Occiput Posterior or Transverse Position: Can We Turn it Around?

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OP & OT: Diagnosis
- Consider OP/OT:
  - “Back labor”
  - Indentation low abdomen/pelvis
  - Labor dystocia (1st & 2nd stage)
  - Position check at onset of 2nd stage
  - Delivery
- Sterile Vaginal Examination
- Considerable molding? – fetal ear
- Ultrasound

Occiput Posterior (OP) & Transverse (OT):
Objectives
- Diagnosis OP/OT
- Incidence/Prevalence
- Etiology/Associations
- Associated adverse outcomes
  - Neonatal & Maternal
- Prevention
- Interventions
  - Rotation
- Future directions

OP/OT: Background
- Incidence:
  - Important during 2nd stage → delivery
  - Onset of labor: 15-20% OP/OT
  - Pre-labor OP/OT ≠ OP/OT at delivery
    - ~2/3 of OP at delivery → OA at onset of labor
    - ~1/3 OP at onset of labor/IOL → OP/OT at delivery
  - OP >8cm dilation → 20% at delivery
- Prevalence:
  - Delivery: 5-8% (2-13%)
**OP/OT: Associated risk factors**

- Non-modifiable:
  - Pelvic outlet
  - African-American race (platypeloid pelvis?)
  - Age >35
  - Nulliparity

- Modifiable:
  - Obesity, Birth weight >4kg, >41 weeks GA
  - Epidural

**OP/OT: Associated Neonatal Outcomes**

- Increased risks:
  - Apgar score <7 at 5 minutes
  - CUA pH <7
  - Meconium stained amniotic fluid
  - ICN admission
  - Composite birth trauma
    - Skull fracture, scalp laceration, cephalohematoma, Erb’s palsy, clavicle fracture, facial nerve palsy
  - Decreased risk of shoulder dystocia
    - If dystocia, increased risk of permanent injury

**OP/OT: Epidural utilization**

- Epidural use is associated with OP/OT
- Theories:
  - OP/OT more painful → increased use of epidural
    - When requested → no increase in rate of OP/OT (sono)
  - Relaxes musculature → malposition
  - Same rate of OP/OT: epidural vs. no epidural
    - At delivery OP/OT increased in those utilizing epidural
- Warrant restriction of epidural utilization?
  - No consistent findings
  - Alternative to adequate pain control

**OP/OT: Adverse maternal outcomes**

- Prolonged 1st and 2nd stages
  - Increase in interventions (AROM, oxytocin, etc)
- Increased operative vaginal delivery (1.5-4 fold)
- 3rd and 4th lacerations
- Postpartum Hemorrhage
- Increased cesarean (2-6 fold)
**OP/OT: At prior delivery**

- Subsequent pregnancy
  - Increased risk of recurrent OP/OT (~8%)
- Prior cesarean - increased risk of:
  - Unexplained IUF/D
  - Uterine rupture with VBAC
  - Placenta previa & accreta
  - Hysterectomy
  - Maternal mortality

**Interventions Proven to Reduce Cesarean?**

- External cephalic version
- Continuous labor support
- Extension diagnosis of active phase arrest

- Change the malpositioned fetal occiput?
  - May we positively influence maternal health?

**OP/OT: Impact on cesarean and maternal health**

- 31.8% of all deliveries (2007)
- 50% increase over last decade
- Nearly one in four delivered via primary cesarean
- Increased maternal morbidity
  - Infection – Surgical site, Uterus
  - Hemorrhage
  - Bladder injury
  - Deep venous thrombosis

**OP/OT: Prevention at delivery?**

- Position – hands/knees
  - Prior to onset of labor
    - No effect on OP at delivery
  - During labor
    - No effect on OP at delivery
  - Position was associated with relief of back ache
OP/OT: Management

- Ideal management strategy?
  - No randomized controlled trials
  - Few published observational studies

Rotation for OP/OT – in the 2nd stage

- Prophylactic rotation
  - Onset of stage 2
    - Abnormal FHR
    - Passive 2nd stage: maternal indication (e.g. cardiac)
    - Poor descent with maternal efforts

- "Rescue" rotation
  - After arrest of descent/poor progress
    - "Socked in" – Often difficult

- Pushing with patient - digital rotation
  - "Assist" with the natural rotation

OP/OT: Management

- Expectant management
  - Multiparous with continual progress
  - Reassuring FHR
  - Adequate pelvis
  - Good expulsive efforts

- Delivery
  - Cesarean
  - Operative vaginal delivery

- Rotation
  - Digital
  - Manual
  - Forceps

Rotation for OP/OT during stage 1?

