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Breech presentation: Clinical practice guidelines from the French College of Gynaecologists and Obstetricians (CNGOF)

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Conflicts of interest

LS was a board member and carried out consultancy work and lectured for Ferring. The other authors report no conflict of interest.

Abstract

Objective: To determine the optimal management of singleton fetuses in breech presentation.

Materials and methods: Consultation of the PubMed database, the Cochrane Library and guidelines issued by the French and foreign obstetrical societies or colleges.

Results: In France, 5% of women have breech deliveries (level of evidence [LE] 3). One third of them have a planned vaginal delivery (LE3), and 70% of these give birth vaginally (LE3). External cephalic version (ECV) is associated with lower rates of both breech presentation at birth (LE2) and of cesarean deliveries (LE3) without any increase in severe maternal (LE3) or perinatal morbidity (LE3). Women with a fetus in breech presentation at term should be informed that ECV can be attempted starting at 36 weeks of gestation (professional consensus).

Planned vaginal delivery of breech presentation may be associated with a higher risk of composite perinatal mortality or serious neonatal morbidity than planned cesarean birth (LE2). These two modes do not differ for neurodevelopmental outcomes at two years (LE2), cognitive and psychomotor outcomes between 5 and 8 years (LE3), or adult intellectual performance (LE4). Short- and long-term maternal complications appear similar in the two groups, unless subsequent pregnancies are under consideration. Pregnancies after a cesarean delivery are at higher risk of uterine rupture, placenta accreta spectrum disorders, and hysterectomy (LE2). Women who want a planned vaginal delivery should be offered a pelvimetry at term (Grade C) and should have ultrasonography to verify that the fetal head is not hyperextended (professional consensus) to plan their mode of delivery. Complete breech presentation, a previous cesarean, nulliparity, and term prelabor rupture of membranes are not, each one by itself, per se contraindications to planned vaginal delivery (professional

consensus). Term breech presentation is not a contraindication to labor induction when the criteria for planned vaginal delivery are met (Grade C).

Conclusion: In cases of breech presentation at term, the child and the mother are at low risk of severe morbidity after either planned vaginal or planned cesarean delivery. The French College of Obstetricians and Gynecologists (CNGOF) considers that planned vaginal delivery is a reasonable option in most cases (professional consensus). The decision about the planned route of delivery should be shared by the woman and her healthcare provider, who must respect her right to autonomy.

Key words: Breech presentation, planned vaginal delivery, trial of labor, planned cesarean delivery, external cephalic version, maternal and neonatal morbidity.

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1. Introduction and methods

The sponsor (the French College of Gynecologists and Obstetricians (CNGOF)) appointed a steering committee (Appendix A) to define the exact questions to be put to the experts, to choose them, follow their work, and draft the synthesis of recommendations resulting from it [1]. The experts analyzed the scientific literature on the subject to answer the questions raised. A literature review identified the relevant articles through mid-2019 by searching the MEDLINE database and the Cochrane Library. The search was restricted to articles published in English and French [2-3]. Priority was given to articles reporting results of original research, although review articles and commentaries were also consulted. Guidelines published by organizations or institutions such as the American College of Obstetricians and Gynecologists (ACOG), the Royal College of Obstetricians and Gynaecologists (RCOG), the Canadian Society of Gynecology and Obstetrics (SOGC), as well as previous guidelines published by the CNGOF were reviewed, and additional studies were located by reviewing bibliographies of identified articles. For each question, each overview of validated scientific data was assigned a level of evidence (LE) based on the quality of its data, in accordance with the framework defined by the HAS (French Health Authority) [3], summarized below.

1.1. Quality of evidence assessment

LE1: very powerful randomized comparative trials, meta-analysis of randomized comparative trials;

LE2: not very powerful randomized trial, well-run non-randomized comparative studies, cohort studies;

LE3: case-control studies;

LE4: non-randomized comparative studies with large biases, retrospective studies, cross-sectional studies, and case series.

The organizing committee drafted a synthesis of recommendation based on the replies given by the expert authors. Each clinical practice recommendation was graded, according to the classification defined by the HAS:

1.2. Classification of recommendations

Grade A: Recommendations are based on good and consistent scientific evidence

Grade B: Recommendations are based on limited or inconsistent scientific evidence

Grade C: Recommendations are based primarily on consensus and expert opinion

Professional consensus: In the absence of any conclusive scientific evidence, some practices have nevertheless been recommended on the basis of agreement between the members of the working group (professional consensus).

