

Course Name :An Overview on Maternal Health Antenatal, Intranatal and Postnatal Care

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Clinical course of Labour

Good morning students. I welcome you all to today's session for the NPTEL online certified course for the topic and overview on Maternal Health, the Antenatal, Intranatal and Postnatal Care. I am Doctor Barnali Ghosh, an Obstetrician and Gynecologist working as Assistant Professor at B.C Multispeciality Hospital and Medical Research Centre, IIT, Kharagpur. Today, we are going to discuss regarding the clinical course of normal labour. In the previous class, we have discussed the mechanism of normal labour and the steps involved that is starting from descent, engagement, descent, then your internal rotation, then the delivery of the head by extension, restitution or your relieving of the torsion in the neck following the delivery of the head, then external rotation and followed by delivery of the shoulders and the trunk bilateral flexion. So, that was the mechanism of normal labour.

Today, we are going to discuss the clinical course, right. So, normal labour we know that it has been divided into four stages and starting from first stage to the fourth stage, we will discuss the slow and stepwise progression of labour, right. So, the concepts covered in today's class will be the clinical course of normal labour and the latent and active phase of first stage of labour following which it will progress to the second stage of labour and ultimately the course of third stage of labour. The keywords are as given.

So, coming to the clinical course and monitoring of labour. So, from here you should first just by the word monitoring and the clinical course of labour, we should know have in our mind that labour means onset of uterine contraction, onset of regular rhythmic uterine contractions that are associated with cervical dilatation and effacement. So, this denotes the onset of labour, right, following which the different stages of labour will slowly progress. So, coming to the first stage of labour. So, first and foremost is the diagnosis of the onset of labour, right.

So, first you have to diagnose the onset of labour when the mother or the antenatal mother comes to the clinic with say pain lower abdomen in the later stages of pregnancy at term or around term. You have to first examine and you know assess whether the labour has already started or not whether it is a false labour pain or a true labour pain and we know the differences

of false labour pain which are you know vague lower abdominal pain without any radiation of the pain to the thighs. Also it is not associated with cervical dilatation, not associated with cervical effacement, not associated with any show or blood mixed mucus discharge per vagina and it primarily gets relieved with sedation with mild analgesics or enema. So, that is false labour pain and if the patient is in false labour pain she should be monitored and if her as well as the fetal status is reassuring you need to counsel the mother as well as the party or the you know husband accompanying person with her that yes the labour process has still not started and you may take her home and you know this is a false labour pain and in say 4 to 5 days time the true labour pain will start when she will again have to visit the clinic. Now coming to the true labour pain.

So, true labour pain is actually associated with the onset of labour which is rhythmic regular uterine contraction which are gradually increasing in intensity as well as frequency as well as in power right. So, frequency, intensity, pain, duration all increases with the onset of labour and this pain mostly radiates towards the thighs it is associated with show that is blood mixed mucus discharge per vagina also associated with cervical dilatation and effacement and it is not relieved with sedatives. So, this marks the onset of first stage of labour and it continues till the full dilatation of cervix. So, till full cervical dilatation and what is that full cervical dilatation that is equal to 10 centimeters. Now, this first stage of labour has been divided into two parts the latent phase and the active phase.

Latent phase according to WHO latent phase continues from the onset of labour till cervical dilatation of 5 centimeters right. ACOG says that yes latent phase will continue till 6 centimeter of cervical dilatation right. So, different WHO has its definition ACOG has its definition we will take for the time being cervical dilatation of 5 centimeter to be the latent phase and this during this latent phase there is slow right this latent phase you know mostly the mother you know is checked for her vitals as well as the fetus is assessed and if both are reassuring we will know we will let the mother be at her own. We will allow spontaneous progression of labour without any intervention right and what is no active phase active phase is after 6 centimeter more than if you go by ACOG it is more than 6 centimeter of cervical dilatation to 10 centimeter right and as per WHO from 5 centimeter to 10 centimeter. So, this is the active phase and why active because during this phase there is no more cervical dilatation more effacement and also it is associated with fetal descent.

