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Umbilical Cord Prolapse Managed by Assisted Vacuum Delivery

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Abstract

G4P3L3 was at 40 weeks of gestation who was admitted in active stage of labor with normal fetal heart rate. At 8 cm cervical dilatation she experienced spontaneous rupture of membrane with clear liquor. Cord prolapse was detected and was prepared for caesarian section meanwhile she was kept in knee chest position and bladder was filled with normal saline 0.9%. 30 min before operation she was fully dilated with signs of Non reassuring fetal status, vacuum extraction was done to assist delivery as soon as possible. The APGAR score was 6 and 10 in the first and fifth minutes respectively. Mother and the baby were discharged the next day in good condition.

Keywords

Umbilical Cord Prolapse, Operative Vaginal Delivery, Vacuum Extraction

1. Introduction

Cord prolapse is among the obstetric emergencies that will lead to fetal death or low APGAR score. There are several risk factors that can predispose the woman to have cord prolapse. The factors include multiparity, low birth weight less than 2.5 kg, prematurity less than 37 weeks, fetal congenital anomalies, breech presentation, transverse, oblique lie, second twin, polyhydramnios, low-lying placenta, artificial rupture of membranes with unengaged presenting part.

There are several studies that concur with the above details as the risk factors for cord prolapse [1]-[3]. The diagnosis of cord prolapse can be through physical examination, obstetric ultrasound and observing fetal heart changes on Cardiotocograph. Once the diagnosis has been made the management of the woman should be fast so as to prevent intrapartum asphyxia [4]. Recommended mode of delivery is caesarian section and the decision to delivery time should not be

more than 30 minutes [5]. While waiting for the caesarian section there are some maneuvers that can be done to alleviate/decrease the compression of the umbilical cord by the fetus head. These maneuvers include putting mother in knee-chest position or lateral position, instillation of fluid into the bladder, giving tocolytics to mothers in labor with cord prolapse and intrauterine resuscitation [1] [6]. In cases where delivery is not imminent operative vaginal delivery can be performed (assisted vacuum delivery). This should be performed by experienced physician and care should be taken not to harm the woman and the fetus.

In most of the developing countries the cases of cord prolapse ended up with fetal demise or very low APGAR score. This is due to lack of facilities like theatres and human resources to enable fast delivery of the fetus. This case shows the other means that can be done in order to save the babies while making sure the women are safe.

2. Case Report

A 30 years Old Gravida 4 Para 3 living 3 who could not remember her date of last menstrual period hence gestation age was approximated from gestation age of the first visit on the antenatal card. She started ANC at 20 weeks gestation hence her gestation age was approximated to be 40 weeks. She was admitted for 3 days.

2.1. Chief Complaint

She was admitted due to Lower abdominal pain for 8 hours and per vaginal mucoid bloodish discharge for 6 hours.

2.2. History of Presenting Illness

The woman reported to have lower abdominal pain radiating to the back, on and off increasing in intensity and frequency with time, no relieving factors, no per vagina leakage, no per vagina bleeding. She reported positive fetal movements; she had no fever, no headache, no vomiting, no blurred vision, no awareness of heart beats, no pain during urination.

The woman started antenatal clinic at 20 Weeks gestation and visited 4 times, with normal weight increase and normal blood pressure. Investigations done during ANC were HIV and syphilis which were negative. She was given hematenics, mebendazole, SP for presumptive treatment of malaria. There were no complications during antenatal period. Her past 3 vaginal deliveries were normal with no complications.

3. General and Systemic Examination

Upon examination the woman was conscious; not pale, afebrile and no edema of lower limbs,

The Blood pressure was 100/70 mmHg, Pulse rate 88 beats per minute, Tem-

perature 36.6˚C, Respiratory rate 22 cycles per minute. Examination of all other the systems was done and all parameters were normal.

3.1. Abdominal Examination

Asymmetrical distension of the abdomen was noted. She had 3 contractions in 10 minutes lasting for 30 seconds. The fundal height was equivalent to 36 weeks, lie was longitudinal with cephalic presentation. The fetal heart tones were detected and were 140 beats per minute.

3.2. Vaginal Assessment

She was 8 cm dilated; thin, anterior, fully effaced, fetal membranes were intact, no active bleeding and the pelvis was adequate.

4. Provisional Diagnosis

Active phase of first stage of labor.

4.1. Management Plan

She was sent to labor room for Labor monitoring using partograph.

4.2. Investigations Done

Hb: 12 g/dL, blood group and Rhesus factor: O positive and cross matching, repeated HIV test which was Negative.

After 10 min she reported spontaneous rupture of membrane and vaginal assessment was done where she still had 8 cm cervical dilatation, clear amniotic fluid, cord prolapse was detected which was pulsating. Fetal heart rates were present 132 beats per minute.

5. Second Diagnosis

Cord prolapse and a live fetus.

5.1. Management of the Woman with Cord Prolapse

The woman was placed in Knee chest position to minimize the cord compression by the fetal head; intravenous 1 liter of RL was given to improve circulation and hence blood flow to the placenta. The woman had very strong contractions this time (3 contractions lasting for more than 40 seconds).

The woman told and counseled on the new diagnosis of cord prolapse and the mode of delivery after the diagnosis. She was planned for emergency caesarian section and she consented for the operation. She was prepared for emergency caesarian section. The hospital had one theatre room and there was another caesarian section being done hence there was delay to perform the procedure. During the waiting time urinary catheter was inserted, 400 mls of Normal saline was added. We clamped the catheter with small artery forceps for the purpose of continuous collection of urine in the bladder as this mechanism helps to de-

crease decent of the fetus head. She was still kept in knee chest position.

