

Complications of Labor and Delivery: Shoulder Dystocia

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KEYWORDS

- Shoulder dystocia • Macrosomia • Brachial plexus injury
- McRoberts maneuver

There is no such thing as routine labor and delivery until after the fact, when a healthy live infant is born. Even in uncomplicated pregnancies, situations may arise during parturition that turn an unremarkable labor or delivery into an obstetric emergency with increased risk or morbidity and mortality for mother and infant. One of the less common but most dreaded complications of labor and deliver, shoulder dystocia, is reviewed.

SHOULDER DYSTOCIA

Shoulder dystocia is an infrequent but potentially devastating event that results from impaction of the fetal shoulders in the maternal pelvis. Although maternal, fetal, and intrapartum risk factors are identified, they have poor predictive value. Shoulder dystocia occurs most commonly in patients without identified risk factors, and can result in both maternal and fetal morbidity. Prophylactic measures including intrapartum maneuvers and cesarean section have not been shown to be effective at preventing the incidence of dystocia except in select populations (maternal diabetes and macrosomia). A series of maternal and clinician maneuvers may be effective in reducing the dystocia. Because the vast majority of cases of shoulder dystocia are unpredictable, obstetric care providers must be prepared to recognize dystocia and respond appropriately in every delivery. Detailed documentation is essential after any delivery complicated by shoulder dystocia.

Definition

Shoulder dystocia has a somewhat subjective definition that is not universally agreed on by delivering providers. Based on physical presentation, shoulder dystocia may be

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defined as impaction of the anterior shoulder against the maternal symphysis pubis, the posterior shoulder against the maternal sacral promontory, or both.¹ The American College of Obstetrics and Gynecologists Practice Bulletin defines shoulder dystocia as “a delivery that requires additional obstetric maneuvers following failure of gentle downward traction on the fetal head to effect delivery of the shoulders.”¹ In an effort to create a more objective definition, Spong and colleagues² proposed a prolonged head-to-body delivery time of more than 60 seconds or the need for ancillary obstetric maneuvers (McRoberts, suprapubic pressure, rotational maneuvers, or hands’ and knees’ positioning). This proposal is based on a prospective study in which patients who did not require obstetric maneuvers had an average head-to-body delivery time of 24.2 seconds, with 2 standard deviations above the mean being 60 seconds.

Incidence

Rates of shoulder dystocia vary because of differences in diagnostic criteria, and range in various reports from 0.3% to 3% of vaginal deliveries of term vertex infants.³ The incidence of shoulder dystocia increases correspondingly with increasing fetal weight and with maternal diabetes. Nesbitt and colleagues⁴ conducted a retrospective study of 175,886 infants weighing greater than 3500 g. Among nondiabetic patients, rates of shoulder dystocia increased in spontaneous vaginal deliveries from 5.2% for infants weighing 4000 to 4250 g up to 21.1% for those weighing 4750 to 5000 g. Vacuum or forceps-assisted deliveries are associated with even higher rates of dystocia. Incidence of shoulder dystocia in diabetic patients with assisted births (vacuum or forceps) increased to a dramatic 34.8% for infants weighing 4750 to 5000 g.

Risk Factors

Maternal, fetal, and intrapartum variables can contribute to increased risk of shoulder dystocia. Risk factors alone or in combination, however, have a poor positive predictive value for any individual delivery.³ Many cases of shoulder dystocia have no identifiable risk factors,⁵ and the vast majority of deliveries, even in patients with multiple risk factors, are uneventful.

Maternal risk factors include maternal diabetes, maternal obesity, postdates pregnancy, advanced maternal age, increased parity, and history of a previous shoulder dystocia.⁶⁻⁹ These risk factors have increased likelihood of a macrosomic infant as the common element. Additional risk factors include maternal short stature and abnormal pelvic anatomy.⁸

The primary fetal factor is suspected macrosomia, defined as weight greater than 4500 g by the American College of Obstetricians and Gynecologists (ACOG).¹ Frustratingly, efforts to predict fetal weight antenatally have proved to be inaccurate. There are multiple formulas that try to predict fetal weight based on ultrasonography during the third trimester, but these formulas have been found to have an error rate that results in lower accuracy by ultrasound than clinician estimates based on Leopold maneuvers or maternal estimates.^{9,10} The larger the fetus, the less accurate the estimate. An additional fetal risk factor is male gender.

Intrapartum risk factors include induction of labor, prolonged first or second stage of labor, and operative vaginal delivery (vacuum having greater risk than forceps).^{11,12} Precipitous delivery is also a risk factor. Although this seems counterintuitive, the proposed mechanism is insufficient time for the fetus to rotate into an oblique position in the maternal pelvis. Use of epidural anesthesia is not associated with an increased risk of shoulder dystocia.¹³

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