So, that is active phase and to note here this active phase after the start of the active phase we start to plot the partograph tracing in the labour room right and latent phase yes we know it is from the onset to 5 centimeter cervical dilatation and in this phase you know the mother is asked to be ambulatory the mother you know can have position of her choice she can lie down in the left lateral position she can sit in upright position or she can walk. She will not take heavy meals not take heavy meals and she should ideally be admitted in the hospital. So, and in

antenatal ward so, not in the labour room, but in the antenatal ward the mother is admitted and she is allowed to progress from latent phase to active phase. In active phase mother is shifted to the labour room and IV access to be made and also frequent monitoring of both mother and the fetus is required. So, that is for active phase.

Now coming to the course of the latent phase and the active phase. So, here you plot time and here the cervical dilatation this red color is the cervical dilatation and this is for the fetal presenting part descent right. So, it can be divided into 3 parts the preparatory phase, the dilatation phase and the pelvic phase right. So, from here itself you can see that the preparatory this is the latent phase, this is the latent phase right. Latent phase meaning from the onset till 5 centimeter of cervical os dilatation and preparatory phase actually includes both the latent phase and a part of the active phase.

So, this from here active phase starts and a part of the active phase is also included in the preparatory phase this part this yellow color and this is the period of this is the acceleration sorry acceleration. So, I have already told why active because there is more cervical dilatation. See the cervical dilatation curve was slowly slowly progressing in the latent phase as soon as it enters the active phase this curve is now very steep this part has become very steep. So, this is the active phase and this again can be divided into the phase of acceleration the first part this is the maximum slope phase of maximum slope and here the curve slightly decreases the rate of increase in dilatation per second slightly decreases. So, this part this part this part is called as the deceleration phase.

Deceleration phase maximum slope and the deceleration phase this 3 this yellow part together is the active phase of first stage of labor. So, here there is full cervical dilatation that is 10 centimeter of cervical os and then this part is the second stage which will start from full cervical dilatation till the delivery of the baby. So, baby gets delivered at this second stage right. So, I suppose you are understanding that is the curve right and from this curve we can deduce a lot of many things. So, just you know in a natural preparatory phase I have told it includes the latent phase plus the acceleration phase of the acceleration slope of active phase of first stage.

Coming again to the dilatation phase. So, this is the dilatation phase dilatation phase includes the maximum slope of active phase and pelvic division actually includes the deceleration slope plus the second stage of labor right. So, here delivery of the fetus occurs in second stage and these two together this will be associated with fetal descent. Again from this curve you can appreciate see the descent was not occurring descent was not occurring and then immediately after when it enters the pelvic division there is descent of the fetal head right and it will be delivered at the end of second stage. So, descent is accompanying the pelvic division of the course of labor.

So, this is the Friedman's curve. Here what I have been telling yes the latent phase this is actually the cervical dilatation plotted against time. So, first part of the first stage of labor first stage this together this whole part is the first stage of labor which starts from the cervical dilatation from the onset of labor till full cervical dilatation that is 10 centimeters of external os right. In full dilatation of cervix there is no difference between the external os as the and the internal os because I have told that the cervix is fully taken up by the lower uterine segment above and it becomes a thin rim like structure right and full dilatation meaning this cervix now the cervical opening will measure about 10 centimeters. So, this is the first stage and this first stage can be divided into the latent phase and the active phase.

The latent phase will start from the cervical dilatation up to 6 centimeter right 6 centimeter of cervical dilatation then will come the active phase and this active phase has 3 parts in the curve that is the acceleration phase the phase of maximum slope and the deceleration phase and at the end of the second stage the cervix is fully dilated and this is the second stage where there will be the delivery of the fetus right. So, this is the second stage now coming one by one to the duration what is the duration of latent phase? What is the duration? Latent phase is just onset of labor. So, the duration can vary it will vary from mother to mother and also you know if the mother has previous pregnancies that will also vary in one pregnancy the latent phase may be of 8 hours duration in the next pregnancy the latent phase may be above 4 hours duration. So, what is the maximum duration? Maximum duration of latent phase in nulliparous. Nulliparous meaning in primigravida right.

