

Breech Delivery Shoulder Dystocia

James W. Van Hook, MD

Dept. OBGYN

University of Texas Medical Branch

Galveston, TX

Background:

- **Prevalence of breech presentation varies with gestational age.**
 - **33% 21-24 weeks**
 - **14% 29-32 weeks**
 - **3-4% term**
- **Prenatal mortality and morbidity higher (3 times cephalic)**
- **Umbilical cord prolapse- more prevalent (except with frank breech presentation)**

Background (2)

- **Breech presentation may be independent risk factor for neurologically-impaired infant**
- **Breech presentation associated with cerebral palsy- irrespective of route of delivery**
- **“It is possible that breech presentation is not coincidental but is a consequence of poor fetal quality, in which case medical intervention is unlikely to reduce perinatal mortality”**

(Schutte and associates, 1985; Gilstrap, 1995)

Factors Associated With Breech Delivery

- **High parity**
- **Prematurity**
- **Multiple Gestation**
- **Polyhydramnios/Oligohydramnios**
- **Uterine Anomalies**
- **Fetal Anomalies**
- **Prior Breech Delivery**

United States Trends: Breech Delivery

- **In the U. S., trend for delivery of breech infants has shifted toward C-section**
 - **22% C-section rate 1963-1973**
 - **94% in 1979**
 - **Breech presentations account for 15% of all C-section**
- **Reasons for shift in trend:**
 - **Belief that perinatal mortality/morbidity improved**
 - **Inadequate resident training**
 - **Medicolegal climate**

Term Breech- Delivery

- **Outcome data are mixed for vaginal versus C-section delivery in breech presentation at term**
- **Weiner reported 57% success in planned delivery of frank breech- no significant difference in perinatal morbidity/mortality (3.1 versus 3.7/1000)**
- **Cheng and Hannah reported higher m/m in planned vaginal delivery [OR 3.86 (2.2-6.7) mortality; OR 3.96 (2.76-5.67) morbidity]**

(Weiner, 1992; Cheng and Hannah, 1993)

Preterm Delivery-Breech

- **At present, no large randomized studies for preterm breech delivery**
- **Retrospective studies suggest improved outcome with C-section of fetuses < 1500 gm**
- **In extremely low birthweight infants (< 1000 gm) difference in outcome not as pronounced**
- **Relative size of fetal head may play a role in morbidity. Issue of intracerebral hemorrhage and preterm breech delivery is not clear**

(Gilstrap, 1995; Effer, 1983; Cunningham, 1997)

Version of Breech Presentation

- **External Version-** performed entirely exterior to the external abdominal wall
- **Internal Version-** hand introduced into the uterine cavity
- **If external version is not applied in the early term period, 80% of non-cephalic presentations will remain as such at delivery**
- **U.S. reported success rate approx. 50-80%**

(Zhang et al, 1993; Van Dorsten et al, 1981)

Version of Breech Presentation(2)

- **Indication: Malpresentation at early term**
- **Predictors for success:**
 - **Presenting part not engaged**
 - **Normal amount of amniotic fluid**
 - **Fetal back not positioned posteriorly**
 - **Mother not obese**
- **Contraindications:**
 - **Obvious CPD or anomaly**
 - **Surgically scarred uterus**

Version of Breech Presentation(3)

- **Informed consent- 1% serious complication rate**
- **Leopold and ultrasound ascertainment of fetal position and lie**
- **Fetal buttocks lifted out of pelvis with cephalic hand providing countertraction**
- **Uterine relaxation (betasympathomimetic) possibly beneficial**
- **Rh-immune globulin given as indicated**

(Thorp, 1991; Fernandez, 1997)

Conduct of Breech Delivery- Requirements

- **Facilities- Capable of C-section**
- **Physician- Experience in vaginal breech delivery**
- **Anesthesia-Personnel present for delivery**
- **Type-Frank breech**
- **Size-1500 gm < Estimated fetal weight < 4000 gm**
- **Exclusion of macrocephaly, intractable head extension**
- **Adequate labor and adequate pelvimetry**

(ACOG, 1986)

Mechanics of Labor and Delivery- Breech Presentation

- **Labor mechanism**
- **Spontaneous versus extraction (until periumbilical delivery afforded)**
- **Pinard maneuver**
- **Extraction**
- **Nuchal arms**
- **Mauriceau maneuver**
- **Piper forceps**