All texts were reviewed by persons not involved in the work, i.e., practitioners in the various specialties (Appendix) concerned and working in different situations (public, private, university, or non-university establishments). Once the review was completed, changes were made, if appropriate, considering the assessment of the quality of the evidence.

The original long texts in French are cited [4-6, 9-12], but their individual references are not included here in view of the enormous space they would occupy in this article intended to summarize the guidelines.

2. Epidemiology, associated factors, and complications [4]

There are three categories of breech presentation, depending on the position of the fetus's lower limbs: frank in two thirds of cases, complete in one third, and, much more rarely,

kneeling or footling (LE3). In France, around 5% of women give birth to fetuses in breech presentation (LE3). Because the frequency of this presentation diminishes as gestational age increases, its incidence is lower after 37 weeks; these presentations account for no more than 3% of births at term (LE3). Among these 3%, around 5% are referred to as "unexpected breech" (LE4), that is, breech presentations discovered only during labor.

The principal factors associated with breech presentation in the literature are the presence of a congenital malformation or myomas (LE3), oligohydramnios (LE3), preterm delivery (LE3), some specific fetal congenital malformations (LE3), and smallness-for-gestational-age (LE3).

In France, a trial of labor is performed for a third of the women with a fetus in breech presentation at term (LE3), and its success rate is 70% (LE3). Perinatal morbidity and mortality after 37 weeks for infants in breech presentation appear higher than in those in cephalic presentation, for all modes of delivery combined (LE3). The risk of traumatic injuries during all breech births is estimated at less than 1% (LE3). The most frequent injuries involve clavicle fractures, hematomas or contusions, brachial plexus injuries (LE3), and perineal hematomas. Breech presentation is associated with a higher risk of hip dysplasia (LE3), and cesarean delivery does not appear to protect against it (LE3). After exclusion of fetuses with congenital malformations, breech, compared with cephalic, presentation does not appear to be associated with a higher risk of cerebral palsy (LE3).

3. External cephalic version and other techniques for turning fetuses from breech to cephalic presentation [5]

Attempting to turn the fetus by external maneuvers, specifically external cephalic version (ECV), is associated with a reduction in the rate of breech presentations at delivery (LE2) and in the cesarean rate (LE3), without any increase in either maternal morbidity (LE3) or severe perinatal morbidity (LE3). In particular, attempted ECV does not appear to increase the risk

of in utero fetal death, compared with expectant management (approximately 0.5% in both cases) (LE3). Women with a fetus in breech presentation should therefore be informed that ECV can be attempted (professional consensus). Nonetheless, its success rate varies greatly between studies and is usually below 50% (LE3).

ECV must not be attempted in situations that justify a planned cesarean for a reason other than breech presentation (professional consensus). Routine screening for cord loop is not recommended before attempted ECV (professional consensus). A previous cesarean or other uterine scar is not a contraindication to attempting ECV (professional consensus).

Attempted ECV before 37 weeks, compared with at or after that gestational age, increases the likelihood of cephalic presentation at birth (LE2) and slightly augments the risk of moderately preterm delivery (LE2). ECV should be attempted starting at 36 weeks of gestation (professional consensus).

The principal factors related to its success are multiparity (LE3) and the absence of maternal obesity (LE3).

ECV should be attempted only in settings where a cesarean can be performed in emergencies (professional consensus). Severe maternal complications (<1%), placental detachment (on the order of 1/1000), and emergency cesareans are rare (<1%) in the immediate aftermath of ECV attempts (LE3).

The use of intravenous tocolysis (β mimetic or atosiban) during an ECV attempt improves the success rate (LE2), increases the rate of cephalic presentation at the start of labor (LE2), and reduces the cesarean rate (LE2). It should therefore be used for ECV attempts to increase their success rate (Grade B). On the other hand, hypnosis during ECV attempts does not appear to

be associated with a higher success rate (LE4) and is therefore not recommended for this purpose alone (professional consensus).

