivery. Both women certainly experienced unenviable moments and their decision was undoubtedly strongly affected by their view of the situation and ability to overcome problems resulting from their conscience. Catlin (2009) brings data on 5 newborns from the group of incredible babies with drawing the following conclusions: These 5 stories take us through the periods of "all must be done" to "parents can choose" and to "are we overdoing?". Neonatal nurses can receive guidance from these wise parents today. Mardegan *et al.* (2015) found minor differences in the management of extremely low-birth-weight infants between Italian academic and non-academic institutions, apart from the thermal management. Miltaha *et al.* (2015) accent influence of perinatal factors in short- and long-term outcomes of infants born at 23 weeks of gestation. This is a retrospective study over a 25-year period (1987–2011) of 87 successfully resuscitated infants at 23 weeks of gestation. We investigated the effects of poor prenatal care, race, gender, chorioamnionitis, antenatal corticosteroids, delivery route/location, low 5-minute Apgar score, birth weight, and multiple births on short- and long-term outcomes. The mortality rate was 43% (37/87). A total of 88% (44/50) of the survivors were followed at 2 years corrected age with 66% (29/44) diagnosed with a moderate-to-severe neurological impairment. Outborn and multiple birth infants had significantly higher mortality. Multiple perinatal factors significantly influence outcomes at the threshold of viability. Litmanovitz *et al.* (2015)

accent active approach in obstetric management of pregnancies appears to impact the neonatologists' decision to undertake AIT treatment in infants born at the border of viability. The higher odds for AIT associated with obstetric interventions might contribute to the reported beneficial effect of antenatal steroids and cesarean delivery on the survival of infants born at the border of viability.

Poole *et al.* (2016) demonstrated that the birth weight status significantly affected the intensity and direction of associations between childhood motor coordination and adult psychiatric outcomes. Wapner (2013) emphasizes the importance of the antenatal steroid administration in periviable deliveries. Their importance and beneficial effects on reducing the morbidity and mortality were demonstrated in long-term monitoring of newborns delivered between weeks 23 and 26. The effect is lower in the 22nd week. Winer and Flamant (2015) point out the importance of "the management", particularly in deliveries before the 26th week of pregnancy: "If active management is more difficult with very preterm infants 24–25 WG, mortality is increased comparing with newborns of more than 26 WG. This is partly explained by limitations of active neonatal intensive care. This justifies a human, medical, and ethical multidisciplinary discussion including the parents' wishes for an active resuscitation or a palliative management. Using the only criteria of gestational age is not a reliable tool to predict survival and neurodevelopmental outcome of preterm infants. It is very important to identify other prenatal factors such prenatal corticosteroid administration, gender, foetal estimated weight, amniotic fluid and absent/reverse end diastolic flow umbilical doppler. Implication and listening the parents' preferences are essential after individual information, objective and a honest counseling including mortality, morbidity and risks of neurocompartmental impairments. Birth and counseling should be done in a reference maternofetal centre with obstetricians and neonatologists specialized in this topic. A real difficulty is to consider the route of delivery and the possibility that caesarean section could improve survival rates. Induction of labour is very often a high risk of failure and the route of delivery remains controversial, and this is a real question in order to improve survival rates. The literature data are poor and conflicting without randomized trials. Caesarean section presents maternal risks such as pathologic placentation, haemorrhage delivery and increasing risks for the subsequent gestation. So, if it is not a good idea to recommend a systematic caesarean delivery, it is not ethical to refuse this route of delivery only because of the gestational age even in extremely premature birth".

Caughe and Burchfield (2014) deals with the cost-effectiveness of the periviable care at the gestational age of newborns delivered between weeks 22 and 24. He notes that if the gestational age of the neonate decreases, then the costs increase and the cost-effectiveness threshold is harder to achieve.

CONCLUSION

There is an interesting fact that problems of conducting ILBW deliveries is frequently dealt with by students of the branch midwife in their works. Two case reports on women delivering the foetus on the limits of its viability were presented. The author attempted to point out the dilemma faced by the women in these difficult situations and their different considerations of possible solutions. In both cases, a tight cooperation between the obstetrician and neonatologist was necessary within the framework of the communication with the parents as well as of securing the foetus itself.

