

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

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Induction and Augmentation of Labour

Hello students. Welcome you all to our NPTEL online certified course on the topic an 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 Medical College and Medical Research Center, IIT Kharagpur. So today we are going to discuss regarding induction and augmentation of labour. So, we have already entered into the intranatal care that is the labour module where we have discussed the various stages of labour, the events occurring in each stage of labour, how to monitor the different stages of labour, the mechanism of normal delivery, you know the the labour analgesia.

We have already discussed also the intrapartum fetal monitoring which comprised of partogram and cardiotocography or continuous electronic fetal monitoring. So, we have already discussed the intranatal care in a detailed manner. Today we are going to discuss the induction of labour right induction as well as augmentation. So, coming to the concepts to be covered induction of labour, augmentation of labour, Bishop's score and a little bit of discussion regarding effective uterine contraction.

Coming to the keywords they are as follows right. So into the chapter proper induction of labour can be defined as initiation of uterine contraction artificially from outside we do some maneuvers right and it is done ideally after the period of viability and before the onset of spontaneous labour right for the purpose of secure vaginal delivery. So, before the onset of spontaneous labour pain we are doing certain artificial external maneuvers in the form of pharmacological administration of pharmacological agents or some non-pharmacological maneuvers which will result in the initiation of uterine contraction so as to have a vaginal delivery at the end right resulting in the birth of a healthy baby through the vagina. So now what will be the contraindications? So contraindications of induction of labour will be the contraindications of vaginal delivery because induction of labour is done with the notion that we want a vaginal delivery and now we need to terminate the pregnancy. So, we need to initiate the labour process and ultimately result in a successful vaginal delivery right and augmentation can be defined as the enhancement right enhancement of spontaneous uterine contraction both in

frequency and intensity and these uterine contractions are already present, but they are found to be inadequate.

So, it is all the onset of labour has already started there is uterine contraction, but they are inadequate and we now try to enhance or increase the uterine contraction both in intensity and frequency in augmentation of labour. Now coming to the induction of labour I have already told that any induction we have in our mind that now this mother this antenatal mother we need to terminate the pregnancy and for that we need to initiate the labour pains so as to have a successful vaginal delivery. So, the indications will be you know those cases where we try to terminate the pregnancy. So, it can be maternal causes, maternal causes in cases of post term or post dated pregnancy in other words prolonged pregnancy in case of PPRM, PPRM preterm pre labour rupture of membranes. So, as the membranes have already ruptured there is chance of infection, there is chance of chorioamnionitis, there is chance of your cord prolapse, there is chance of fetal distress and so we need to expedite the delivery and after the delivery we need to take care of the neonate right.

So, in preterm pre labour rupture of membrane in pre labour rupture of membrane at term that is PROM both in both these cases we need to induce labour or we need to go for induction of labour. Chronic disease of the mother say a mother is having APLA syndrome or there is pregnancy induced hypertension, there is gestational diabetes mellitus, there can be associated chronic kidney disease or chronic liver disease all these diseases in the mother and the mother is at term say at 37 weeks. Now we try to induce labour and terminate the pregnancy because continuation of this pregnancy will pose problems both for the mother as well as the baby. PIH and its complications, complications meaning complications of PIH, PIH is pregnancy induced hypertension. So, there can be chance of placental abruption, there can be imminent signs of preeclampsia right.

So, preeclampsia or eclampsia, it can be complicated with hellep syndrome. So, all these complications if they arise in a PIH patient we need to expedite the delivery and for that we need to go for induction of labour. Coming to fetal causes mild oligohydramnios, severe oligohydramnios we are you know routine or in our practice we do not go for vaginal delivery because it is stressful for the fetus and can lead to fetal distress. So, in severe oligohydramnios or oligohydramnios associated with abnormal Doppler we will be going for caesarean section right. So, in mild oligohydramnios with no fetal distress we can go for induction of labour.