Because attempted ECV is associated with a transient rise in fetal heart rate (FHR) abnormalities (LE3), FHR should be recorded before and during the attempt and for 30 minutes afterwards (professional consensus). On the other hand, no data justify a recommendation to record FHR at any time not immediately before or after this attempt (professional consensus). Because of the low risk (<0.1%) of a significantly positive (>30 mL) Kleihauer test (LE3), routine performance of this test after an ECV attempt is not recommended (professional consensus). Close attention should be paid to RhD alloimmunization prophylaxis for women with RhD-negative blood, in accordance with the CNGOF guidelines.

The following methods have not been shown to be effective in reducing the number of breech presentations at birth (LE2): acupuncture, moxibustion, or postural methods, specifically the knee-chest position and supine hip elevation (also known as Indian bridge). They are therefore not recommended (Grade B).

4. Risks and benefits for the child in a planned trial of labor compared with planned cesarean delivery for breech presentation at term [6]

In cases of breech presentation at term, a trial of labor is associated with a higher risk of a composite outcome including perinatal mortality or severe neonatal morbidity than among infants with planned cesarean delivery (Term Breech Trial [7]) (LE1). Nonetheless, a large prospective observational study in France and Belgium (PREMODA [8]) did not observe this increased risk (LE2).

Trial of labor of a breech presentation at term is associated with a risk of perinatal mortality around 1‰ (LE3). This risk may be lower — but not zero — for planned cesarean deliveries (LE2). Compared with a planned cesarean, a trial of labor is associated with higher risks, on the order of 1% (LE3), of neonatal trauma — mainly clavicle fracture and perineal hematoma — as well as of a 5-min Apgar score < 7 and neonatal intubation (LE2). On the other hand, no differences have been found between trial of labor and planned cesarean delivery for neurological development at 2 years (LE2), psychomotor and cognitive development between 5 and 8 years (LE3), or intellectual ability in adulthood (LE4).

No specific comparative data for breech presentation by mode of delivery allow an assessment of the risks of allergies or metabolic disorders, or of perinatal morbidity and mortality in subsequent pregnancies. Nonetheless, and independent of fetal presentation (cephalic or breech), cesarean delivery is associated with a higher risk of asthma in children up to the age of 12 years, as well as of obesity during both childhood and adulthood (LE2). In a subsequent pregnancy, the risks of in utero fetal death and preterm delivery are higher when the preceding delivery was cesarean rather than vaginal (LE2).

5. Maternal risks and benefits for planned cesarean compared with planned trial of labor in breech presentations at term [9]

Only one randomized controlled trial — the Term Breech Trial — is available for the study of maternal complications according to the planned mode of delivery for a fetus in breech presentation at term, and it is limited by its lack of power to study maternal complications. This trial showed similar rates of short-term maternal morbidity for both modes of planned delivery (LE2). The most recent population-based studies, which include mainly fetuses in

cephalic presentation, report similar results, that is, similar severe maternal morbidity for planned cesareans and trials of labor (LE3).

The Term Breech Trial showed that at 3 months postpartum the risk of urinary incontinence and perineal pain after a planned cesarean was lower than after a trial of labor, but the risk of abdominal pain was higher (LE2). There was no difference in maternal morbidity at 2 years postpartum between the two groups in this trial (LE2).

For outcomes of subsequent pregnancies, the studies, which again have mostly included women with a fetus in cephalic presentation, have shown that a previous cesarean exposes women to serious risks of uterine rupture, placenta accreta spectrum disorders, and hysterectomy (LE2).

Accordingly, in the case of singleton pregnancies with a fetus in breech presentation at term, the risks of severe short- and long-term maternal complications appear similar after a trial of labor and a planned cesarean delivery, as long as subsequent pregnancies are not considered. Nonetheless, during a future pregnancy, a previous cesarean puts women at risk of severe complications (especially placenta accreta spectrum and uterine rupture).

6. Selection criteria for trial of labor [10]

The factors considered to be maternal, obstetric, placental, or fetal contraindications to trial of labor with cephalic presentations should also be considered as such for breech presentations (professional consensus).

