

METHOD OF DELIVERY and MANAGEMENT OF LABOR IN IUGR

Prof.Dr. Ali Ergün
GATA Maternal / Fetal

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Ceserean Birth

- The most common hospital-based operative procedure
- The incidence has been attributed to the liberalization of indication
 - Fetal distress
 - CPD/failure to progress
 - Breech presentations
 - Elective repeat ceserean delivery

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Ceserean Birth

- Cumulative consequences of this major surgical procedure with its implications not only for the current pregnancy but also for future reproduction
- It has a dramatic impact on the reproductive future of women

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A Prior Ceserean Birth

- More difficult repeat ceserean birth and complications
- Higher incidence of placenta previa
- Placenta accreta
- Symptomatic uterine rupture
- Hemorrhage
- Requirement for transfusion
- Need for unplanned hysterectomy

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Cause of increased C/B

- Medical advances
- Delay in childbirth
- More often older and often nulliparous patients
- Dystocia diagnosis liberalized
- Fetus as a patient
- Nonreassuring FHR indications
- Breech as an indication
- Fear of litigation
- Prior C/B
- Physician factors
- Regional differences
- Teaching vs. Nonteaching hospitals

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Cause of increased C/B

- Private practice ?

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Delivery in IUGR

- Proper timing of delivery
- The majority of fetal deaths occur 36th week of gestation
- Iatrogenic prematurity
- A/C, pulmoner maturity, dating and karyotyping

Frigoletto-
1977

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Mode of delivery in IUGR

- Continuous fetal heart rate monitoring
- Increased lactic acid levels, polycythemia , hypoglicemia and acidosis before labor are more common in IUGR
- During labor, a tracing without late decelerations is predictive of a good outcome

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Mode of delivery in IUGR

- The incidence of asphyxia with late decelerations is far greater than in normally grown infants so, earlier intervention may be indicated
Lin-1980
- As many of IUGR fetuses require preterm delivery
- An unfavorable cervix for induction is not uncommon
- Contraindication to the use of prostaglandin for cervical preparation
Sawai-1991

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Mode of delivery in IUGR

- For the intrapartum management, two predominant goals,
 - Avoidance of asphyxia and birth trauma
- Less than 1500 gr infants 1. minute Apgar score is highly correlated with survival

Myers-1985

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Anesthesia and Analgesia

- There is no one method superior for all conditions
- The goal of intrapartum care:
 - Least traumatized
 - Least depressed
 - Least acidotic fetus consistent with maternal health
- Epidural anesthesia, muscle relaxation
- Paracervical block is undesirable
- Parenteral narcotics is generally minimized (even in early labor or respiratory depression, uncertain speed of PTL)
- Anesthesia for C/B
 - Epidural
 - General
- EPIPAGE Cohort: Spinal anesthesia vs general anesthesia-AR:1.7 (95% CI, 1.1 to 2.6)

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Delivery in IUGR

- Episiotomy, in a few patients, an early episiotomy performed for perineal resistance
- Prophylactic forceps is not recommended. May be employed for the customary indications

Barett-1983

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C/B in IUGR

- Routine C/B of all LBW infants is not justified by current literature
- Breech presentation is an indication but it is controversial
- Low vertical/classic or low segment incision?
- Intracranial hemorrhage
 - Gestational age, unfavorable cervix, bleeding, abnormal heart rate tracing, low-risk
 - preterm labor, incompetent cervix

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Outcome of induced deliveries in IUGR

- 836 IUGR, mean GA: 38.2, mean weight: 2114g
- Nonelective C/S 43%
- Nonelective C/S for other indications:
 - 12.3% for all deliveries ($p < 0.0001$)
 - 23.6% for induced deliveries ($p < 0.001$)
- 160 women with IUGR preferred elective C/S
 - NICU admission and 5 min APGAR < 7 rates lower than induced deliveries
 - NICU 43.1 and 29.4%, $p < 0.05$
 - 5 min Apgar < 7, 5% and 1%, $p < 0.005$
- Induction; more NICU, lower Apgar scores

Maslovitz-2009

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IUGR

- Presents a complex management problem for the clinician
- Increased risk for perinatal mortality and morbidity
- Aneuploidy, congenital malformations, fetal infection
- Maternal/placental factors,
 - Inadequate substrates
 - Decreased oxygen availability
- Appropriate timing and mode of delivery ensure a favorable neonatal outcome [Resnik-2002](#)

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IUGR

- Misoprostol and dinoprostone are equally safe for induction of labor in pregnancies that are at high risk of fetal distress
- Misoprostol allowed the earlier induction of labor than did dinoprostone

