

Shoulder dystocia: the frightening emergencies

Abstract

Shoulder dystocia is a condition where there is a difficulty in the delivery of the shoulder of the fetus occurs. This is an obstetric emergency. It happens when the fetalbiacromial diameter is larger than the biparietal diameter or the maternal pelvic brim is flat rather than gynecoid. If this frightening situation is not managed properly, in time and by expert hand it can cause severe fetal and maternal outcome. All doctors should require proper training and knowledge for the management of this emergency situation. Well-trained health professionals can improve the outcome of the delivery when shoulder dystocia occurs. There is no any strong evidence to prevent shoulder dystocia because it is so unpredictable. But good control of blood glucose level of diabetic mother will reduce the incidence of macrosomic baby. Elective caesarean section is recommended for suspected fetal macrosomia to prevent brachial plexus injury.

Keywords: shoulder dystocia, brachial plexus nerve palsy, clavicle fracture, brain injury, postpartum bleeding

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Tahmina Afrose,¹ Farzana Afzal,² Nasrin Habib,³ Mamunur Rashid,⁴ Anath Bondhu Chattopadhyay⁵

^{1,5}Department of Obstetrics & Gynecology, AIMST University, Malaysia

²Department of Ophthalmology, AIMST University, Malaysia

³Department of Physiology, Quest International University Perak, Malaysia

⁴Department of Medicine, Quest International University Perak, Malaysia

Correspondence: Tahmina Afrose, Department of Obstetrics & Gynaecology, AIMST University, Malaysia, Tel +60149402614, Email drtakeya@gmail.com

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Introduction

According to the definition of the Royal College of Obstetricians and Gynaecologists for shoulder dystocia some specific manoeuvres are needed for the delivery of the shoulder of the baby.¹ All over the world both in developed and developing countries the incidence of this emergency situation is increasing.² Serious fetomaternal complications are associated with the improper management of shoulder dystocia. Macrosomic baby are in high risk for the injury of the Brachial plexus in this situation.^{3,4} Larger infant and Shoulder dystocia are interrelated,⁵ but there are some evidence Shoulder dystocia can occur in infant with less than 4000gm birth weight.⁶ Some mechanical causes are related for the development of Shoulder dystocia.^{7,8}

Risk factors for shoulder dystocia Antenatal risk factors for shoulder dystocia are listed below

- i. Previous history of shoulder dystocia⁹
- ii. Macrosomic baby¹⁰
- iii. Gestational Diabetic mother¹¹
- iv. Obesity (body mass index >25)^{12,13}
- v. Multiparty^{13,14}
- vi. Elderly mother^{12,13}

Intrapartum risk factors are as follows

- i. Short labour (<20min)^{11,15}
- ii. Instrumental vaginal delivery (vacuum, forceps)¹⁰
- iii. Prolonged second stage of labour¹⁰
- iv. Without local anaesthesia (>2h for multiparous patients, or >1h for multiparous patients)¹¹

- v. With local anaesthesia (>3h for nulliparous patient, >2h for others)¹¹

- vi. Induction of labour for "impending macrosomia"¹⁶

In clinical practices a lot of patient having these risk factors do not face this complication but some other patient without these risk factors have the complication of shoulder dystocia. Sometimes the delivery of a small fetus can be complicated by Shoulder dystocia.¹⁷ The accurate birth weight of a macrosomic baby cannot be diagnosed before the delivery.¹⁶ Babies of diabetic mothers are in greater risk of Shoulder dystocia.^{5,18} Prolonged second stage of labour is also associated with Shoulder dystocia. Many of the elderly mothers having the higher BMI and their deliveries are complicated by Shoulder dystocia.¹⁹ Shoulder dystocia is also associated with multiparty because most of them are dealing with obesity.²⁰

Neonatal-maternal outcome of shoulder dystocia

Incidence of neonatal and maternal morbidity and mortality is higher in shoulder dystocia. Prompt action can reduce this incidence.²¹

Maternal complication of shoulder dystocia:22

- i. Hypovolumic shock due to profuse bleeding during postnatal period
- ii. Cervical laceration
- iii. Injury to the birth canal
- iv. Separation of the Pubic symphysis
- v. Lateral femoral cutaneous neuropathy
- vi. Rupture of the uterus

Fetal complication of shoulder dystocia:22

- i. Brachial plexus palsy

- ii. Fetal death
- iii. Fetal distress
- iv. Fracture of the clavicle
- v. Fracture of the humerus

One dangerous neonatal complication of shoulder dystocia is Brachial Plexus nerve palsy.²³ Majority of the cases resolve spontaneously. 10% of the infants with this complication may develop permanent disability.²⁴ Either excessive traction by the doctor during the delivery or maternal bearing down effort during the labour may be the cause of this type of injury.²⁵ Postpartum bleeding due to birth canal injury is one of the major causes of the maternal morbidity and mortality.^{26,27}

Prevention of shoulder dystocia

If fetal weight is normal for a Gestational diabetic mother, after 38 weeks her baby can be delivered either by vaginal delivery through Induction of labour or by caesarean section.²⁸ If the high risk mothers are identified during their antenatal period and their babies are being delivered by elective caesarean section, the incidence of Shoulder dystocia can be prevented.^{29,30}

Intrapartum management of shoulder dystocia

For the clinical diagnosis of Shoulder dystocia during intrapartum period the health care provider should routinely observe for the followings: (Evidence level IV, RCOG)²⁵

- i. Difficulties in delivery of the face and chin
- ii. "Turtle-neck sign"
- iii. Failure of restitution of the fetal head
- iv. There is the difficulty in descend of the shoulder

During the management of the Shoulder dystocia the birth attendants must be calm, confident and have the ability to take prompt action.³¹ The mother should be needed for the counselling of this emergency situation. Documentation is always necessary.³⁰ Systematically management of the Shoulder dystocia according to "the RCOG algorithm" may prevent some serious feto-maternal complication.³² There are various techniques for the delivery of the anterior shoulder.