- Typically during 2nd Stage
  - Decreased success if performed during first stage
  - Increased risk of complications?
    - Cord prolapse
    - Disengage fetal vertex
    - Cervical laceration

- If attempted during stage 1 – exercise caution
  - Anecdotal reports of success using digital rotation during 1st stage
    - "The fingers have eyes"
Manual rotation

- Few studies
  - One case series
  - 1971
  - One small prospective trial
  - One case control
  - Retrospective cohort from UCSF

Reichman et al, Eur J Obstet Gynecol 2006

Prospective OP, 2nd stage, sono confirmed
- n=61, randomized by time period
- More Nulliparas in expectant (63 vs 39%, p=0.0545)
- Expectant vs. Rotation (digital)
  - SVD VAVD CD OP@del
- Expect: 27% 50%, 23% 85.2%
- Rotation: 77% 23%, 0% 6.4%
- Those in rotation group
  - Shorter 2nd stage
  - Shorter hospital stay

Walkowiak RG, Obstet Gynecol 1971

- Record review from 1951-1960
- n=2785 OP/OT – 2568 managed with rotation
- Rotation followed immediately by low forceps
- 18 (0.7%) cases of morbidity & mortality
  - 4 premature
  - 10 born dead (abruption, erythroblastosis)
  - 1 died during delivery and another within 24h
  - 1 died after difficult delivery resulting in internal version
  - 1 humerus fracture
  - 1 internal podalic version – no complications

Le Ray et al, Obstet Gynecol 2007

- Predictors of failed rotation & impact on cesarean
  - Cervical dilation, station, indication
- Case control 1:1; no matching
- n=796 (16.2%) with 85 (10%) failures
  - Examined 85 fail/85 success =170 cases
  - Complete outcome data on 147
- Risk of failure:
  - Age>35, nulliparity, nonengaged,
  - 1st stage, failure to progress
  - Multivariable: 1st stage, indication of FTP
- Cesarean – 4% in success, 59% in failure
UCSF study
- Retrospective cohort study
  - All women with term, cephalic, non-anomalous, singleton, live births in the second stage of labor with fetal OP/OT position
  - Position determined by delivering physician or midwife
  - Trial of manual rotation versus expectant management

Manual rotation at UCSF
- Women with fetal OP/OT who underwent a trial of manual rotation in the second stage of labor:
  - Overall delivered vaginally 30 minutes earlier
  - Even shorter 2nd stage in nulliparas
  - Decreased maternal morbidity
  - PPH
  - Chorioamnionitis
  - 3rd & 4th degree lacerations
  - Increased maternal morbidity
  - Cervical laceration
  - Decrease in Apgar scores <7 at 5min

Rotation and Cesarean
- n=3258
- Manual rotation n=731 (22%)
- Vaginal n=668 (91%)
- Cesarean n=1046 (41%)
- Expectant n=2527 (78%)
- p<0.001
- Adjusted Odds Ratio: 0.12 (0.09-0.16)

Rotation: Potential Impact
- Trial of Rotation associated with a lower risk of CD
  - Number needed to avert: 4
- ~4 million births/year
  - ~200,000 OP
  - Expectant → 80,000
  - Rotation → 25,200
  - 54,800!
  - 31.8% → CD to 30.4%
**Manual Rotation - Safety**

- Overall has limited but reasonable safety record
  - May limit neonatal morbidity observed in prior studies
- Technique
  - Number of attempts – 3 or less
  - Limit digital pressure on fetus
- Associated with cervical laceration
  - Examine cervix after delivery

**Walkowiak RG (1971) – Technique**

- From LOP:
  - Cradle the head, frequently disengages: 0 or +1 station
  - Middle finger pushes the shoulder across the maternal sacral promontory,
  - Move hand clockwise over fetal face, grasp the head with the fingers on the right side of the fetal face and the thumb on the left, flex the head, rotate to ROA,
  - Assistant can apply pressure from the L abdomen
  - Place forceps, deliver

**Walkowiak RG (1971) - Technique**

- “left to the left and right to the right”
- Assess fetopelvic relationship,
- ROM, complete
- Anesthesia (spinal)
- Left hand to rotate LOP & LOT
- Right hand to rotate ROP & ROT

**Reichman (Williams & Danforth) Techniques II**

- Digital Method: 2nd stage, engaged
- Index and middle fingers – edge of parietal-occipital bone overlaps
- Rotate posterior fontanelle up toward symphysis
Reichman (Williams & Danforth) Techniques II

- Manual rotation:
  - Whole hand in birth canal fingers under lateral posterior parietal bone
  - thumb on the anterior parietal bone → rotate

Our approach

- Complete dilation & station
- Labor curve
- Confirm with ultrasound
- Fetal spine
  - Left lateral vs. Posterior
- Digital rotation w push
- Manual rotation
- Abdominal hand (CNM, RN, MD)
- Returns to OP?

Manual Rotation Techniques - III

- Tarnier (1982)
  - >7cm, empty bladder, 2 fingers/hand
  - Anterior portion of fetal head → with UC rotate

- Hybrids
  - With/without push
  - Elevate out of pelvis
  - Relation of Spine
  - Abdominal Hand
  - Deflexed

Future Directions

- RCT of manual rotation vs. expectant at onset of 2nd stage
  - Center where rotation is not routinely performed
- Pre-post educational/training intervention
  - “Early vs. Late” - onset of 2nd stage
Thank you!

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