So, we cannot tell a pregnant mother to be nulliparous she is primigravida that means, she is first time pregnant right. So, primigravida it is 20 hours maximum duration is 20 hours and in multigravida that means, they are they have a previous pregnancy at least one previous pregnancy for them the for latent phase is 14 hours. So, point here is just after the onset of labor we are you know we are very gentle we will not intervene unnecessarily we will just monitor. So, just monitor no active intervention these are very important because we need to just assess fetal and maternal well being and allow spontaneous progression of labor. So, we need to wait if there is say in the first 2, 3, 4 hours there is no progression of labor.

Mother has come with 2 centimeter cervical os dilatation on the point of admission and then say after 4 hours when we reassess we see that yes the cervix is still no 2 to 3 centimeter dilated. So, there is no less progress, but that does not mean you need to give some drugs because we know that the maximum duration can be of 20 hours. So, if it crosses 20 hours that means, that is prolonged if more than 20 hours or more than 14 hours in multigravida this is prolonged latent phase and in this case this will hint towards cephalopelvic disproportion right. So, in these cases we need to assess right whether it is cephalopelvic disproportion or whether it is hypotonic uterus whether the uterine contractions are less right. So, we need to augment the uterine contractions in that case, but that will be after the you know permissible time limit.

So, that is regarding the latent phase. Now coming to the active phase, active phase I have told that yes here the degree or the rate of cervical dilatation and effacement is very much higher than the latent phase. Here the uterine contractions increase and you know cervical dilatation has already been cervical dilatation is already more than 6 centimeters right. So, if we go by WHO it is more than 5 centimeters right. So, now, the you know active phase the duration will be 1.2 centimeter per hour. Cervical dilatation of 1.2 centimeter per hour in case of primigravida and 1.5 centimeter per hour in case of multigravida right. So, this is the rate of cervical dilatation in active phase of first stage of labour. And in this active phase I have told active phase has 3 parts the acceleration slope, the maximum then the maximum slope and then the deceleration right.

So, it has 3 parts and the fetal descent, descent begins in the later stages of active phase right active dilatation or active phase in the later stages. That means, in the deceleration slope there will be fetal presenting part descent right. And mostly it has been seen that it occurs at 7 to 8 centimeters of cervical dilatation in nulliparous and the descent is most rapid after 8 centimeter of cervical dilatation. So, to note that first there is cervical dilatation followed by fetal descent which occurs towards the end of active phase of first stage of labour right. So, that was regarding the first stage of labour the clinical course, the latent phase, the active phase, the duration or the maximum permissible limit for the latent phase and the active phase.

And also we know now that what is latent phase, what is active phase and what to do right. So, in case of latent phase we need to be very observant, we just observe the spontaneous progression of labour. But in active phase if we see that the cervical dilatation is less than what is to be expected or say the uterine contractions are not occurring there should be uterine contractions also increase, uterine contractions also go on increasing right. So, it comes say every 1 in every 2 to 3 minutes and persists for say you know 60 to 90 seconds right more than at least more than 45 seconds. And it should be you know the intensity should be you know as high as 200 to 250 Montevideo units.

That means, when we put a palm on the uterus it should not get dipped right, it will be hard and firm and the you know when we press with finger on the uterus it will not go down it will be firm right. So, that is the uterine contraction occurring in the active phase of labour. If say there is decreased rate of cervical dilatation or say the uterine contractions are of lesser intensity as expected then we can go for augmentation of labour. We have a lecture on induction and augmentation of labour and their various drugs can be administered most commonly is injection oxytocin to augment the labour right. So, that was regarding the first stage of labour.

Now coming to the second stage, second stage starts from the full dilatation of the cervix right. That means, 10 centimeters. So, 10 centimeter cervical dilatation has already occurred and now the fetus or the baby no delivery of the baby occurs in the second stage. Expulsion of the fetus

from the birth canal to the exterior. So, this period is the second stage of labour.

What factors add to this second stage? This is the expulsive forces, expulsive maternal forces. That means, the bearing down effect of the mother. This comes into play in the second stage of labour. So, after the full dilatation there is fetal descent and now the mother will know will exert the expulsive forces. She is asked to you know to strain as during defecation and that will increase the intra abdominal muscle contraction as well as intra abdominal pressure which will aid along with the uterine contraction force to expel out the baby through the birth canal to the exterior.