The theatre room was available 30 minutes from the diagnosis. This time she was screaming that she has the urge to push.

The assessment of the cervix was done, she had full dilatation with pulsating cord but this time weak pulsations, head at station 1. The amniotic fluid was thick meconium stained hence the decision to deliver the woman vaginally with the use of vacuum extractor was made. The patient was also involved in every decision. This was done because of the presence of signs that showed compromise of the fetus like weak pulse on the prolapsed cord and thick meconium stain of the amniotic fluid. We also anticipated the preparations of the theatre room for the next caesarian section would take longer time hence the decision to speed up the process using vacuum was reached. If she would have delivered vaginally without vacuum assistance there was fear of continuous cord compression during the process leading to severe birth asphyxia or fetal death.

5.2. Delivery of the Fetus Using Vacuum Extraction

The woman in knee chest position, aseptically a soft vacuum cup was placed at vacuum pressure of 15 mmHg extraction of the fetus was done.

At 12.40 pm baby was delivered using vacuum, the first minute the APGAR score was 6, the baby was dried and kept warm, suction of the meconium was done and then resuscitation with bag and mask was done. After resuscitation the fifth minute Apgar score became 10.

Active management of the third stage of labor was done and the placenta was removed. Estimated blood loss was 300 mls. She got second degree vaginal tear which was repaired. The woman and the baby were kept for observation for four hours while breast feeding the baby and were transferred to the postnatal ward. The following day after review the woman and the baby were discharged in good condition. She returned after 10 days for follow up. The woman and the baby had no complications hence was discharged from the clinic and was told to continue follow up clinics at the health center near her village.

6. Discussion

Occult cord prolapse is the descent of the umbilical cord through the cervix alongside the presenting part (membrane intact) and overt cord prolapse is the descent of the umbilical cord through the cervix past the presenting part, in the presence of ruptured membranes [1]. Incidence of cord prolapse is between 0.1% to 1.6% with high incidence among women with breech presentation, premature rupture of membrane and multiple pregnancy [1]. High perinatal morbidity and mortality are associated with Umbilical cord prolapse [7] [8]. The risk of perinatal mortality is approximately 7% among women who have cord prolapse [9]. Other studies done in African countries and India reported high perinatal mortality of 36% among women with diagnosis of umbilical cord prolapse [2] [10].

Risk factors for cord prolapse include multiparity, low birth weight less than

2.5 kg, prematurity less than 37 weeks, fetal congenital anomalies, breech presentation, transverse, oblique lie, second twin, polyhydramnios, low-lying placenta, artificial rupture of membranes with unengaged presenting part [1]-[3]. This woman was multipara hence she was at risk of this event and it occurred spontaneously without any manipulations.

Occult prolapse is rarely palpated during pelvic examination. This condition can be suspected only if fetal heart rate changes (variable decelerations, bradycardia, or both) associated with intermittent compression of the umbilical cord are detected during monitoring [11]. It was difficult for us to detect the decelerations or bradycardia before the overt prolapse because of lack of Cardiotocograph or any device to constantly monitor the Fetal heart rate. Overt cord prolapse can be diagnosed simply by visualizing the cord protruding from the introitus or by palpating loops of cord in the vaginal canal. This was the presentation at the time of diagnosis.

In order to improve fetal outcome some interventions can be done like putting mother in knee-chest position or lateral position, instillation of fluid into the bladder, giving tocolytics to mothers in labor with cord prolapse and intrauterine resuscitation [1] [6]. This woman was placed in knee chest position and adding 400 mls of normal saline into the bladder to serve the purpose of reducing compression of the cord and hence fetal hypoxia. These acts served the purpose as the woman was fully dilated and the fetus was alive but with features of fetal compromise (thick meconium that was detected).

When cord prolapse is diagnosed there should be immediate delivery of the fetus. The mode of delivery of the fetus needs to be in the fastest and safe way [1] [7]. Caesarian section is the recommended mode of delivery and has shown to have better perinatal outcome in most studies when imminent vaginal delivery is not possible [1] [12].

In a woman with fully dilated cervix vaginal delivery in most cases operative (vacuum or forceps delivery) can be attempted if it is anticipated that the delivery will be accomplished quickly and safely [1] [12]. Under these circumstances there should an experienced physician and no signs of cephalopelvic disproportion [13]. In United Kingdom there is a case series report that showed successful delivery in one third of 93 cases of cord prolapse [14]. In a study by Houri *et al.* 5.3% of women with umbilical cord prolapse had delivered successfully through assisted vacuum delivery [15].

In our case we anticipated that doing operative vaginal delivery would take less than 10 min rather than doing caesarian section which would take longer time and there was an experienced Obstetrician Gynecologist to perform the vacuum delivery. In the under resourced areas like our hospital at that particular time that had one theatre room and inadequate manpower the operative vaginal delivery seemed right in order to reduce fetal loss.

There are several factors that can predict the outcome of the fetus that include location of the cord prolapse, decision to delivery interval, birth weight and mode of delivery [16].

7. Conclusion

Women at risk of umbilical cord prolapse should be treated as high-risk patients. Once the diagnosis is made, measures to reduce compression of the cord should be applied to prevent hypoxia to the fetus. The best mode of delivery in these cases is the caesarian section. In cases where a woman has full cervical dilatation with features of fetus compromise, the operative vaginal delivery can be attempted if it is anticipated to take short time and will not compromise the safety of the woman.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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