Shoulder Dystocia

- **Incidence of “true” shoulder dystocia approx. 1%**
 - Maneuvers used for delivery
 - Head-to-body delivery time of > 60 seconds
- **Positive (albeit not absolute) relationship to birthweight and torso to head ratios**
- **Fetal injury or asphyxia risk is present**
 - Brachial plexus injury
 - Clavicular fracture

(Gabbe and Benedetti, 1978; Spong, 1995, Cunningham, 1997)

Brachial Plexus Injury

- **Erb Palsy- paralysis of nerve roots of C5-T1- with upper arm paralysis**
 - **Arm paralysis with sparing of hand**
 - **C5-6 associated with breech delivery**
 - **C5-7 or C5-T1 associated with vaginal deliveries**
 - **Occurs from stretching of nerve roots- can occur as consequence of “unremarkable” delivery**
 - **< 10% of shoulder dystocia cases result in permanent brachial plexus injury (75-90% Erb cases resolve, 4-40% shoulder dystocias associated with Erb palsy)**
- **Klumpke paralysis- Lower nerve brachial plexus injury**
 - **Associated with hand paralysis**

(Cunningham, 1997)

Clavicle Fracture/Humeral Fracture

- Incidence:
 - **1-2%-Clavicle**
 - **Humeral: much less common**
- Clavicular fractures may occur as consequence of “normal delivery”- they generally are not associated with clinical significance
- Humeral fractures may occur with difficult deliveries- may also occur spontaneously

(Chez, 1994; Turpenny and Nimmo, 1993)

Relationship Between Birthweight and Shoulder Dystocia- Parkland Hospital

| Birthweight | Total Births | Shoulder Dystocia |
|---------------------|---------------------|--------------------------|
| <4000 gm | 10,101 | 0.42% |
| 4001-4500 gm | 704 | 5.4% |
| >4500 gm | 91 | 19% |
| All Weights | 10,896 | 0.9% |

(Modified from Cunningham et al, 1997)

Relationship Between Diabetes, Birthweight and Shoulder Dystocia

| Birthweight | No Diabetes | Diabetes |
|---------------------|--------------------|-----------------|
| < 4000 gm | 0.1-1.1% | 0.6-3.7% |
| 4000-4449 gm | 1.1-10% | 4.9-23% |
| ≥ 4,500 gm | 4.1-22.6% | 20-50% |

(Acker, 1985, Huff, 1991; ACOG, 1997)

Risk of Shoulder Dystocia- Diabetes

Risk of Shoulder Dystocia According to Diabetic Status

| | |
|--------------------------|--|
| Acker et al, 1985 | Rate Ratio 5.2 |
| Bahar, 1996 | OR 4.3 (2.2-8.3) |
| Langer, 1991 | RR <4000 gm 2.6 (1.29-5.34) RR >4000 gm 3.6 (2.37-4.76) |
| Sandmire, 1988 | RR 6.5 (1.5-27.1) |

(ACOG, 1997)

Planned C-section?- Shoulder Dystocia

- **Estimation of birthweight not reliable ($\pm 20\%$ by ultrasound)**
- **Pelvimetry subjective**
- **Approx. 2500 C-sections required to prevent one case of shoulder dystocia if all babies > 4000 gm delivered by C-section**
- **Data may be suggestive of better yield in diabetics > 4000 gm (4250 gm?; > 4500 gm?)**

(ACOG, 1997; Keller, 1991; Langer, 1991)

Prior History of Shoulder Dystocia- Recurrence Risk

- **Smith reported 12% recurrence – recurrence not related to increased birthweight as compared to prior delivery**
- **Baskett and Allen reported 1-2% recurrence of shoulder dystocia**
- **Conclusion: Prior history confers increased subsequent risk (how much?)**

(Smith, 1994; Baskett and Allen, 1995)

Summary- Shoulder Dystocia

- **Most cases of shoulder dystocia cannot be predicted or prevented**
- **Ultrasound estimation of fetal weight to determine macrosomia are of limited accuracy**
- **Planned C-section for the non-diabetic is not a reasonable strategy**
- **Planned C-section for diabetic pregnancies greater than 4000-4500 gm may be reasonable**