And what is the duration of second stage in case of nali, no sorry prima gravida. Nullipares I am just you know mentioning like they do not have any pregnancy earlier. So, in prima gravida the duration is 50 minutes. In multigravida the average this is on an average the duration is 20 minutes. And what is the maximum permissible time? Maximum permissible time in prime it is 3 hours, in multi it is 2 hours without epidural anaesthesia.

We will also learn the labour analgesia in the coming classes. So, epidural analgesia we give during the labour process to decrease the pain experienced by the mother during the process of labour. So, if there is no analgesia given no epidural or regional anaesthesia given then the maximum permissible limit is 3 hours in prime gravida and 2 hours in multigravida for the second stage of labour. And if epidural anaesthesia is given then we add plus 1 hour. So, with epidural anaesthesia the maximum permissible limit will be 4 hours in case of prime and 3 hours in case of multi.

So, this is the second stage of labour which has 2 parts the propulsive and the expulsive part. The propulsive part is actually you know the contraction during the this second stage the uterine contractions also increase that will help to descend you know for the fetus to descend right and that will also abolish the recoil from the pelvic floor of the mother. And the expulsive force which is due to the bearing down effect of the mother which helps to helps the baby to expel out of through the birth canal out of the uterus to the outside world and this is the duration or the average time limit for the second stage of labour right. So, another thing to examine during this second stage is the descent right. So, this is done by the crichton's maneuver.

We have discussed this in the case of obstetrical examination. So, how is the fetal head descending? So, this with the examiner's hand with the examiner's hand parabdaminally we will palpate the fetal head. So, here just beneath the examiner's hand will be the fetal head when the fetus is solely inside the abdomen it has not gone below the pelvis. Now as the labour progresses the fetal head gets engaged that will go inside the pelvis and so now the examiner will palpate only a part of the fetal head because a maximum part has gone into the pelvis.

So this is the pelvic brim. So, this is the fetal head. Fetal head was above the pelvic brim and when the examiner was palpating he or she was palpating the whole of the fetal head. Now as the fetal head goes inside the pelvic inlet that is in after engagement only a part of the fetal head only a part of the fetal head can be palpated. So when less than two-fifth, two-fifth or less, two-fifth or less of the fetal head is being palpated parabdminally this suggests that engagement has taken place, engagement has occurred. So that will signify that yes the fetal descent is occurring and mostly the fetal descent occurs during the second stage of labour.

So assessing fetal descent this is by parabdminally. Another method is by parvaginal examination right parvaginal examination how by assessing this is the pelvic sidewalls and here is the fetal spine right. So when we go for a parvaginal examination blow down we go up and we palpate the fetal skull right. So when the fetal skull say this is the fetal skull when we palpate the fetal skull at the level of ischial spine this is station 0 right. Above it is you know 1 centimeter above is minus 1 station minus 2 minus 3 minus 4 minus 5.

So this is the pelvic brim minus 5 station. So when the fetal head is at the level of the ischial spine at the level of ischial spine that means station 0. Here it is said that the fetal head is engaged right. If it is plus low down say fetal more descent has occurred more descent has occurred more descent has occurred and say it is plus 1 or plus 2 then also the fetal head is engaged. So this is by parvaginal examination and this is by par abdominal examination right two methods to be assessed the fetal descent in second stage of labor.

So second stage we have completed. So we know what is second stage what is the course what is the factors operating in the second stage and what is the average duration as well as the maximum duration permissible in the second stage. Another thing I want to add here only say when know you have the cervix fully dilated and the second stage is prolonged that is it is not the delivery has not occurred within say 3 hours. So what to do? So then the second stage is prolonged. So if it is more than 3 hours then we go for instrumental vaginal delivery right what that means, with forceps or vacuum.

Forceps is preferred. So to cut short the second stage prophylactically we can also apply forceps as in case of heart disease in the mother or sometimes we can also use forceps in prolonged second stage when the mother is getting dehydrated the mother is not able to push the fetus then we can use forceps provided there is no cephalopelvic disproportion. The fetus is in good condition the cervix is fully dilated it is you know cephalic presentation occiputo anterior and an average sized baby then we can go for instrumental vaginal delivery. So that was the second stage coming to the third stage. Third stage is from the birth after the birth of the baby till the expulsion of the placenta and membranes outside the uterus. And here normally or traditionally the duration is 15 to 20 minutes if you leave as it is then after the delivery of the fetus the uterus I have all discussed in this the uterus will decrease in size it was like this and

slowly slowly slowly the uterus decreases in size right.