Fetal growth retardation with reassuring CTG in the previous class we have dealt with CTG. So, when the CTG is reassuring all the parameters of the fetal heart rate as normal we can go for induction of labour. IUD intrauterine fetal death. So, in intrauterine fetal death we always try to go for vaginal delivery because caesarean section as such has its complications on the mother and caesarean section done for you know you IUFD. In a case of IUFD caesarean section if

done it will only add to the maternal morbidity because at the end of the delivery you are you are getting a dead fetus.

So, we try to go for vaginal delivery. So, we need to go for induction of labour. RH isoimmunization in RH negative pregnancy fetus is RH positive there is chance of RH isoimmunization and due to this RH isoimmunization there will be allo immunization causing fetal anemia and hyperbilirubinemia right. So, these are complicated cases. So, once fetal anemia or hyperbilirubinemia sets in we need to terminate the pregnancy earlier.

In cases of logistic reasons logistic meaning you know distance, distance from the hospital. So, mother is already at 39 to 40 weeks and she is staying you know very away from the hospital. So, she will take her longer time once the labour pain sets in there it can lead to say there will be difficulties in the road and she will take a longer amount of time to reach the hospital in that case we admit the mother at 39 to 40 weeks and we go for induction of labour. Also if there is history of rapid labour or precipitate labour that means, when the labour previously the first and second stage of labour completed within 3 hours for that particular pregnant female. So, this time there is also a risk of precipitate labour or rapid labour and in that case you cannot allow the mother to be at home you need to admit the mother and go for induction of labour.

So, these are the indications. Now coming to the contraindications. So, what are the contraindications? They are the contraindications of vaginal delivery. So, where we do not want a vaginal delivery will be the contraindications for induction of labour. Coming to the maternal causes it can be a previous classical caesarean section.

So, this is the uterus. So, any you know incision in the upper uterine segment this is the incision for classical caesarean section. Right. So, in the upper uterine segment if there is any incision given previously then this pregnancy also you know need to go for caesarean section because upper uterine segment scar can lead to scar rupture during labour in the following pregnancy. So, you cannot go for vaginal delivery.

In previous myomectomy say there was a myoma and the myoma has been excised and it was in the fundus. So, fundal myomectomy and sometimes say the myoma is large and the uterine cavity has any you know that at that time when the myomectomy was done the uterine cavity was opened right. So, if there is such history we will terminate the pregnancy by caesarean section only. We will not go for induction of labour. Previous uterine rupture.

So, there was a uterine rupture which was you know say it was repaired in the previous pregnancy. So, in this pregnancy we have to go for caesarean section. Placenta previa you know placenta previa if it is you know over the internal os placenta previa. So, placenta covering the

internal os no chance of vaginal delivery. Active genital herpes cervical carcinoma here also no chance of vaginal delivery.

Pelvic causes if there is contracted pelvis as in case of android pelvis or there is a chance of cephalopelvic disproportion the baby is macrosomic the baby is larger in size and the pelvis is you know a shorter it has shorter diameter it is contracted then there is a chance of cephalopelvic disproportion where we cannot go for vaginal delivery. Fetal causes in case of malpresentation. Malpresentation in case of transverse lie. Transverse lie it has no mechanism of labour delivery only by caesarean section. Malpresentation in case of breech.

Primi breech is an indication for caesarean section right. Malposition in brow or face presentation where the neck is extended you cannot go for vaginal delivery. So, you need to go for caesarean section. Deflects or extended head. Umbilical cord presentation you have diagnosed that the umbilical cord is present just above the internal os and it is covered by membranes right.

The membranes are still intact that is called as umbilical cord presentation. So, here this is the baby and say this cord is overlying the internal os this umbilical cord and here these are the membranes are still intact right. So, this type of presentation is called as umbilical cord presentation. Here also you cannot allow vaginal delivery because once you allow there will be chance of cord prolapse and cord compression and we will lose the fetus.

