

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

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### **Intrapartum Fetal Monitoring - Partogram**

Good morning students. I hope you are all doing good. I welcome you all to today's session for the NPTEL online certified course on the topic and overview on maternal health, the antenatal, intranatal and postnatal care. I am Dr. Barnali Ghosh, an obstetrician and gynecologist working as assistant professor at B.C. roy Multispeciality Hospital and Medical Research Center, IIT, Kharagpur. Today, we are going to discuss another topic on labor module that is the intrapartum fetal monitoring of which there are two right intrapartum fetal monitoring it consists of two.

One is the partograph, another one is the cardiotocography that is the CTG or continuous electronic fetal heart rate monitoring. So, today we will discuss the partograph right. So, what are the concepts covered in today's class? The intrapartum fetal monitoring that is the partogram or the partograph or the plotting of the various parameters of the fetus as well as the mother during the process of labor on a graph paper right and thereby helping in monitoring of the mother and the fetus. The keywords are as given.

So, coming to the partograph, what is the definition? Partograph is actually a composite graphical recording. So, it is a graphical recording right of the events of labor right. So, it is a graphical tool to record or to demonstrate the events of labor. Or in other words, we can say that it is the recording of cervical dilatation as well as descent of the fetal head against duration of labor in hours. So, we assess the cervical dilatation and the fetal head descent against time, time in hours right.

So, duration of labor in hours corresponding to that we discuss or we assess the cervical dilatation. And these you know both the fetus and the maternal condition are all recorded on a single sheet of paper. This is very important because we get from that sheet of paper, we can have an idea regarding the labor events that has been occurring for that particular pregnant mother. So, what are the advantage of partograph? Number one is there is a single sheet of paper which provides the details of necessary information at a glance. Looking at the single sheet of paper, you have an idea of the previous labor events for that particular mother.

It can predict any deviation from the normal course of labor right. And if we see any deviation from the normal course, appropriate steps can be taken in time. Early intervention right, early detection and timely intervention is the aim of partograph. It gives a clear picture of normal and abnormal events during the process of labor. And there is no need to record the labor events separately, repeatedly because you already have that sheet of paper and say it has already been started to plot the labor events some 6 hours ago.

So, now you do not have to again repeatedly you know go for recording all those events which have occurred 6 hours ago because they have already been plotted on the partograph right. So, these 4 then fifth point is it facilitates handover procedure of staffs. This is very very important. This you know in case of shifting duty in the labor room or in the labor ward. So, when one shift is completed, you know that particular obstetrician will have to give a handover to the next obstetrician regarding the patients in the labor room right.

So, you know maybe she has been or the obstetrician has been examining the mother for last 6 to 8 hours. And say for the last 4 hours the dilatation of the cervix has been increased by 2 centimeter. The mother is in latent phase of labor. All these details have to be given or have to be informed to the next obstetrician. Also in case of the nursing staff, they should be well aware of each and every patient in the labor room.

So, you know these are all verbally. Verbally we convey that this patient has is having these type of labor events right. But this partograph is a record of all the events that has been going in the last few hours of labor for that particular mother. So, it saves the working time of staff against writing labor notes right in long hand. So, just a pictorial graphical representation of the events of labor can be can be portrayed on the partograph.

And that will help to assess the labor events of the mother and it also gives you know a clear picture of the total labor procedure for that particular patient that can be you know assessed by the obstetrician, by the nursing staff and all other working staff present in the labor room. So, that way partogram is very important. Now, coming to the principles of partograph, what is the how do we plot? So, there is an x axis which has the time duration in hours right. So, in x axis we plot the time and in y axis, this is the y axis here we plot two things. Now, these are the two vital events occurring during the labor process.

Number one is the cervical dilatation and number two is the fetal head descent right. So, these are plotted in the x axis say the cervical dilatation this is 0. So, 1 hour, 2 hour, 3 hour these are all in hour. And here you have centimeter cervical dilatation in centimeter, 1 centimeter, 2 centimeter, 3 centimeter, 4 centimeter. Remember partograph starts from 4 centimeter of cervical os dilatation.

So, from 4 centimeter because 4 centimeter cervical dilatation as per WHO, it is you know the start of the active phase of first stage of labor. And with the active phase we start plotting the partograph right. So, from 4 centimeter cervical os dilatation we start to plot the partograph and you know it gives a graph. We will see that there are two lines already present the alert line, the left one is the alert line and the right one is the action line. These are already plotted on the partograph.