Women who want a trial of labor at term should be offered specific pelvic measurements to enable a joint decision about mode of delivery (Grade C), because these measurements, although they do not modify the global cesarean rate, do make it possible to reduce the risk of cesarean delivery during labor (LE3), as the rate of cesarean before labor will be increased, the rate of cesarean during labor will be reduced. The pelvimetry standards in effect during the PREMODA study set cutoff points for the anteroposterior (conjugate) diameter of the pelvic inlet (between the pubic symphysis and the sacral promontory) at ≥ 105 mm, for its transverse diameter at ≥ 120 mm, and for the interspinous diameter at ≥ 100 mm. Nonetheless, no evidence justifies either a decision about which pelvic measurements are most useful or what decision cutoffs to apply to them, other than those set in published studies. Accordingly, the cutoffs chosen can be modulated according to gestational age at delivery or fetal biometry (professional consensus). The theoretical carcinogenic risk associated with in utero exposure to ionizing radiation makes pelvimetry by Magnetic Resonance Imaging (MRI) preferable to x-rays; if MRI is unavailable, computed tomography should be chosen (professional consensus). No evidence supports a recommendation for pelvimetry for deliveries before 37 weeks (professional consensus). For unexpected breech presentations (not recognized before labor), the lack of pelvimetry does not by itself contraindicate a trial of labor (professional consensus).

The available data are insufficient to decide whether the routine estimation of fetal weight and/or biparietal diameter should be used as criteria for trial of labor. Nonetheless if fetal weight has been estimated before birth at more than 3800 grams, a cesarean should be preferred (professional consensus). Breech presentation is not a per se contraindication to a trial of labor of small-for-gestational age fetuses (professional consensus). Compared with a frank breech presentation, a complete breech presentation at term is not associated with a

higher risk of perinatal morbidity in trials of labor (LE3). A complete breech presentation is therefore not a per se contraindication to attempted vaginal delivery (professional consensus), even though it is associated with an increased risk of cesarean delivery during labor (LE3). Current data do not allow any recommendation of one mode of delivery rather than another for preterm births of fetuses in breech presentation (professional consensus). It is recommended that the absence of hyperextension of the fetal head be verified by ultrasound before a trial of labor (professional consensus) and that a cesarean be performed if the head is indeed hyperextended (professional consensus). A previous cesarean is not a per se contraindication to the trial of labor for a fetus in breech presentation (professional consensus). As nulliparity is not associated with a higher risk of severe perinatal morbidity (LE3), a planned cesarean should not be proposed only because of nulliparity (Grade C), even though it is associated with a higher risk of failure than among women who have already had a vaginal delivery (LE3). Rupture of the membranes at term before labor is not a per se contraindication to a trial of labor (professional consensus).

7. Information and organization for breech presentations [11]

The information provided by the obstetric team of the maternity ward where the woman is planning to give birth is an essential part of obstetric care. It is crucial that women clearly understand the information they are given; this may sometimes require recourse to an interpreter. The mode of delivery will be decided jointly by the woman and the obstetrician.

This information must cover the topic of external cephalic version, the principal objective of which is to reduce the use of cesarean deliveries without increasing severe maternal and perinatal morbidity. Any physician or team not certain to have mastered the skills for

performing ECV must offer to refer the woman to another professional (professional consensus).

This information must also describe the short- and long-term risks and benefits of planned cesarean delivery compared with a trial of labor for both mother and child. It must also set forth the circumstances that must be met for vaginal delivery of a breech presentation: this delivery must take place in a maternity ward with continuous monitoring available as well as an obstetrician present during the delivery, in view of the frequent need for maneuvers. The woman must be warned of the possibility that the planned management may be changed according to the situation. For example, a trial of labor may be selected if the woman comes in before the date set for a planned cesarean and is in rapid or very advanced labor. This situation must be envisioned with the woman before the birth.

Finally, this information must appear in the obstetric file, together with the strategy chosen in the shared decision (professional consensus). An information form for women is proposed as Appendix B.

Breech births must take place in a maternity ward where an immediate cesarean can be performed if necessary. The maternity ward must have a protocol describing the specific conditions to be met to conclude that a trial of labor is appropriate for the woman and defining the procedures for the management of labor. A physician or team not certain to be able to support a woman who wants a trial of labor must offer to refer her to other professionals more familiar with this management rather than referring her directly for a planned cesarean (professional consensus). Similarly, if the woman wants a trial of labor when the team considers that this option is inappropriate for her, a second opinion must be suggested (professional consensus). If a woman wants a planned cesarean delivery after being fully

informed by an obstetrician, even if she meets the criteria for a trial of labor, her decision must be respected (professional consensus).