Vasaprvia. Vasaprvia also there is chance of fetal bleeding in vaginal delivery. So, in these cases we will directly go for caesarean section and we will not go for induction of labor. So, they are the contraindications. Now coming to the factors which affect the success of induction. So, what is success of induction? That means, no successful induction is vaginal delivery ultimately results after induction.

If we have to go for caesarean section after induction as a method for termination of pregnancy that means, the induction is a failed induction. And if after induction of labor ultimately there is the delivery is by vaginal delivery then it is successful right induction of labor. And what are the factors? If say the mother is multiparity with previous history of vaginal delivery that there is no CPD, no cephalopelvic disproportion, average size of the baby less than 3.5 kg, tall stature of the mother, roomy pelvis right gynecoid pelvis and normal BMI all these will help in vaginal delivery in help in successful induction. And the most important predictive factor very important this is the Bishop score at the time of induction.

So, we need to assess we need to assess the Bishop score by per vaginal examination and this Bishop score value at the time of induction is the most important predictive factor for the success of induction. What is Bishop score? This is the Bishop score. Bishop score previously

there was a original Bishop score and now we have the modified Bishop score right modified Bishop score 4 plus 1. Previously there was 4 in original and modified we have added another 1 criteria.

So, there are total 5 criteria. Number 1 is dilatation of the cervix and here the scores given are 0, 1, 2 and 3. So, depending upon the dilatation of cervix in centimeter when the cervix is closed it is 0, 1 to 2 centimeter score is 1, 3 to 4 centimeter score is 2, 5 or more centimeter score is 3. Length of the cervix here also there is one important factor this is sorry effacement effacement of cervix. So, previously we were using this term effacement, but this is very subjective. Effacement meaning that what percentage of cervix is still present I have told as the labor onset starts or during the later stages of third trimester the cervix is gradually taken up by the lower uterine segment.

So, when you go for per vaginal examination the part of the cervix that you are palpating that is effacement right. So, previously we used to call effacement if it is 0 to 30 percent score is 0, 40 to 50 percent score is 1, 60 to 70 percent score is 2 and more than equal to 80 percent effacement score is 3. But this has now changed and we have changed to length of the cervix in modified Bishop's score where we see the length of the cervix by per vaginal examination and this is also calculated in centimeter more than 4 centimeter if length is palpable then score is 0. So, as the length decreases that means, cervix is being taken up by the upper uterine segment. So, as the length decreases cervix cervical length decreases meaning you know Bishop's score is better it is more favorable for induction 3 to 4 centimeter, 1 to 2 centimeter this is less than 1 centimeter right.

At the end when the cervix is fully effaced fully taken up you cannot find you know length of the cervix, cervix is just a rim like right consistency of cervix firm medium and soft position of cervix whether it is posteriorly placed or in the midline or anterior and this one station this has this is the new term or new to the modified Bishop's score this is you know this 4 were already present this is added right station, station minus 1 minus 2 you know as per the station of the fetal head in relation to the ischial spine. So, minus 3 station score is 0 minus 2 station score is 1 minus 1 or 0 station we take the score as 2 plus 1 or plus 2 station we take the score as 3. So, by this we score right we give score to these 5 criteria and here you will write the total Bishop's score for that patient and also the date and time of Bishop's score right and this at the time of induction this score value is important. So, what is the total score? Total score is 13 and here as per the score of the Bishop's score you know this Bishop's score what is unfavorable less than equal to 5 is unfavorable. So, if it is unfavorable that means, there is less chance for success of induction of labor if the Bishop's score is 6 to 13 it is favorable right and good sign for induction or more chance of success of induction is when the score comes more than equal to 8.