And now you have to plot for your patient right. So, at 0th hour say her cervical dilatation was 4 centimeters. So, you have plotted the cervical dilatation by a cross. After 4 hours because we do a per vaginal examination after 4 hours always. So, after 4 hours when you see the again by per vaginal examination the cervical os dilatation you see that it is dilated to 9 centimeter right.

So, after 4 hours so, this is the this is 1 2 3 4. So, after 4 hours you see that your patient is having a cervical dilatation of 9 centimeter. So, this is the point here you put again a cross mark. So, now this curve you join these two points. So, this is the curve for your particular patient.

Now this curve is lying to the left of the alert line. So, if it lies to the left of the alert line or it lies over the alert line then it is normal. But say the curve of your particular patient rise to the right of the alert line in this area. So, this if this happens then you have to be alert you have to be more vigilant right you have to be alert. But it does not mean you need to necessarily intervene you need to more observe the patient and look for the progress of labor.

And once it touches the action line or it crosses the action line then you have to intervene. Intervene in the form of oxytocin infusion if you feel that the uterine contraction is you know less not adequate. If it is say your the progress is not you know it is slow is slow right. So, you need to augment labor in that case oxytocin infusion can be given or sometimes caesarean section need to be done. So, these are intervention done when the line or the plot you know crosses the action line.

So, this is the principle of your partograph. Another thing is you know just here I will tell this action line this plot this action line has been plotted you know as 1 centimeter per hour of cervical dilatation. So, you can see here at 4 centimeter it is 0th hour and this is full cervical dilatation 10 centimeter. So, that will be after 6 hours. So, this is 4 this is 5 and this is 6.

So, this goes the action the alert line goes you know as per 1 centimeter per hour of cervical dilatation. You know that you know in primigravida in the active phase cervical dilatation is 1.2 centimeter per hour and in multigravida it is 1.5 centimeter per hour. But you know WHO says that we should wait if it is less than 1.2 centimeter we should wait and we can wait up till you know it is 1 centimeter per hour. So, this alert line is at 1 centimeter of cervical dilatation per hour and once you cross the alert line to the right side then you have to be more cautious, more

vigilant and monitor the mother more frequently. Because it can so happen that the mother crosses the action line and what is the action line? Action line is also an imaginary line which is to the right of the alert line and it starts 4 hours. It starts 4 hours after the alert line and this line is also plotted at the rate of 1 centimeter of cervical dilatation per hour. So, these 2 lines are guiding us to note any abnormality in the labor process right.

So, these were the principles. Other things apart from cervical dilatation and fetal descent we also plot you know parity, gravida, LMP, EDD of mother, molding of fetal head, amniotic fluid color, then your pulse, blood pressure, temperature of the mother, oxytocin infusion. Now, if it is being given and at what rate it is being given all these are present in that single sheet of paper. And also urine analysis as and when the mother urinates right micturates we collect the urine and we go for urine analysis and that measurements are also plotted on the graph. So, from the single paper we get a lot of information. Now, coming to the stage of labor which is studied in partograph.

So, I have already told that you know it starts from 4 centimeter of cervical dilatation. So, say this is the onset of true labor pain and up till 4 centimeter is the latent phase and from 4 centimeter to 10 centimeter that is full cervical dilatation is your active phase. So, this period is studied in partograph right. partograph we study the active phase of first stage of labor. The second stage that is up to the delivery of the baby this is the second stage.

Then from the delivery of the baby to the delivery of placenta, expulsion of placenta right. This is the third stage and one hour after expulsion of placenta is the fourth stage these we all know, but these are not studied in partograph right. We are concerned only with the active phase of first stage of labor that is with cervical dilatation in against the duration in hours. And also we some we see the descent of the fetal head by per abdominal examination right.

So, that was partograph. In older days this is old partograph old WHO partograph I have just added it, but it is not used nowadays in older partograph the latent phase was also plotted right. So, this is the latent phase. The latent phase was also plotted right and then after see this is you know after this latent phase the active phase starts. So, both the phases were plotted, but this is the new partograph which came in picture in the year 2002. New WHO partograph where we start from 4 centimeter of cervical dilatation right.