REFERENCES

- Catlin A (2009). Five incredible babies, five paradigm cases that greatly influenced neonatal ethics: what do their parents say today? *Adv Neonatal Care*. **9**(6): 287–292, doi: 10.1097/ANC.0b013e3181e20026.
- Caughey AB, Burchfield, DJ (2014). Costs and cost-effectiveness of periviable care. *Semin Perinatol*. **38**(1): 56–62, doi: 10.1053/j.semperi.2013.07.010.
- Čepický P (2011). Ethical problems in the premature delivery management. *Mod Gynek Porod*. **20**(3): 332–335 (in Czech).
- Doubilet PM, Benson CB, Bourne T, Blaivas M (2014). Society of Radiologists in Ultrasound Multispecialty Panel on Early First Trimester Diagnosis of Miscarriage and Exclusion of a Viable Intrauterine Pregnancy Diagnostic criteria for nonviable pregnancy early in the first trimester. *Ultrasound Q*. **30**(1): 3–9, doi: 10.1097/RUQ.0000000000000060.
- Göthová M (2013). Procedures in premature delivery of foetus on the limits of viability (22nd–25th weeks) of pregnancy. *Čes. Gynek*. **78**(6): 573–583 (in Czech).
- Gross ML (2000). Avoiding anomalous newborns: preemptive abortion, treatment thresholds and the case of baby Messenger. *J Med Ethics*. **26**: 242–248.
- Hrubý R and Fedor-Freybergh P (2014). Ethical problems in prenatal medicine. In: Ptáček R, Bartůněk P. *Ethical problems in medicine on the threshold of the 21st century*, p. 115. ISBN 978-80-247-547-1-0 (in Czech).
- Hull D, Davies G, Armour CM (2015). Survey of the Definition of Fetal Viability and the Availability, Indications, and Decision Making Processes for Post-Viability Termination of Pregnancy for Fetal Abnormalities and Health Conditions in Canada. *J Genet Couns*. Nov 5.
- Itabashi K, Horiuchi T, Kusuda S, Kabe K, Itani Y, Nakamura T *et al.* (2009). Mortality rates for extremely low birth weight infants born in Japan in 2005. *Pediatrics*. **123**: 445–450.
- Kett JC (2015). Prenatal Consultation for Extremely Preterm Neonates: Ethical Pitfalls and Proposed Solutions. *J Clin Ethics*. **26**(3): 241–249.
- Křepelka P (2011). Communication and ethics in gynaecology and obstetrics. In: Ptáček R, Bartůněk P. *Ethics and communication in medicine*, pp. 105–112 (in Czech).
- Law No. 372, dated November 6, 2011. On health services and conditions for providing them (Law on health services). In: *Collection of Laws of the Czech Republic*, parts 131, pp. 4730–4801 (in Czech).
- Litmanovitz I, Reichman B, Arnon S, Boyko V, Lerner-Geva L, Bauer-Rusak S, Dolfin T (2015). Israel Neonatal Network Perinatal factors associated with active intensive treatment at the border of viability: a population-based study. *J Perinatol*. **35**(9): 705–711, doi: 10.1038/jp.2015.48.
- Mardegan V, Satariano I, Doglioni N, Criscoli G, Cavallin F, Gizzi C *et al.* (2015). Delivery room management of extremely low birth weight in Italy: comparison between academic and non-academic birth centres. *J Matern Fetal Neonatal Med*. **12**: 1–4.
- Měchurová A (2013). Contemporary considerations of the amniotic fluid leaking management. *Česká gynekologie*. **78**(Suppl.): 15–18 (in Czech).
- Miltaha HR, Fahey LM, Sajous CH, Morrison JC, Muraskas JK (2015). Influence of perinatal factors in short- and long-term outcomes of infants born at 23 weeks of gestation. *Am J Perinatol*. **32**(7): 627–632, doi: 10.1055/s-0034-1390350.
- Nishida H and Sakuma I (2009). Limit of viability in Japan: ethical consideration. *J Perinat Med*. **37**: 457–460.
- Pignotti MS and Donzelli G (2008). Perinatal Care at the Threshold of Viability: An International Comparison of Practical Guidelines for the Treatment of Extremely Preterm Birth. *Pediatrics*. **121**: e193–e198.
- Poole KL, Schmidt LA, Missiuna C, Boyle MH, Van Lieshout RJ (2016). Childhood motor coordination and adult psychopathology in extremely low birth weight survivors. *J Affect Disord*. **190**: 294–299, doi: 10.1016/j.jad.2015.10.031.
- Romero R, Espinoza J, Kusanovic P, Gotsch F, Hassan S, Erez O *et al.* (2006). The preterm parturition syndrome. *BJOG*. **113**(3): 17–42.
- Smith PB, Ambalavanan N, Cotten CM, Laughon M, Walsh MC, Das A *et al.* (2012). Approach to infants born at 22 to 24 weeks' gestation: relationship to outcomes of more-mature infants. *Pediatrics*. **129**(6): 1508–1516.
- Šimek J (2015). *Medical ethics*. Praha: Grada, pp. 134–138. ISBN 978-80-247-5306-5 (in Czech).
- ÚZIS ČR (2013). Born and died children under one year of age 2012. [online] [cit. 2015-11-30]. 88 p. Available from: https://www.google.cz/?gws_rd=ssl#q=Narozen%C3%AD+a+zem%C5%99el%C3%AD+do+1+roku+2012 (in Czech).
- Velemínský M Jr and Velemínský M Sr (2010). Some controversial events in gynaecology and obstetrics. *Čes-slov. Pediat*. **65**(10): 616–619. ISSN 0069-2328 (in Czech).
- Wapner RJ (2013). Antenatal corticosteroids for periviable birth. *Semin Perinatol*. **37**(6): 410–413, doi: 10.1053/j.semperi.2013.06.024.
- Winer N and Flamant C (2015). Below 26 gestational week prematurity: What support? *J Gynecol Obstet Biol Reprod (Paris)*. **44**(8): 732–739, doi: 10.1016/j.jgyn.2015.06.009 (in French).
- Zlatohlávková B (2011). Viability of the foetus and newborn. *Aktuální gynekologie a porodnictví*. **3**: 474–451 (in Czech).