So, there that means, if the score is more than 8 or equal to 8 that means, it is a good sign for

inducibility and we can predict a successful induction. Now, coming to the methods of induction there are 2 types of method pharmacological method and non pharmacological. In pharmacological we actually give 2 types prostaglandins here you can write prostaglandins and in mechanical we have dilators, we have artificial membrane stripping and number 3 is your surgical induction that means, artificial rupture of membranes ARM. So, these 3 are mechanical methods coming to the pharmacological methods. So, I have told prostaglandins prostaglandins E 2 and prostaglandin E 1 prostaglandin E 2 is also called as dinoprostone right dinoprostone and prostaglandin E 1 we all know it is called as misoprostol and to note here you know oxytocin previously it was used for induction now oxytocin is used only for augmentation.

Amniotomy that is rupture of membrane that was previously was used for induction, but now amniotomy you know not used for induction because early amniotomy there is a chance of infection. So, these 2 are the main pharmacological agents used now at recent times for induction. Coming to prostaglandin E 2 that means, dinoprostone it can be given intra cervical or intra vaginally intra cervical we give it as gel intra vaginally we give it as insert right. So, this is you know it comes in the name of Cerviprime gel and insert it is known as vaginisert or propess right. So, one is in the gel form and one is in the form of a thread gel we give intra cervical and the insert we place it in the posterior phornix of the vagina right.

So, you know if you need to know both of this intra cervical gel how many you know it contains 2 points sorry 2.5 ml of gel will contain 0.5 milligram of dinoprostone PGE sorry yes PGE 2 right. So, 0.5 milligram of dinoprostone is present it is given intra cervical every 6 hours and then we you know assess we assess whether induction has occurred.

We can repeat if induction of labour has not started we can repeat it every 6 hours repeat every 6 hours right and how many times total 3 doses total 3 doses can be given every 6 hours intra cervical the patient is made to lie down in lithotomy position and then with parts in aseptic condition we clean the vagina and then by per speculum examination or by cascosp speculum we locate the cervix and then with that gel it has an applicator we introduce the applicator inside the cervix and then we push the gel inside the cervix right. And here another point to note that after you know application of dinoprostone gel intra cervical oxytocin if needed to start oxytocin infusion if we start it should be started at least 6 hours after the last dose after 6 hours right. So, should be started after 6 hours from the last dose of PGE2 right. So, because there is more chance PGE2 will try to augment or induce labour and this oxytocin will try to augment the labour. So, there will be more uterine contraction that can lead to tachysystole or uterine hyper stimulation.

So, this is the intra cervical gel. Coming to the intra vaginal insert or vaginicert or propess it is a you know thread like it is give it is placed in the posterior fornix posterior vaginal fornix and it contains 10 milligram of prostaglandin E2 and release is at the rate of 0.3 milligram per hour.

And this vaginocert can be kept for 12 to 24 hours in the vagina after that it has to be removed or it can be removed once labour starts once the uterine contraction starts it can be removed. And what is the advantage if you compare these two it has one advantage what is it if there is any signs of hyper stimulation or say hyper tonus or tachysystole you can just remove the insert by pulling the thread it has a thread and you can just remove the vaginocert from the vagina and thereby it will revert back the tachysystole will go away. But in case of intra cervical gel once it is pushed inside the cervix you cannot take it out.

So, this is one advantage of vaginocert. So, here these are the pictures these are the intra cervical gel it is comes under the name of Cerviprime and this is the applicator and we place the applicator inside the cervix now looking into the cervix under the under vision by Cascospeculum and this is vaginocert or you know proposs this is the prostaglandin E 2 and here you place this vaginocert in the posterior fornix in the posterior fornix right. So, these are the prostaglandin E 2 that means, dinoprostone. Now, coming to prostaglandin E 1 or misoprostol. Misoprostol can also be given vaginal route or oral route both here you give 25 microgram high in the vagina in aseptic condition and can be repeated every 4 hours repeat every 4 hours maximum 6 doses. Orally we give 50 microgram and this also repeated every 4 hours maximum 6 doses and same here after the last dose of misoprostol a gap of at least 6 hours needed before start of oxytocin infusion to decrease the risk of uterine hyper stimulation.