Rosenberg-2004

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Predictors of neonatal resuscitation Low Apgar scores, and umbilical artery pH among IUGR neonates

- General anesthesia vs others
 - Intubation 37.9% vs 4.1%, $p < 0.001$
 - Apgar score mean 1(4 vs 7) and five minute (6.5 vs 8.4) $p < 0.01$
 - pH of UA; general, nalbuphine, epidural or no anesthesia (7.21 vs 7.28, 7.26, 7.29) $p < 0.01$
- For intubation;
 - General anesthesia OR 4.1
 - Lower infant weight OR 10.1 per kg decrease
- For UA pH;
 - Preeclampsia OR 3.0
 - Older maternal age OR 1.3 per 5 years
 - Vertex delivery OR 0.5
- For APGAR less than 7;
 - Meconium OR 1.5
 - General anesthesia OR 6.9
 - Lower infant weight OR 16.5 per kg decrease
 - Vaginal breech delivery OR 7.0
 - S/C breech delivery OR 0.2

Levy-1998

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Management of IUGR

- PED flow, delay delivery until at least 37 weeks provided others surveillance findings are normal
- AED, RED vs PED OR 4.0 and 10.6
- AED or RED
 - Over 34 weeks; delivery
 - Before 34 weeks, admission, close surveillance and steroid administration BPP, CTG and venous Doppler abnormal; delivery is indicated likely to be by C/B

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Management of IUGR

- Before 36 weeks steroid administration
RCOG 1999
- Deliver in a unit where optimal neonatal expertise and facilities are available
HMSO 1996
- Intrapartum continuous CTG monitoring
 - Did not reduce PM
Cochrane 2000
 - In high-risk populations is likely to be of benefit in reducing PM
Hornbuckle 2000
 - Current data are not sufficient to justify a policy of elective C/B of all IUGR
Cochrane 1997

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Intrapartum management in IUGR

- IUGR fetuses may exist mild- to moderate chronic oxygen and substrate deprivation so, which may result in:
 - Antepartum or intrapartum/neonatal hypoxia
 - Neonatal ischemic encephalopathy
 - Fetal heart rate abnormalities
 - Meconium aspiration
 - Polycythemia
 - Hypoglycemia and other metabolic abnormalities

Low 1972, Resnik 2009

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Intrapartum Management in IUGR

- Timing of delivery
- Continuous intrapartum FM to detect progressive hypoxia during labor
- Provide immediate skilled neonatal care
- Umbilical cord blood analysis

Resnik 2002-2009

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Intrapartum management in IUGR

- A relation between CTG abnormalities and abnormal Doppler
- 323 IUGR fetuses with S/D ratio > 99th centile
- UA pH at birth,
 - Artery; 7.23 ± 0.08 vs 7.25 ± 0.1
 - Vein; 7.31 ± 0.01 vs 7.34 ± 0.09
- Increased nonreassuring fetal heart rate patterns, 26 vs 9 %
- No fetuses with normal Doppler was delivered with metabolic acidemia

Baschat 2000

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Intrapartum management in IUGR

- In the presence of normal antenatal testing, labor with careful intrapartum monitoring and vaginal delivery
- The clinician should be prepared for rapid intervention if there is any evidence of fetal intolerance to labor

Cochrane 2001

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Delivery in IUGR

- If delivery is indicated because of increasing fetal compromise or evidence of decompensation, C/B should be performed to permit birth in the best possible condition
- Preterm delivery for IUGR will always be by C/S except in rare circumstance
- At term, normal CTG, no evidence for fetal compromise, induction of labor with continuous FHR monitoring

Louphna 2006

- In most cases C/B was done without attempts to induce labor

GRIT 2004

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What is the best delivery mode of IUGR fetuses?

- AEF or REF with IUGR fetuses rarely tolerate attempts at V/B
- ≥ 34 weeks, with an abnormal UA S/D ratio, normal BPP will not uncommonly tolerate labor

Mori 2007

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Relationship between the route of delivery and perinatal outcome in preterm IUGR

- UA pH < 7.0
- PVL
- NEC
- IVH(III-IV)
- RDS
- NND
- Composite of at least one adverse outcome
- "The mode of delivery did not affect perinatal outcome. C/B should be reserved for obstetrical indications"

Odibo-2007

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IUGR at term; Induction or spontaneous labour?

- No significant differences in obstetrical interventions (25% vs 24%) and neonatal morbidity rates (50% vs 35%) were found
- A larger multicenter study is feasible

Von den Hove 2006

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