

DELIVERY DURING THE TRANSPORT TO THE HOSPITAL

POROĐAJ TOKOM TRANSPORTA U BOLNICU

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Abstract: Delivery outside the hospital is an emergency situation with possible fatal complications. The health care providers in emergency medicine should be properly trained for the medical care of such patients. The recognition of signs of inevitable delivery is crucial before the decision to transport the labouring women to the hospital. In such circumstances we should be prepared for normal delivery, where physiological support is most important, to high risk delivery with the need for newborn or women's resuscitation.

We present recommendations for delivery during the transport to the hospital.

Keywords: Delivery outside the hospital, newborn, postpartum haemorrhage, transport of the pregnant woman

INTRODUCTION

The incidence of birth outside the hospital is low and varies in different societies. There are three main groups of pregnant women, delivering outside the hospital. The women who decided for the home birth (should be the low risk pregnancy), unintended delivery outside the hospital (no time for transport) and the unwanted pregnancies, usually in the low socioeconomic status population.

Intended home birth in well-resourced countries represents up to 3 % of all births (The Netherlands excluded). In some countries home births are regulated and supported with proper infrastructure, in others the home births are undertaken in less supportive, even hostile environment [1,2]. One of the eligibility criteria is availability of timely transport to the hospital in case of complications and proper training of the health care providers.

The United Kingdom Royal College of Obstetricians and Gynaecologists are supportive of home birth for low risk women. But the American Congress of Obstetricians and Gynaecologists warn that 'planned home birth is associated with a twofold to threefold increased risk of neonatal death when compared with planned hospital birth [1]. So in home birth, when transport to the hospital is needed, previously low risk woman becomes a high-risk patient with delivery complication.

In England national study there was a higher risk (OR 1,75) of complications (stillbirth after start of care in labour, early neonatal death, neonatal encephalopathy, meconium aspiration syndrome, brachial plexus injury, fractured humerus, or fractured clavicle) in home birth nulliparous women when compared to hospital setting. Home birthing nulliparas were transferred to the hospital in 45 %, and in multiparas transfer was needed in 13 % of cases [3].

Unintended delivery outside of the hospital is usually a quick event, with a good outcome. It usually happens when the labour is too quick.

In Slovenia there were 0,1 % of deliveries outside the hospital between 2008-12, which means up to 30 deliveries annually. Majority of them (N= 71; 60 %) were at home, without the

trained health care provider in another 10 % there was one. Thirty percent happened during the transfer to the hospital. (national data).

The third group of deliveries outside the hospital are in women with a low socioeconomic status, teen pregnancies, unwanted or hidden pregnancies. Those are high-risk deliveries with possible criminal elements and unfavourable outcomes.

PHYSIOLOGY OF THE NORMAL DELIVERY

Labour is defined as the process by which the fetus, placenta and fetal membranes are expelled from the uterus. There are three stages of labour.

The first stage begins with regular painful contractions that result in dilatation of cervix, passage of blood-stained mucus and rupture of fetal membranes. It ends with full dilatation of cervix (10 cm). We can divide first stage into passive and active phase. In general, active phase begins with more than 4 cm dilatation of the cervix [4]. This is the key moment to calculate the time of labour duration. For active phase the rate of dilatation of cervix is 1.2 cm per hour for nulliparous women and 1.5 cm per hour for multiparous women. We can use Friedman's labour graph to predict cervix dilatation and labour progress [5]. The first stage is the point when we take decision whether we have time to transport the pregnant women to the hospital or we need to prepare ourselves for delivery outside the hospital. We can predict the labour process with vaginal examination (assessing cervical dilatation, effacement and fetal station).

The second stage starts with full dilatation of cervix and ends with the delivery of the baby. In this stage fetal head and body pass through the birth canal. Because of the asymmetry of the shape of both, the fetal head and the maternal bony pelvis, rotation is required for the fetus to successfully negotiate the birth canal. In average the second stage of labour lasts from 1 to 2 hours for nulliparous and 0.5 to 1 hour for multiparous women.

The third stage starts with the delivery of the baby and ends with the delivery of the

placenta with fetal membranes. If experienced, we manage it actively to reduce postpartum haemorrhage otherwise physiological management is recommended [6].

Active management of the third stage means: the routine use of uterotonic agents (oxytocin 5 I.E. i.v. after the delivery of first shoulder of the baby), clamping the cord and cutting and controlled cord traction after the signs of separation of the placenta.

Physiological management of the third stage means no routine use of uterotonic drugs, no clamping of the cord until pulsation has stopped and delivery of the placenta by maternal effort.

It is important to monitor and record the blood loss after the delivery.

TAKING THE DECISION: TRANSFER TO THE HOSPITAL OR DELIVERY OUTSIDE THE HOSPITAL?