So, that was regarding the prostaglandins. Now coming to the side effects general side effects you all know prostaglandin can lead to nausea, vomiting, rise in temperature, fever, diarrhea, chills and rigor and uterine specific side effects are tachysystole. I have already discussed all this tachysystole meaning more than 5 uterine contraction in 10 minutes. Uterine hypertonus each contraction persisting for each contraction persisting for more than 2 minutes and uterine hyper stimulation is tachysystole or hypertonus associated with non reassuring fetal heart rate. So, all these can occur after the application of prostaglandins these are the side effects and if no any such thing happens you immediately need to stop because intracervical or misoprostol application you cannot revert back right, but in case of the vaginocert you just pull the thread take it out and it will revert back. So, these are the side effects of prostaglandin and prostaglandin E 1 that is misoprostol is contraindicated in scarred uterus because of high chance of uterine rupture.

And coming to the advantage of dinoprostone over misoprostol you know dinoprostone it causes less uterine hyper stimulation right though misoprostol in misoprostol there is more chance of induction of labor it is more effective in cervical ripening, but it has more evidence of more uterine hyper stimulation or tachysystole and once there is hyper stimulation or tachysystole it can result to fetal distress. So, misoprostol nowadays is less used more commonly used is dinoprostone gel. Now come so, pharmacological we have completed coming to the mechanical methods it can be I have told that there are certain dilators right. So, it can be

non-hygroscopic or hygroscopic. So, these are the mechanical dilators coming to the non-hygroscopic.

Non-hygroscopic mostly the Foley's catheter trans cervical Foley's catheter 16 French right. So, this say this is the cervix and this is the fetal head and this is the membranes right. So, you place the catheter you in you know you you we introduce the catheter inside up in above the internal os right above the internal os and here you can see this is 16 Fr catheter and this is the bulb of the catheter this is the bulb of the catheter we inflate the bulb of the catheter. So, it has two path two inlet. So, here with this through this inlet we inflate the bulb of the catheter to say about you know it maximum amount or the maximum volume of this bulb is 80 ml by, but we only inflate it 40 to 50 ml of normal saline and through this path we try to push some extra amniotic saline infusion right.

We give some extra amniotic saline infusion and try to separate the membranes from the uterine wall right. So, that will also help to induce the labor contraction that is helping in induction of labor and what amount of saline is infused it is approximately 60 ml. In our institute we use 60 ml of normal saline and then we tie an artery forceps here we tie an artery forceps here and this artery forceps is attached to the thigh of the mother with a leucopore. So, that this you know gives attraction and this traction will be felt on all around the cervical circumference. Distraction will be felt and this will help to dilate the cervix and the when the cervix is sufficiently dilated the Foley's catheter will automatically come out right.

So, this is a very good method and you know just before the application of Foley's catheter you need to have a little bit of cervical dilatation to introduce the catheter, but this has resulted or there is evidence that it has less chance of hyper stimulation, less chance of fetal distress and more effective in induction of labor. Instead of Foley's catheter sometimes you can use double volume catheter or Cook's catheter, but it is not available know profoundly in India and so, we in our institute I have never used this I have used the 16 French Foley's catheter and it is very much effective right. You can keep this catheter for next 12 to 24 hours. So, this is the Foley's catheter you have passed the bulb you know above the internal os and the bulb has been inflated with you know 40 to 50 ml of normal saline and through this we give certain amount of saline infusion which is around 60 ml in the extra amniotic space. So, these are the membranes in the extra amniotic space we give the saline infusion that will you know that will help in separation of the membranes from the uterine wall that will also lead to induction of labor right and this is the Cook's double you know double volume one is above the internal os and other is below the internal os.