The obstetrician on call onsite will be alerted to the woman's admission to the maternity ward so that he or she can provide her with additional information if necessary and can review and verify the mode of delivery selected, even though it is clearly documented in the obstetric record (professional consensus). The delivery must take place in the presence of an obstetrician and with an anesthesiologist and a pediatrician immediately available at the final stage of fetal expulsion (professional consensus). An instrument intended to help to release of the fetal head (forceps or spatulas) must be available in the delivery room (professional consensus).

8. Vaginal delivery for breech presentations [12]

Only low levels of evidence support recommendations for the management of labor and delivery.

Breech presentation at term is not a contraindication to the induction of labor when the criteria for vaginal delivery are met (Grade C), given the absence of evidence that induction of labor of a fetus in breech presentation at term is associated with higher perinatal morbidity than either spontaneous labor or planned cesarean delivery, including for an unfavorable cervix (LE3). The cesarean rate is nonetheless higher for women whose labor is induced than for those in spontaneous labor, especially when the Bishop score is low (LE3). Oxytocin or prostaglandins can be used when labor is induced (Grade C). Insufficient data are available to allow recommendations about the use of the transcervical balloon to induce labor for breech presentations.

Epidural analgesia with lower concentrations of local anesthetics, as in the case of cephalic presentation, must be encouraged for trials of labor (professional consensus). Trial of labor is not contraindicated by either a contraindication to epidural analgesia or the woman's choice not to use it (professional consensus).

Continuous FHR monitoring is recommended (professional consensus). The use of second-line methods of fetal monitoring is not recommended (professional consensus).

The PREMODA study reported the following information about the course of labor for women with vaginal deliveries of fetuses in breech presentation: i) for the first stage (latent and active phases), only 3.8% of women had one episode of failure to progress lasting at least 2 hours, and 0.8% had at least two such episodes; ii) a duration of the active phase of the first stage of labor (dilation between 5 and 10 cm) lasting 7 hours or more was observed in only 1.4% of cases (LE3); iii) amniotomy and/or oxytocin administration were possible in cases of labor dystocia; iv) the overall duration of pushing (expulsive efforts) was less than 30 min in 94% of the cases.

Accordingly, amniotomy and oxytocin administration are possible in cases of labor dystocia. In the absence of engagement after 2 hours at full dilation and after correction of potential dystocia, cesarean delivery should be considered (professional consensus).

It is preferable to begin pushing when the fetus is engaged as low as possible in the pelvis (professional consensus). Pushing should not begin for a breech presentation that is not engaged (professional consensus). Breech presentation is not an indication for episiotomy (professional consensus). Total breech extraction of a non-engaged singleton fetus should not be performed (professional consensus). The available data are insufficient to recommend choosing as interventions for release of the shoulders and the fetal head either spontaneous

expulsion without intervention or the routine performance of maneuvers (professional consensus), or to recommend any one maneuver rather than another (professional consensus). Vacuum assistance for delivery of a frank breech presentation is not recommended (professional consensus).

The insufficiency of the data prevents any recommendations for specific procedures for the preterm delivery of fetuses in breech presentation.

Conclusions

For breech presentations at term, mother and child are at low risk of short-term severe complications, regardless of whether a trial of labor or a cesarean has been planned. The short-term benefit/risk ratio for the child can be favorable to planned cesarean delivery, but the mode of delivery does not appear to modify long-term morbidity (professional consensus). The long-term benefit/risk ratio for mothers is better for a trial of labor, especially if she plans future pregnancies (professional consensus).

The expert advisory group of the French National College of Gynaecologists and Obstetricians consider that a trial of labor is a reasonable option in most cases (Professional consensus).

The choice of the mode of delivery must be shared by the woman and her doctor. After complete information, the woman's choice — whether the women want a trial of labor or a planned cesarean — must be respected (professional consensus).