With signs of inevitable delivery (seeing baby in the vulva, pregnant woman has unbarring feeling of pushing, full cervical dilatation) we should prepare for delivery outside the hospital (Figure 1).

When there are no signs of inevitable delivery we should collect and evaluate necessary clinical data and risk factors from obstetrical history and physical examination that includes assessment of vital signs of women and vaginal examination [6]. We try to answer the following questions:

About the woman:

- What is the gestational age (smaller the baby, faster the labour), usually calculated from the last menstrual period.
- Parity, has the woman delivered before (labour of nulliparous women is slower), did she have cesarean section or any uterine operation?
- Review the antenatal history and ultrasound scans. Discuss these with

woman. In the case of diabetes and large for gestational age fetus, consider the risk of shoulder dystocia during the labour.

- The regularity, frequency and intensity of contractions?
- Ask about the pain she is experiencing. Use the relaxation and breathing techniques for pain relief.

About the unborn baby:

- Is it a multiple or singleton gestation (multifetal delivery is a high risk delivery).
- Ask about the fetal movements in the last 24 hours.

The exam:

- The position of the fetus (transverse lie can not be delivered vaginally, breech position is a high risk delivery).
- Record her pulse, blood pressure and temperature, (if there is high blood pressure or proteinuria, there is a possibility of preeclampsia, if high temperature consider infection, the risk of sepsis).
- Is there vaginal bleeding? The bleeding is a possible sign of placenta previa, vaginal examination is contraindicated, the transport to the hospital is urgent, vaginal delivery of live fetus impossible. A blood stained mucus is a sign of cervical dilatation and labour in progress.
- Record the rupture of fetal membranes (it accelerates the labour), if ruptured, check the colour (meconium stained – dark green or black, is a sign of fetal distress, be prepared for neonatal resuscitation!).
- Auscultate the fetal heart rate for 1 minute after the contraction, palpate the woman's pulse at the same time. The fetal heart rate should be between 120 and 160 beats per minute. The drop after contraction – deceleration, is a sign of fetal distress, be prepared for neonatal resuscitation!).
- Offer a vaginal examination.