So, it is not used in India, but you know this will give a pressure all around the cervix that will help to in cervical dilatation. So, that was regarding the Foley's catheter. Now coming to the dilators, hygroscopic dilators are available though not used nowadays because of

hypersensitivity reactions. Now previously it was present or it was found in natural form the laminaria tent you know I collected from seaweed and some synthetic rods these are the synthetic rods dilapan s right they come as the name of dilapan s rods 3 to 5 rods are kept you know inside the cervix. So, here is the cervix and you place this rod right you place this rod 2 or 3 maxillar maximum 5 and this 4 millimeter rod gradually gradually become 15 millimeter see they are gradually increasing in diameter over 12 hours.

So, they increase in diameter and they cause mechanical pressure on the cervix also there is osmotic dehydration making the cervix soft and it helps in release of prostaglandin from the uterine wall thereby inducing the uterine contraction. So, that was regarding mechanical dilator. Coming to membrane stripping yes in membrane stripping also if this is the cervix we place our finger through this cervix and we go 360 degree all around the cervix. So, you know just you know you can as you know feel or you can understand that before membrane stripping the cervix should be at least one finger dilated. Now, if 2 fingers are in can be introduced beyond the internal loss then we introduce 2 finger and then we try to go all 360 degree round and while stripping you should be towards a uterine wall not towards the membrane because while stripping accidentally it may so, happen that the membrane may get ruptured and there will be like a no like a drainage.

So, we should avoid the membrane to be ruptured we must be cautious we must be towards the uterine wall and we will go you know we will try to strip the membrane or separate the membrane from the uterine wall. So, this is also a very good method for induction, but what are the disadvantage number one you know discomfort on the part of the mother because she will be you know that will not be for you know she is not comfortable. When you do that membrane stripping there will be stretching of the cervix that will that is the causing discomfort to the mother also it can result in bleeding part vagina. So, you need to be very cautiously doing it, but it is also very effective in induction of labor. Now we have discussed the induction of labor and after induction we try to induce the uterine contraction.

Now coming to effective uterine contraction effective uterine contraction is 3 to 5 contraction in 10 minutes I have already told. So, this is the normal frequency. So, we want 3 at least 3 to 5 contraction in 10 minutes if more than 5 contraction then it is a chance of hyper stimulation. Duration should be 30 to 60 seconds each contraction should be at least 30 to 60 seconds persisting if more than 2 minutes then it is a case of hyper it is a case of hypertonicity or hypertonic uterus. More than 5 contraction that is tachysystole and any of the tachysystole or hypertonic uterine contraction associated with non reassuring fetal heart rate is called as hyperstimulation.

So, all this should not occur you know maximum 5 contraction in 10 minutes duration of each contraction 30 to 60 seconds desired intensity 40 to 50 millimeter of 8 g. Now when you go for

per abdominal examination the finger should not go you know the uterus uterine wall should not dip by the pressure of the finger that should be the desired intensity and optimum relaxation time in between 2 contractions is at least 3 minutes right. So, that was effective uterine contraction which we need for induction of labour. Now we have discussed the induction now coming to Bishop's score we have seen that if the Bishop's score is more than 6 WHO is telling that yes you can go for amniotomy followed by oxytocin infusion.

Now a little bit discussion regarding oxytocin infusion. Oxytocin infusion I have told this is mostly for augmentation of labour augmentation of labour and it can be given in low dose or high dose regime. You know low dose say we start from low dose and gradually we increase the dose right. So, we start from low dose and gradually we increase the dose. So, we start say you know 1 milli international units per minute we start from here and gradually every 40 minutes every 40 minutes we will assess and if there is not sufficient uterine contraction we can increase the dose, but maximum dose which can be given is 32 milli international units per minute more than that it there will be side effects of oxytocin. In high dose regime we start from a higher dose we start from a higher dose right what is that higher dose 6 milli international units per minute and also we start from a higher dose and every 20 very frequently we monitor every 20 minutes we monitor and we can escalate the dose, but here also the maximum dose is 32 milli international units per minute.