So, uterus being an elastic organ it will decrease in size, but the placenta which was attached to the uterus right. So, this is the placenta say. So, the placenta which was attached to the uterine wall during pregnancy that cannot that is not elastic. So, uterus wall is getting decreased in size and there will be no folding of the placenta. So, folding of the placenta and this folding of the placenta you know it will buckle up around itself and this will lead to separation of the placenta from the uterine wall right.

So, that traditionally the time is 15 to 20 minutes, but in case of active management of third stage of labour if we use or we actively intervene this active management of third stage of labour this duration decreases to 5 minutes right duration of third stage of labour also it is associated with less blood loss right. So, this is the third stage and what is active management? Active management here I will write two words controlled cord traction. Controlled cord traction number 1, number 2 is oxytocin 10 units oxytocin IM injection right. These two things are routinely done now a days in active management of third stage of labour. So, that was the third stage now signs of placental separation you all know number 1 uterus becomes I have already told.

So, uterus is decreasing in size it is gradually decreasing. So, uterus now becomes contracted right. So, uterus is after the delivery of the baby the uterus is decreasing in size uterus is contracted globular hard or firm inconsistency and it sits right. So, say this is the uterus the uterine fundus will sit over the placenta like a dome. So, this is the placenta which has separated from the uterine wall and this uterus sits over the placenta in the lower segment like a dome. So, uterus is felt like a globular mass and the fundus, fundus is at the level of umbilicus this is per abdomen right.

Per vaginal you will see gush of bleeding due to separation of placenta there will be bleeding per vagina and number 2 is permanent lengthening of the cord. So, the cord also comes out and this cord will not recede back even if you push the uterus above even if you push the uterus above the placental cord which has come out of the vagina will not go inside because the placenta has already separated from the uterine cavity. So, this is called as permanent lengthening of the cord and it the sign is called as Kustner's sign. So, this is per abdominal this is per vaginal another thing is maternal shivering maternal shivering right sometimes occasional hypotension occurs following placental separation. So, these are all signs of placental separation and lastly is the fourth stage which is after the third stage that is after the expulsion of the fetus after the expulsion of placenta from the birth canal one hour, one hour of observation this is only to determine the well being of mother and the baby right.

Any complication in the first one hour following the delivery should need to know should

requires prompt action both from the obstetrician as well as from pediatrician point of view and so this one hour is of prime importance and it is called as the fourth stage of labour where the mother is still kept in the labour room right. So, that was all and lastly coming to the labour duration as a whole the mean length of first and second stage of labour approximately is 9 hours in case of prime gravida without regional anaesthesia that means, without epidural anaesthesia and the 95th percentile or the upper limit is 18.5 hours. The same in multipara the mean duration is 6 hours right. So, here it was 9 hours here it is 6 hours and maximum it can be 95th percentile value is 13.5 hours. Following last point is the place of delivery where the delivery should occur depends upon the complications associated with pregnancy with mother as well as fetal status right. So, if there is any fetal compromise we need a good NICU facility, we need you know if the mother is compromised say there is PIH, eclampsia, heart disease or any kind of thrombophilia or anemia or associated autoimmune disease we need an ICU facility right or a tertiary care facility where 24 hours blood bank cesarean section all these resources are available right. So, if referral is at all needed referral should be done, referral should be done before the onset of labour, referral before the onset of labour ideally right. So, before the onset of labour you know the patient should be examined very minutely and if any complications is seen it will be dealt with and if it and the if the know the setup is not well equipped to handle the pregnancy the mother should be transferred to the higher centre immediately.

So, that was all for today's class. References are taken from D.C Dutta book of obstetrics, Williams obstetrics, James book on high risk pregnancy and also Oxorn- foote right. So, that is a very good book on labour module and go through these portions and this labour the stages the duration the clinical course of labour is very very important right. So, thank you for today looking forward to our next class.