First-line manoeuvres: I These include

- a) **Call for additional help:** In this emergency situation a team work is necessary. The must have an expert obstetrician, an experienced pediatrician and an anesthetist.³³
- b) **Discouraging fundal pressure:** For the management of this type of emergency it is always suggest to avoid fundal pressure.³⁴ Otherwise it can lead to fetal life in danger.³⁵
- c) **Episiotomy:** It is given when necessary. The benefit of the episiotomy is that the doctor can get more space if they try for any internal manoeuvre.³⁶⁻³⁹
- d) **McRoberts' manoeuvre (Figure 1):**^{37,38} In this type of manoeuvre maternal hips are being kept in flexed and abducted position with thighs on her abdomen.³⁹ This manoeuvre help to increase the anterior-posterior diameter of the maternal pelvis creating an adequate space for the delivery of the shoulder.⁴⁰ The success rates is high in this manoeuvre.⁴¹⁻⁴⁴
- e) **Suprapubic pressure:** Both suprapubic pressure and the

'McRoberts' manoeuvre' can be tried simultaneously.⁴¹ By applying suprapubic pressure the fetal biacromial diameter is reduced, facilitating the rotation of the anterior shoulder of the fetus into the wider pelvis.⁴³

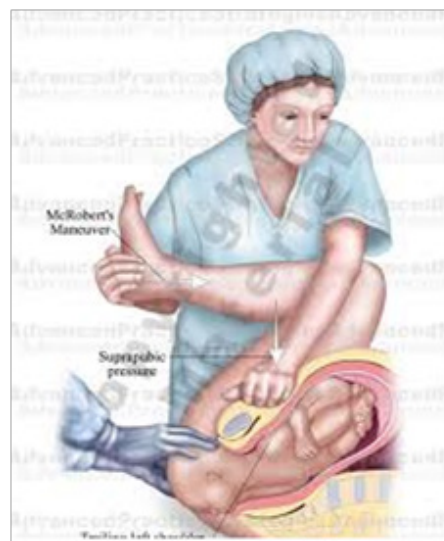


Figure 1 Somatotopical interpretation on the homunculus model of functionality.¹⁶

Second-line manoeuvres: I These include

- a) **Internal rotation:** This is done by giving pressure on the posterior aspect of either the anterior or the posterior shoulder of the fetus. This facilitates adduction of the shoulder and in turn decreases the biacromial diameter.⁴⁵⁻⁴⁸
- b) **All-fours position:**⁴⁰ In this type of manoeuvre The success rate is also good.⁴⁹

Third-line manoeuvres:¹ The maternal morbidity and mortality is high if this type of manoeuvres is not performed by expert hand. Any of the following can be tried.¹

- a) **"The Zavanelli manoeuvre":**⁵⁰ Here vaginal delivery is avoided. In this manoeuvre first the fetal head is replaced into the vagina and the baby is delivered by caesarean section.^{50,51}
- b) **"Symphysiotomy":**^{50,51} In this manoeuvre the anterior fibre of the pubic symphyseal ligaments are dissected. The success rate is also good.⁵²
- c) **"Cleidotomy":** This procedure is performed either by surgically or by manually.⁵²

Post-partum management of shoulder dystocia

Documentation should be comprehensive. Specially in keeping birth record the following information are required to look for.^{53,54}

- i. The time interval between the head and the body of the fetus
- ii. The name of the manoeuvres that has been tried, their duration and the outcome.
- iii. Clinical findings of the vaginal and perineal examinations
- iv. About the amount of bleedings
- v. About the team work
- vi. Neonatal condition including the Apgar score.^{53,54}

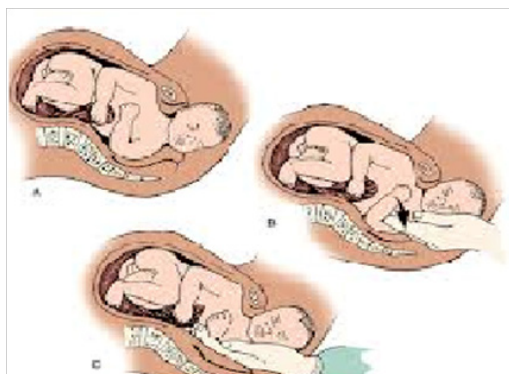


Figure 2 Posterior arm delivery.

Conclusion

The incidence of the Shoulder dystocia is increasing² due to higher rate of elderly mother and the obesity. Even after managed appropriately there can be significant perinatal mortality and morbidity associated with this condition,⁵⁵ It can be managed systematically. It is frequently associated with permanent birth-related injuries and maternal complications. Calm and effective management of this frightening emergency with applying specified maneuvers will allow a spontaneous delivery of the infant. All healthcare providers attending pregnancies needed to be prepared with a high level of awareness and training to handle vaginal delivery complicated by Shoulder dystocia.^{56–58} All the obstetricians should be prepared to manage this anxiety-provoking emergency. For this reason a team-oriented approach is necessary for the management of SD. For this purpose team-oriented approach is very much important. The key of success lies in managing shoulder dystocia includes constant preparedness, a confident team work and proper documentation.⁵⁹

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Conflict of interest

Author declares that there is no conflict of interest.

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