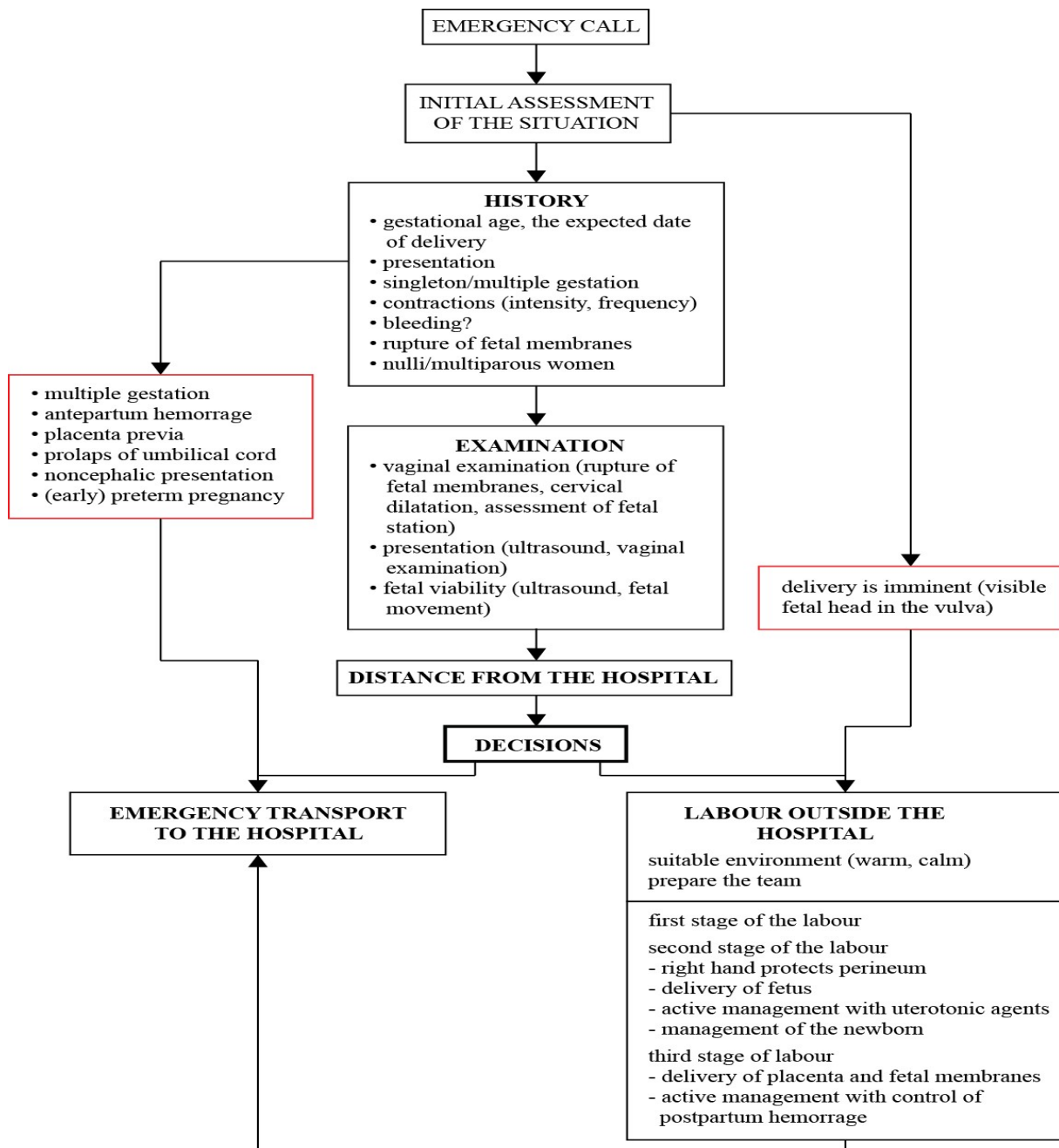


Figure 1. Algorithm of decision for delivery or transport to the hospital.

The progress of labour is the most important information. We assess cervical dilatation and labour progress and consequently predict the duration of labour by vaginal examination. Be sure that the vaginal examination is really necessary and will add the necessary information to the decision making process. We should then estimate the time it takes to arrive to the hospital and then decide if we have enough time to transport [7].

If we expect any complications, the transport to the hospital is necessary. Circumstances that will require operating room, special equipment and educated staff are: twins, breech presentation, face presentation, transverse lie, placenta previa, abruption placentae, and prolapse of the umbilical cord. Women with chronic diseases or uneventful history are considered high risk and should deliver in the hospital. We also try to transport preterm pregnant women as soon as possible.

TRANSPORT

Treat all women with respect and communicate with her. Give her proper psychological support. Her position during transport should be on her left side, to prevent the vena cava syndrome. Also we should find the position in which the woman feels as comfortable as possible before and during the transport. She should be dressed or wrapped in the blanket, so that she feels comfortable and decent. Communication and companionship is necessary, she should not feel afraid [6].

The head of the patient should be at the door of the ambulance car with the feet towards the driver, so you have enough space for the management of the delivery if necessary. Insert the intravenous path (G18) in the left forearm not to be disturbed during the transport. Heat the ambulance if you have to deliver (to prevent hypothermia of the newborn). Monitor the frequency and intensity of contractions (place your hand on the uterus) and monitor the fetal heart rate. Prepare the labour set and medicines for labour and resuscitation of the newborn. Stop the ambulance at a safe place if the delivery is imminent [6].

DELIVERY

Prepare for neonatal resuscitation.

If the delivery is imminent, prepare and secure the place, check the air temperature and consider proper light. Communicate with the woman and try to offer some privacy. The medical personnel present should work as a team, so we divide roles - team leader assists delivery of infant and later placenta; first assistant evaluates vital signs of the woman, inserts intravenous cannula, administers medications; second assistant takes over the care and possible resuscitation of the newborn [7]. For better care the lithotomy position of delivering women is appropriate. Our main goal is to assist the spontaneous delivery in order to reduce maternal trauma, prevent fetal injury and give support to a newborn baby if required.

When the fetal head is descending through birth channel, there is pressure on the rectum and woman feels the urge to push. She should take a deep breath, brace herself under her knees and push as if she would like to void.

As we see the fetal head in the vulva in the it is time to prepare for the perineum protection and the delivery (Figure 2).



Figure 2. Fetal head seen in vulva.

The team leader washes his hands, opens sterile labour set, and puts sterile gloves on his hands. He puts a gauze over his right hand, covers the anus and protects the perineum with a gentle pressure. At the same time he maintains flexion of the head (Figure 3). The right hand stays on perineum throughout entire delivery. With the left hand he controls delivery of head it should be as slow that the perineum adjust and extends with a minimal trauma.



Figure 3. Right hand protecting perineum, left hand controlling the delivery of the head.

When the head is delivered, he wipes the baby's face with his left hand and then he waits for external rotation of the head (internal rotation of shoulders) - baby's face rotates to maternal thigh. Then he delivers anterior shoulder by gentle downward traction of his left hand placed flat on baby's head simultaneously with maternal expulsive efforts (Figure 4).



Figure 4. Delivering the anterior shoulder with gentle downward traction.

