The importance of training programs in shoulder dystocia

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Abstract

We reported a case of a woman with a delivery complicated with Shoulder Dystocia (SD). She did not present any complications during her pregnancy and she had not any intrapartum risk factors to present this kind of dystocia. Despite the initial maneuvers were not successful but, the assistance by an instructed staff had an optimal maternal and neonatal outcome, due to a correct selection, technique and sequence of maneuvers to resolve this complication. The aim of the article is to highlight the importance of training programs for clinicians in this area.

Introduction

SD is an emergency that appears in less than 1% of births but with potential for cause important injuries to infant and mother. The occurrence of SD cannot be predicted by any risk factor, so it is important to develop training programs for physicians in an attempt to recognize this complication and perform a proper management to resolve it.

Case Representation

Mrs. BS was a 34 year old Spanish woman, primigravida. Her last menstrual period was on 12/04/2011 so her expected date for delivery was 09/09/2012. Prior to conceiving, her periods were regular (4 days of bleeding with 30 days cycles) and she has not had any gynecological problems in the past. Her weight was 72.3 kg, due to a gestational weight gain of 13.8 kg, and she was 166 centimeters tall (her body mass index was 21.23 kg/m²). She is not on any medication at present and does not have any known allergies; she has never smoked and she does not drink alcohol. She underwent appendicectomy when she was 12 years old.

Mrs. BS was booked in with the midwife at 10 weeks gestation and baseline investigations did not reveal any significant findings. Next antenatal care visits came back normal and ultrasounds never showed any fetal abnormality.

On 09/14/12, at 05:00 am, there was spontaneous onset of labour (40+5 weeks) and forty minutes later she was admitted in to labour ward. The baby was longitudinal lie with cephalic presentation and there were 3 contractions in 10 minutes. About 06.30 am, spontaneous rupture of membranes occurred and contractions became very painful so, and epidural anesthetic injection was given. The progression of Mrs. BS was optimal and she was fully dilated at 13:00 pm. During all the process, CTG monitored showed a baseline fetal heart rate of 140 beats per minute with accelerations, normal variability and in the last 35 minutes there were decelerations in less than fifty percent of contractions. Around 14:30 pm, Mrs. BS wanted to push so she was put into the lithotomy position; twenty minutes later, 14:50 pm, the head was visible at the perineum and an episiotomy was performed. Finally, the head was delivered at 15:40 pm but, immediately, the Turtle sign was seen by the Obstetrics resident who told the mother not to push, while a failed gentle downward traction of the fetal head was performed. At the same time, Obstetrics Attending Physician was called and two midwives try Mc Roberts maneuver and applied suprapubic pressure without any success. When Attending physician arrived it was 15:42 pm and after a fast examination, he tried to relieve impaction of the anterior shoulder performing delivery of the posterior arm (the fetal abdomen faced the maternal left, so with his right hand identified the posterior arm and followed it to the elbow, which was flexed, so he could grasp the hand and pull out of the vagina this arm; in consequence, the anterior shoulder was resolved and the rest of the female baby was delivered at 15:43 pm. She was examined by the pediatric team that has been warned; resuscitation was not necessary because baby was crying and breathing without any difficulty with good pulses. Her APGAR score was 8/9/10 at one, five and ten minutes, respectively; arterial pH was 7.28 and she weighed 3,640 kg.

Oxitocine was given to Mrs. BC at 15:43 pm and the uterus had contracted; at 15:50 pm the placenta was delivered and a cervical and vaginal revision showed a second degree perineal tear that was sutured without any complications.

Mrs. BS’s postdelivery evolution was favorable and the pediatric examination of the infant did not reveal
any abnormality with regard to the complicated delivery.

Discussion

SD is an obstetric emergency with the potential for mild or catastrophic consequences for both mother and infant. It occurs in 0.2 to 3% of births and it is believed that there has been an increase in its incidence on account of an increase in reporting in the last years. It has a clinical diagnosis and it must be suspected by the clinician when the routine practice of gentle downward traction of the fetal head fails to accomplish delivery of the anterior shoulder; a more objective definition is one that is referred to births with a prolonged head-to-body delivery time (more than sixty seconds) or with the need of ancillary obstetric maneuvers.

The aim of the management of SD is to avoid fetal and maternal complications. The infant is liable to bone fractures, brachial plexus injury, hypoxic-ischemic encephalopathy and even death. The most frequent of them is brachial plexus palsy, but the majority resolve with conservative therapy resulting in 1.6% rate of permanent brachial plexus injury. On the other hand, the mainly maternal complication is uterine atony and hemorrhage (11%) or different degree lacerations in lower genital tract.

The appearance of SD is associated with different risk factors but the main of them is high birth weight, and the other ones are related with this fetal characteristic.

Fetal weight over 4,000 kg increases the incidence of dystocia and its morbidity and mortality increase when weight is > 4,500 kg. However, half of cases of SD appear with birth weights < 4,000 kg.

Maternal diabetes mellitus is a risk factor to present SD, not only due to the higher prevalence of fetal macrosomia, but also different measurements of infants of women with diabetes (increase of ratio of chest-to-head and shoulder-to-head).

Operative vaginal delivery is unclear if is cause (instrument-assisted fetal descent causes shoulder impaction) or consequence (shoulder malposition inhibits descent increasing the frequency of instrumental delivery).

In women who has a previous delivery complicated with SD, the likelihood of recurrence is 1 to 25% in subsequent pregnancies and there are different features that increase the risk: birth weight > 4,000 kg or greater than in previous pregnancy, prepregnancy weight or gestational weight gain greater than in the index pregnancy or second stage of labour longer than in the other one. However, the most of cases of SD occur in women without a previous obstetric complication.

Despite of labour abnormalities alone are not good predictors, the combination of: prolonged second stage with high birth weight and operative delivery, supposes greater risk of SD.

It is more easily SD occurs in postterm pregnancy because of higher birth weights with advancing gestational age.

Male fetal gender has a greater relation with SD; in population-based series, the most of infants with weight > 4,500 kg were male and also, anthropomorphic dimensions of male infants are similar to findings in infants of diabetic women more often than female infants.

Respect to the maternal qualities, high body mass index and excessive gestational weight gain are risk factors for SD as well as advanced maternal age. These three factors suppose a risk to maternal diabetes. In addition, the relation between pelvimetry and fetal biometry through imaging and in fact, almost cases of SD occurs in women with normal pelvic dimensions.

Conclusion

The high risk of SD is due to is an unexpected complication that cannot be accurately predicted by imaging studies, antenatal or intrapartum risk factors. When one or a combination of risk factors is present, their predictive value is less than 10%. In fact, the most of SD (50%, approximately) happen with women and fetus without risk factors, like in case which is showed. The key is the clinician was able to promptly recognize any delivery complicated with SD when the fetal head, after expulsion, retracts into the perineum (Turtle sign) and the delicate downward traction of the fetal head does not accomplish delivery of the anterior shoulder. In this sense, there are evidence based recommendations that after team simulation, there is an improvement in management of SD (proper selection and sequence of maneuvers) as well as in neonatal outcomes. In consequence, it is key that either resident as attending physician have periodical clinical drills to improve the assistance to births with SD, the obstetric nightmare.