From 4 centimeter we start and this is the alert line and the action line and this is actually the active phase of first stage of labor which is being studied in partograph right. And also I have been stressing that various other parameters are you know discussed in the partograph which we will gradually see. So, coming to the different parameters right. So, first see this is the patient information column or the patient particulars where it will be having the details of the patient.

Next we will have the fetal heart rate. Fetal heart rate it starts from 80 to 200 beats per minute and according to the fetal heart rate measurement as we get we will plot on this points. Then is the amniotic fluid, amniotic fluid color that means, you know the color of the amniotic fluid can only be evident after rupture of membranes. And if the membranes are intact then it will there will be no color. We cannot see the color of the amniotic fluid when the membranes are intact by par vaginal examination right. And with amniotic fluid we will also have an idea regarding the molding which is present on the fetal head.

Next is the very important part that is the cervical dilatation and it is plotted as X or cross right. It is plotted as X or cross and this is the fetal head descent which is plotted as 0, 0 or you know we can also shed it sometimes. So, this is the plotting of the descent of the fetal head and with cross we plot the cervical dilatation against time right. Time say if we start measuring from 6 pm we write the time here and then this is 1 hour, 1 hour, 2 hour, 3 hour, 4 hour like this we have to write right. And next will be the uterine contraction, number of uterine contraction per 10 minutes we have to assess.

Also the duration of uterine contraction, each uterine contraction for how long it is persisting right. So, over a period of 10 minutes we will know see the number of uterine contractions and also duration of each uterine contraction and as per your findings you have to plot here. Next is oxytocin if infusion is being given and in know what is the dose units per liter and also at what rate right. Now, number of drops per minute so that is oxytocin infusion. Next is drugs if it being given drugs in the form of epidocin for cervical effacement we give right.

In case there is given you know you give any type of anti hypertensive you have to write here. Any you know during the process of labor say you have been given any injection pan 40 or ondem to stop vomiting you have to write here. IV fluids if you have started IV fluid in the form of RL then also you have to write here. Next coming to the maternal vitals that is pulse which is you know depicted as point. Then the BP, BP here is depicted by an arrow and ultimately temperature. These are all the maternal vitals and lastly is the urine analysis the as and when the mother urinates we will analyze the amount of protein, amount of acetone and the volume of urine right. So, that was the total partograph.

Coming to one by one the patient information or the patient particulars which will have name, age, gravida, number of previous pregnancies very important, parity right, hospital number that is the registration number you have to write. Then is your other things also we note here that is the LMP and the EDD because from that single sheet of paper we want to have all the information LMP, EDD, gestational, age. These are also written in the patient particulars right and the date of admission when she is admitted time of admission very important and if the membranes are ruptured or not, if membranes are ruptured right if there is membrane membranes are ruptured that is plus then you have to note the time in hours. So, when it was ruptured whether it was ruptured in the morning you have to mention the time and date right very very

important. Another point is the name of the hospital where the patient has been admitted. So, these all are taken together in your patient particulars. Coming to the fetal heart rate, fetal heart rate monitoring you know that in active phase it is every half an hour right in the first stage of labour fetal heart rate this is half an hour 30 minutes.

So, this is half hour, this is 1 hour, this is 1 and half hour every this small box is 30 minutes. So, every 30 minutes you measure the fetal heart rate and it should be within 110 to 160 beats per minute. If it is less than 110 then it is bradycardia right and if it is more than 160 then it is tachycardia. And both are signs of fetal distress of which bradycardia is very dangerous and you need to go or intervene or you need to assess why there is bradycardia right.

So, that was fetal heart rate monitoring. Next is your amniotic fluid I have already told that amniotic fluid colour you can assess only when there is rupture of membranes. So, see this is C it is written as C that means, it is clear right. So, there are amniotic fluid you have 4 notifications I, I meaning intact membranes. So, you cannot note the colour of the amniotic fluid then is your clear C is clear amniotic fluid then B, B is for blood stained. In case there is any abruption of placenta right intrauterine bleeding any cause.

So, then the amniotic fluid will be blood stained and then you have to write it as B. And lastly is M, M is meconium stained right. So, meconium stain that will hint towards fetal distress right. So, these are the abbreviations of amniotic fluid. Now, coming to moulding right moulding is you know it also has different grades right and here only we write.