Posterior shoulder is delivered by upward traction. We must not pull, but these movements should be performed with the minimal force possible. When the anterior shoulder is delivered, it is time to administer 5 I.U. of oxytocin intravenous in bolus to accelerate delivery of placenta. The body of the baby is slippery, it should be put on the mother's abdomen [8]. After delivery the baby should be wiped dry and kept warm. Drying and wiping the baby usually produces enough stimulation to induce effective breathing. Team leader clamp the cord with two clamps (peans) 15 cm away from the umbilicus and cuts the cord with scissors between the clamps. It is recommended to delay cord clamping for at least one minute (or after it stops pulsating). One of the team members takes over the care of the newborn. It's important to keep the baby warm. It is recommended to avoid hypothermia and maintain the baby's temperature between 36.5-37.5°C [9].

The team leader waits for the classic signs of placental separation: mild contractions of the uterus, lengthening of umbilical cord, gush of

blood from vagina, uterine fundus becoming flatter. When the placenta is fully separated from the uterine wall, we can gently remove it by downward traction of the umbilical cord with one hand while with other hand we gently massage the uterine fundus to stimulate the contraction and minimise bleeding. Removed placenta is examined for the missing parts.

We have to transport the mother, the newborn baby and the placenta (with fetal membranes) to the hospital. During the transport we assess the infant and mother's vital signs, tonus of uterus and mother's vaginal bleeding. We transport the mother and the baby secured, the mother lying on her back and the baby in the car seat for the newborn. Keep them as close as possible.

POSTPARTAL HAEMORRHAGE

It is normal to lose some blood at delivery (usually around 300 to 500 ml). The normal pregnant women can tolerate up to 1000 ml of blood loss.

Risk factors for excessive blood loss are: previous postpartum haemorrhage, low maternal haemoglobin (below 85 g/L), BMI more than 35 kg/m², parity 4 or more, haemorrhage before delivery, overdistended uterus (large for gestational baby, multiple pregnancy, polyhydramnios), uterine abnormalities, low-lying placenta, maternal age more than 35 years, fast delivery.

In the case of risk factors, be prepared! After the delivery the bladder should be empty, we should regularly massage the uterus and give uterotonic drugs (oxytocin 5-10 IU iv or ergometrine 0,5 mg im) if needed, give intravenous fluids, oxygen and transfer to the hospital as soon as possible.

WHAT TO WRITE DOWN

In Slovenia a dedicated labour form is used to record the data. Besides the woman's personal data (the name, surname, date of birth), the health history and antenatal history are recorded. Any allergies are noted also the medicines she is taking.

From the labour itself it's important to record:

- the time of the beginning of the regular painful contractions,
- time of rupture of fetal membranes,
- time of contacting medical service, time of arrival,
- address of labour and delivery,
- the exact time of delivery of the newborn, placenta.
- which medicines, doses, mode of application and time of medicine administration
- describe the course of labour, record the vaginal examinations and findings, fetal heart rate
- vital signs of mother/newborn,
- Apgar score and temperature of the newborn
- the amount of the blood loss

NEWBORN BABY

In the first minutes after delivery, we should evaluate the condition of the baby: respiration, heart rate, tone and colour. Usually we grade all these as the Apgar score.

The baby should be as close to his mother as possible, if possible put the baby skin to skin on woman's chest and wrap them both together. Assure the right temperature for the baby.

If the basic resuscitation is needed, start with air. Resuscitate according to the guidelines for neonatal resuscitation.

In the presence of meconium, do no suction or intubation before the baby's shoulder are born or if baby is breathing normally and crying [6].

CONCLUSION

The safest way to deliver is in the hospital. Majority of newborns are born there. Some deliveries are too quick, or in some way

unexpected and those need the transport to the hospital accompanied with emergency medical staff. In the last years there is a trend for home delivery with a trained midwife support for low risk pregnancy, which can be complicated with the need for emergency transport.

Emergency medical professionals should be properly and regularly trained for neonatal and pregnant women resuscitation and delivery assistance. The signs of imminent delivery and the need of urgent transfer in high risk cases should be recognised.

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Sažetak: Prehospitalni porođaj je urgentno stanje sa mogućim fatalnim komplikacijama. Timovi hitne medicinske pomoći trebaju biti adekvatno trenirani za zbrinjavanje ovih žena. Prepoznavanje znakova neizbežnog prehospitalnog porođaja je od ključne važnosti pre donošenja odluke o transportu u bolnicu. U takvim okolnostima moramo se pripremiti za normalan porođaj, gde je psihološka podrška najvažnija kao i pripremiti se za reanimaciju novorođenčeta ili žene u slučaju visoko rizičnog porođaja. U ovom radu prezentujemo preporuke za vođenje prehospitalnog ili porođaja u toku transporta
Ključne reči: Prehospitalni porođaj, novorođenče, hemoragija postpartum, transport trudnice

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