More than that oxytocin cannot be given because there will be side effects and as such in practice in our institute what we do we give 5 units of oxytocin that is 1 ampoule in 500 ml of normal saline at the rate of 10 to 12 drops per minute and then we assess right. If there is sufficient uterine contraction you can continue in that dose right up till delivery. So, that was oxytocin infusion for augmentation and what are the side effects number 1 and very important side effect is dilutional hyponatremia and if this occurs you need to stop oxytocin you need to stop the hypotonic solution IV infusion you may sometimes need to give diuretics or hypertonic solution. So, that is one very important side effect and also it can lead to hypotension and arrhythmia mostly these are seen in case when I you know oxytocin is given IV as a bolus. Oxytocin should always be given as infusion in the 500 ml normal saline or there can be hypotension or arrhythmia neonatal hyperbilirubinemia can occur.

Uterine hyperstimulation I have already been telling more stimulated uterus can result from oxytocin infusion in that case also you need to stop the oxytocin you need to tell the mother to go into left lateral position go for nasal oxygen do all the you know check up no cord prolapse fetus whether any signs of fetal distress and sometimes hyperstimulation can be reverted back by you know administration of subcutaneous injection terbutaline which is a tocolytic 0.25 milligram. There is chance of rupture of scar uterus chance of amniotic fluid embolism in case of precipitate labor and postpartum hemorrhage more you know if there is more induction you know more cases of induction of labor. So, that has resulted in postpartum hemorrhage

following delivery. So, that is a chance or risk for oxytocin infusion and very important we have already discussed in the CTG that once oxytocin infusion has been started in the labor room for that particular antenatal mother you need to start continuous electronic fetal monitoring with CTG for the rest of the delivery.

So, that was regarding oxytocin infusion and last is the amniotomy or artificial rupture of membrane sometimes amniotomy is done early at 3 centimeter cervical dilatation to augment labor and after amniotomy you see the color of the liquor and in case of abruption following amniotomy there is reduction in pain, but this early amniotomy is associated with complications there can be cord prolapse there can be infection or chorioamnionitis you know sudden gush of liquor coming out there can be chance of placental abruption. So, ARM should never be never be done never be done when the head is floating when the head is floating that is the your there is no engagement the head the lower the cephalic end has not know covered the lower uterine segment. So, the head is floating and if you go for amniotomy there will be sudden liquor rush from the vagina and that can lead to placental abruption and during this liquor draining it can cause cord prolapse and may we may lose the fetus. So, always make sure that the fetal head is engaged and it has come down low down sufficiently down to prevent cord prolapse after ARM and ARM should be done in a controlled manner right in a control manner sometimes we do it with you know 16 or 26 gauge needle. So, that it is you know liquor is draining in a controlled fashion and WHO says that amniotomy with oxytocin infusion is more effective than oxytocin infusion alone.

So, two can be combined for better effects. Last slide of today's discussion is failed induction what is failed induction as per WHO is if after even after 24 hours of oxytocin infusion or even after 12 hours of artificial rupture of membrane there is no induction that is the definition of failed induction and what is the most common cause it is cephalopelvic disproportion right. So, what are the recommendation by WHO routine induction of labor not to be done unless indicated WHO says that at 39 weeks you can go for induction of labor, but WHO says that no need to go for induction of labor if it is not indicated right if there is no complications on the part of the mother of the fetus right and only amniotomy is not recommended you go for amniotomy with oxytocin infusion and not to be given or not to be done in labor is routine IVF infusion, routine NMA application, routine antispasmodic administration, early ARM because chance of cord prolapse, early oxytocin infusion only for prevention of delay in labor these are not recommended these have shown to have no effective result at the end right. So, you should not do because there is more damage rather than benefit. So, these are not recommended. So, that was all regarding the induction of labor and augmentation of labor references has been taken from D.C. Dutta book of obstetrics 26th Williams obstetrics and your James book on high risk pregnancy.

So, thank you for your patient hearing and now hope you have enjoyed today's class. Thank you.