So, this negative or 0 negative or 0 this means that there is no moulding right 1 plus that means, there is no the skull bones are just touching each other. Skull bones are just touching each other. Then is your 2 plus, 2 plus is mild overlapping of skull bones, but they can be separated right. So, like this is one skull bone there is mild overlapping and, but they can be separated and 3 plus is severe degree of moulding.

So, severe overlapping and skull bones cannot be separated. So, these severe moulding severe grades of moulding this will hint towards cephalopelvic disproportion right or obstructed labour. So, you have to be very cautious if there is severe degree of moulding. So, this you can write here this is negative then negative and if there is some moulding you know in the later stages of first stage, later part of first stage of labour there may be some bit of for mind just touching each other the skull bones just touching each other that is also no need to worry that is also physiological right. So, that was regarding moulding. Now, coming to cervical dilation I have already told that yes cervical dilation starts from 4 centimetres.

So, you plot here at 4 centimetre and then you gradually plot it in hours. So, when the mother has come time, time is say at 6 am. So, this is 7 am, 8 am, 9 am like this it goes on right and this

hour meaning 1 hour, 2 hour, 3 hour, 4 hour, 5 hour like this it goes. And this single say this is 1 hour that means, 1 single is your half hour right I think you are understanding. So, when it starts when the mother has come to the labour room you check by per vaginal examination.

So, if it say if it is your the per vaginal examination you have done and it comes that the cervical os dilatation is 5 centimetre. So, in this just here you plot as the first examination at 6 am you have examined the mother in the labour room for the first time and it is cervical os dilatation 5 centimetre. Next per vaginal examination will be a period of after 4 hours. So, at 6 am then so, you have to do after 4 hours at 10 am. At 10 am you again do a per vaginal examination and you see that the cervical os has already dilated to 9 centimetre.

So, this is your this is your 9 centimetre here is your next plotting right and say after 1 hour only it was the head of the fetal head can be seen on the perineum that means, it is full dilated. So, this is the curve. So, this is the curve of your patient and this curve is to the left of the alert line that means, it is normal. Up to the full dilatation we will assess after that when is the delivery we will not plot here right. Up till the full dilatation of the cervix we will be plotting and the fetal head descent will also have to be plotted and that has to be plotted by per abdominal examination right.

So, this is plotted by 0 that will I will also show. So, see here this is the cervical this is the cervical plot cervical is by Crosts right. So, at 0th hour it is 4 centimeter dilatation and see this is after 4 hours after 4 hours you have found that the cervical dilatation is 10 centimeter. So, this is the graph for your patient right and this is the graph for the fetal head descent right fetal head descent. So, at 0th hour you are palpating per abdominally only 3 5ths of the fetal head then fetal head palpation you can repeat it. It is not necessary that you have to go only after 4 hours per vaginal examination should be done always 4 hourly.

Fetal head descent you can assess even earlier right. So, here you assess a little earlier at this place and you see that is at 9 am say this is am. So, 7 am, 8 am, at 9 am or 8 30 am this is actually 8 30 am. So, at 8 30 now sorry if this is the 7 this is 8 this is 9. So, this is 9 30 am at 9 30 am you assess and you feel only 2 5th of the fetal head to be palpable per abdominally right. So, that then you plot it here and next plotting will be at the end of you know at 10 30 this is 9 30 then here this is 10 :30.

At 10: 30 you see that the fetal head is at the you cannot palpate it palpate the fetal head per abdominally this is 0 right. So, this is the curve for the fetal head descent. So, from this you can say that yes the curve the cervical dilatation is to the left of the alert line that is normal. The fetal head descent is also occurring and you know within 5 hours of admission of the mother the mother the mother has completed her first stage and she has already been full dilated.

So, it is a normal progression of first stage of labour right. So, that was all this is coming to the descent, descent what I was asking that this is by per abdominal examination not per vaginal very important to note. And we calculate the number of 5ths of fetal head number of 5ths of fetal head palpable per abdomen right and this is by also called as Crichton's maneuver. You can go back and see the obstetrical examination where I have shown you how to go for the Crichton's maneuver by placing the hand on the mother's abdomen and palpating the head. And number of fingers that can be placed over the fetal head per abdominally gives the 5ths.