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Appendix A

A.1. Steering committee

E. Verspyck, président (obstetrician-gynecologist, CHU, Strasbourg), L. Sentilhes, coordinator (obstetrician-gynecologist, CHU, Bordeaux, CNGOF), T. Schmitz (obstetrician-gynecologist, APHP Robert Debré, Paris, CNGOF) MV. Senat (obstetrician-gynecologist, CHU, Le Kremlin-Bicêtre, CNGOF), S. Baumann (CNSF, Collège national des sages-femmes de France).

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A.3. Peer reviewers

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Appendix B

This information form is intended for women/couples with a child still in breech presentation at and after 36 weeks of gestation. A fetus is said to be in breech presentation when he or she presents buttocks or feet (or foot) first, rather than head first. It provides information to enable the mother or couple to have a fruitful discussion with the health care team.

Is this frequent?

Breech presentation is very frequent during the second trimester of pregnancy. Later, most babies pivot spontaneously into a head-first position. In the ninth month, only around 3% remain in breech presentation.

What should be done if the child remains in this breech presentation after 36 weeks?

The healthcare professional will describe the different ways to manage this:

- Perform external cephalic version (ECV), that is, maneuvers of the exterior of the mother's body, to help the infant pivot into a head-first position.
- Support an attempt to give birth vaginally
- Or plan a cesarean delivery

Why envision an ECV?

This maneuver reduces the number of children who will remain in a breech presentation. When it is successful, it makes it possible to reduce the use of cesarean deliveries.

How does external cephalic version work?

The doctor tries to make the child pivot — turn upside down — manually, by exerting pressure on the mother's abdominal wall. This maneuver takes place at the maternity ward but

it does not require hospitalization: you normally go home after the procedure. It is most often performed around 36-37 weeks of gestation. A drug that relaxes the uterus can be administered several minutes before the maneuver to facilitate the baby's rotation. Verification of the baby's position and recording his or her fetal heart rate (monitoring) take place right before and after the procedure. The maneuver takes several minutes. It can cause discomfort and even, but more rarely, pain. You should return to the maternity ward if you experience bleeding, pain, contractions, loss of fluid, or a reduction in fetal movement after this maneuver. Women who are Rh-negative may need an injection of immunoglobulins. If the maneuver fails and the breech presentation persists, the professional might suggest another attempt in the days to come.

Is ECV dangerous?

There are usually no complications to ECV. In very rare cases (less than 1%) a cesarean can be necessary immediately after the procedure because of bleeding or modifications of the fetal heart rate. ECV can be performed even if you have already had a cesarean.

What is the success rate for ECV?

Generally, the success rate appears to range from 30% to 50%. It varies substantially between hospitals and is higher among women who have previously given birth. It can happen that a child rotates back to breech position after a successful ECV but this is quite rare (less than 5%).

What happens if the baby remains in breech presentation after the ECV?

Most often, the child will stay in breech position until delivery. In that case, it is necessary to consider either a trial of vaginal delivery in breech presentation or a planned cesarean

delivery. Both of these alternatives have advantages and disadvantages for you and your child, in both the short and long term. It is therefore necessary to discuss this on a case-by-case basis with your obstetrician. In both cases, the risks of short-term severe complications for the child and the mother are low, unless the mother wants subsequent pregnancies. Nonetheless, the French National College of Gynaecologists and Obstetricians considers that a trial of vaginal delivery is a reasonable option in most cases.

If a vaginal delivery has been planned, it can happen that a cesarean is finally necessary, as it can be for any birth, because labor is not progressing correctly or due to a fetal heart rate anomaly. If a cesarean has been planned, it is nonetheless possible that labor will start before that date. This situation can also lead to changing the decision and going ahead with the vaginal delivery, especially if the birth seems imminent.

What happens during labor with a fetus in breech presentation?

You will be cared for by the maternity ward team, like the other women in the delivery room. Your child's breech presentation will be confirmed and the possibility of vaginal delivery reevaluated by the obstetric team. The fetus will be monitored by continuous heart rate recording. You will receive epidural analgesia if you want it. It is advisable, however, because it facilitates obstetric maneuvers during delivery or a cesarean during labor, and both of these are more frequent than when the child has a cephalic presentation, that is, is head first. The obstetrician will be at your side during the birth and an anesthetist and a pediatrician will be easily available.

If a cesarean is planned, the obstetric team will explain what will happen to you.