So, if 5 fingers are can be placed over the fetal head it is 5 by 5. If 4 fingers can be kept it is 4 by 5 part of the fetal head palpable, 3 5th of the fetal head palpable per abdomen. By that mechanism we note the descent of the fetal head per abdominally and then we plot it here. So, that was all regarding cervical dilatation and fetal head descent. Now, coming to the uterine contraction. Uterine contractions are also seen per abdominally over a period of 10 minutes, period of 10 minutes and done every half an hour right.

And you have to plot it you know by dot or by line or by completely shading and these are as per the duration of contraction. Duration less than 20 second just dots 20 to 40 seconds it is line and more than 40 seconds it is total shading right. So, like this is number of contraction in 10 minutes. So, if there is 3 contraction and all the 3 contractions are you know of less than 20 second duration then you plot it like this.

After say 30 minutes. So, it is seen every half an hour. So, after 30 minutes you again assess and again you see that yes there are 3 contractions each contraction of less than 20 second then you plot it like this again right. We have a plotting here. So, this is the all these you know in the first 2 first 1 hour this is every half an hour. So, in the first 1 and half hours it was less than 20 seconds weak contraction then the contraction duration increase to moderate 20 to 40 second. And this is you know strong contraction or adequate contraction and they are of more than 40 seconds duration and in this hour there is 5 contractions per 10 minutes 5 contraction.

So, here you have 1, 2, 3, 4 and 5 not more than 5. If more than 5 contractions are occurring in 10 minutes that means, it is a case of hyper sorry tachysystole. We do not want tachysystole right. So, we do not want the contractions to be more than 5 in 10 minutes. If it is so, then we will have to stop oxytocin, we will have to give mother RL to prevent any dehydration, we exclude cord prolapse, we ask the mother to go for left lateral position, give nasal oxygen and sometimes we administer injection terbutaline 0.5. So, terbutaline 0.25 milligram subcutaneous to prevent this tachysystole. So, that was your uterine contraction plotting. Coming to oxytocin drip you know amount of units 5 mostly we use 5 or 2.5 international units per liter right.

So, in a 500 ml NS we push 1 ampoule or 2.5 that is half ampoule of oxytocin. And what is the drops per minute? Say previously you were giving 5 drops then you after say 10 after 1 hour or 1

and a half hour or 2 hours you thought that you need to increase the drops per minute to 10 drops per minute. Now, maximum you can go to 15 to 20 drops per minute. So, slowly slowly you are increasing this oxytocin drip as and when labor progresses as a assess and you have to plot it here. Next other drugs which are given right. So, drugs like epidocin you give, for cervical effacement, you can give nifedipine or say any antihypertensive in a case of PIH mother you have to all write it down here.

IV fluids number of IV fluids bottles of RL that has been infused during the period of labor has to be plotted here right. Lastly the maternal vitals pulse, pulse is measured every half hourly. So, pulse is measured every half hourly, BP is measured every 4 hourly right. And lastly temperature, temperature is measured every 2 hourly.

So, see this is the pulse which is plotted as a dot. So, you measure it every this are these are the half hour blocks right, these are the half hour box and this is 1 hour box right. So, you measure pulse and this is your BP with an arrow. So, this is 70, this is 100. So, here you measured the BP as 100 by 70, here your BP is 120.

So, this is the upper here, this is 120 and lower is 80. So, 120 by 80 right. BP is measured every 4 hourly pulse, every half hourly and temperature you measure every 2 hourly right in degree centigrade and you plot it in the partograph. Lastly the urine analysis glucose is now not seen right. So, you see 3 parts, 3 parameters in urine as when the mother make churets, number 1 is the volume, number 2 is acetone right. And protein, why? Protein to note for any PIH right, acetone in case of dehydration right. So, ketonuria, ketosis right whether it is developing any form of ketosis in the mother due to obstructed labor you can assess from urine analysis and also the volume of urine which is being passed.

So, that was your all the parameters which are plotted on the partograph and the process or the method of plotting on a partograph. Now, we may have 2 case scenarios. Number 1 is a patient called Radha, not a patient she is a pregnant mother. Pregnancy is a physiological phenomenon we cannot call the mother a patient right. So, a pregnant female Radha 26 years 3rd gravida, 3rd gravida admitted at 5 am on 11th June with the complaint of labor pain since 2 am.

So, admission at 5 am on 11th June right. Membranes have ruptured, rupture of membrane positive at 4 am she is admitted at 5 am, membrane rupture is at 4 am date and time you have to write in the patient particulars I have told when is the time of rupture of membrane. She has 2 children. So, gravida 3 para 2 of age 5 and 2 right.

So, para 2 and on admission cervix is 2 centimeter dilated. So, cervical os is 2 centimeter. Now, the question is will we plot her on a partograph right. What is the answer? No. Why? Because she is still in the latent phase of labor and she has not entered the active phase of labor. So, when

it is you know minimum 4 centimeter of cervical dilatation then only we will start with the partograph plotting.

Next case scenario is os is 5 centimeter at 9 am right date you put it here say 11th of January. So, at 9 am the cervical os is 5 centimeter that means, she has already been entered into the active phase. Now, you have to plot a partograph. So, uterine contractions 3. So, uterine contractions 3 per 10 minutes and each lasting for 20 to 40 seconds that means, moderate right fetal heart rate 120 beats per minute membrane, structured amniotic fluid is clear BP is 120 by 70 temperature 36.

8 pulse is 80 per minute. So, these are all in writing right and see every half an hour you are measuring the fetal heart rate, every half an hour you are measuring the contractions, every half an hour you are measuring the maternal pulse and also the amniotic fluid color which is evident in per vagina. Because there are there is already rupture of membranes. So, these all are given in writing at 1 pm, 1 pm what is the scenario and then at 1 pm the cervix is fully dilated that is here it is 10 centimeter right. So, all these writings can be plotted in a simple graph right this graph I will plot it here for you.

So, just at 9 am. So, start from 9 am, 9 am, 10 am, 11 am, 12 am sorry 12 noon, 1 pm right and then again 2 pm. So, this is 1 hour, 2 hour, 3 hour, 4 hour, 5 hour, 6 hour on admission the cervical os dilatation was 5 centimeter. So, here you plot it then at 1 pm you see and at 1 pm. So, after 4 hours after 4 hours you again do upper vaginal examination right after 4 hours you see that the cervical os is fully dilated.

So, this is your graph right and you have to again go back and see yes. So, fetal heart rate was 120. So, plot it here you plot it at 120 it was first the fetal heart rate then there was no change of fetal heart rate 120, 136. So, like that you have to plot it and after you plot it you can see it is very easy to see from this graph only and assess whether it is a normal labor or not. So, the aortic fluid was clear all throughout right and there was no molding contractions you have to plot it is already given. So, 3 before it was 3 moderate then it was 3 30 seconds that means, moderate.

So, firstly there was 3 contractions and moderate, moderate meaning this line sorry. So, 20 to 40 seconds these are moderate. So, it remained 3 contractions, 3 contractions and then it became 4 at from 11 30 right it became 4 from 11 30. So, this is this is the 11 30. So, from here it became 4. So, that for till that time there were 3 contractions then it became 4 right it became 4 then you see it became 4 and it became 45, 45 seconds meaning it is adequate.

So, it will be full more than 40 seconds. So, it was full right like this you have to plot and from after you plot you can very easily say that yes this is a case of normal labor right. So, like this you have to plot contractions given and ultimately at 1 20 p m there is a spontaneous birth of a

live female infant owing 2.8 kg this you can write it here. So, spontaneous vaginal delivery at 1 20 p m birth weight 2.

85 kgs this you can write here, but we are not monitoring the second stage of labor right. We are not monitoring the second stage of labor actually we are monitoring only the active phase of first stage of labor right. So, from this plot as it is left to the alert line the labor progress is normal and ultimately she has delivered spontaneously vaginally giving birth to a 2.85 kg baby which is healthy right. So, from one single graph you get an idea of all the labor events occurring for that particular pregnant female right and you can assess any abnormality during the process of labor or any intervention that has been done during the period of labor and ultimately you know that will help to timely intervene to early diagnose any abnormality and also to timely intervene on the part of the obstetrician as well as the working staff nurses right. So, that is all and this is very important partograph plotting in the labor room for every mother in the active phase of first stage of labor right.

So, we need to know this partograph and immediate we need to know we need to read a partograph and we need to have the inference from the partograph right. So, that was all regarding partograph references mostly from D.C Dutta the book of obstetrics, Williams obstetrics 26th edition and James book on high risk pregnancy. So, thank you for your patient hearing and I hope you know you are finding interest in this labor module classes. Thank you.