

The *Rise* and *Fall* of Vaginal Birth After Cesarean

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Historical Perspective

- Cesarean Section (CS)
 - First “report” perimortem in Roman Times
 - Rousset (1581) claimed to have heard of 14 CS
 - Six on the same woman!

“...the credulity of the most gullible is exhausted!”*
 - 1800s: Ether/chloroform anesthesia but no suture, no antibiotics, no transfusions
 - Almost no survivors

Historical Perspective

- Harris (1879)
 - “Cattlehorn” cesarean: 6/12 survived
 - NYC hospital CS: 1/12 survived
 - “A far better showing for the cow-horn than for the knife” (but $p=0.07\dots$)
 - Selection bias: CS patients usually in extremis
- Sanger (1882)
 - Uterine sutures





Historical Perspective

- Krönig (1912)
 - Low vertical incision
- Kerr (1926)
 - Low transverse incision
- 1900s: regional anesthesia, halothane, improved transfusion technology
- Sulfa (1932), Penicillin (1946)



“Once a Cesarean, Always a Cesarean”

EB Cragin, 1916

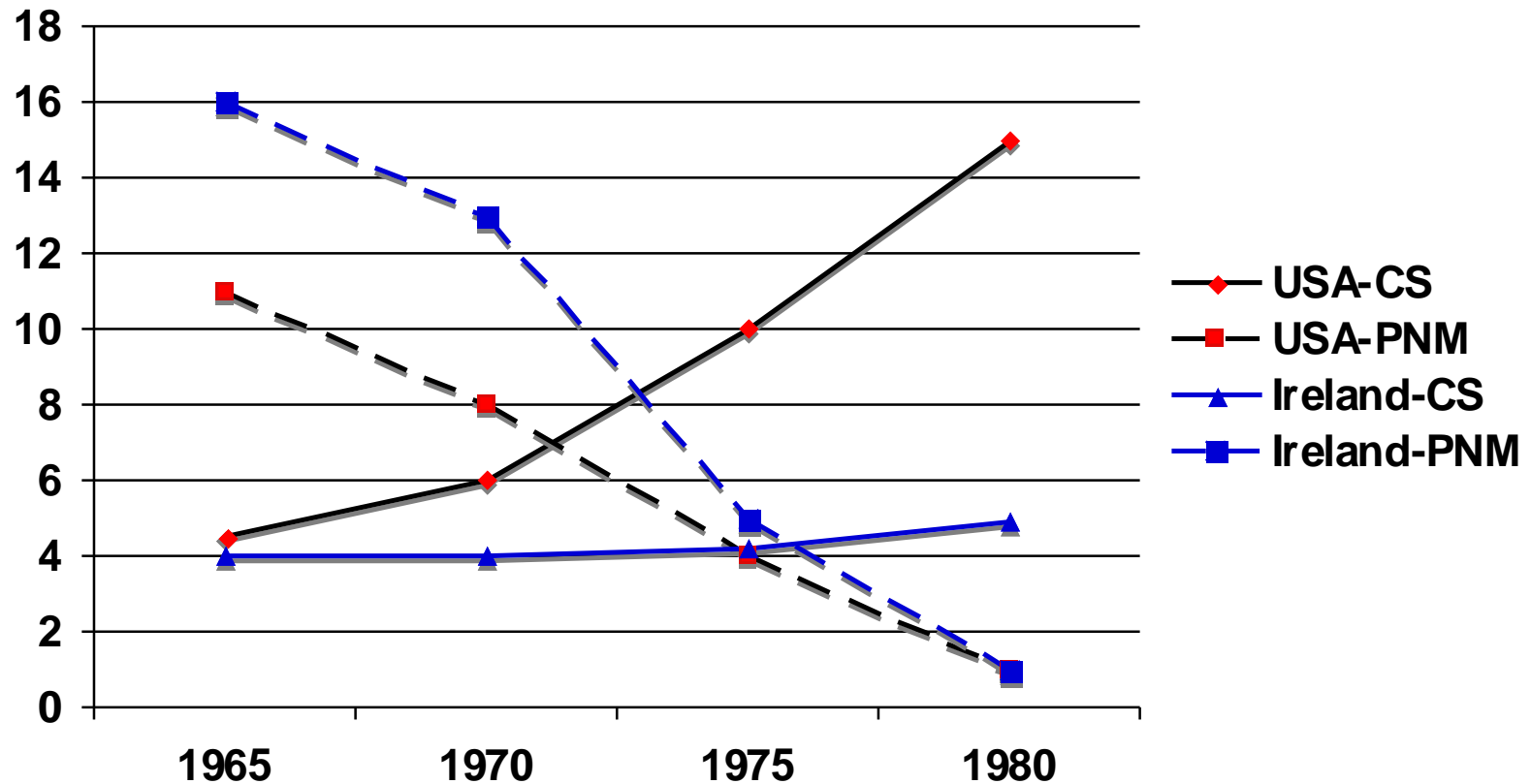
- Fear of rupture
 - $\approx 10\%$ with classical incision
 - Lower with low transverse
 - CS rate $\leq 5\%$ in 1960s
 - Few candidates for RCS



Just Say Yes to Cesarean

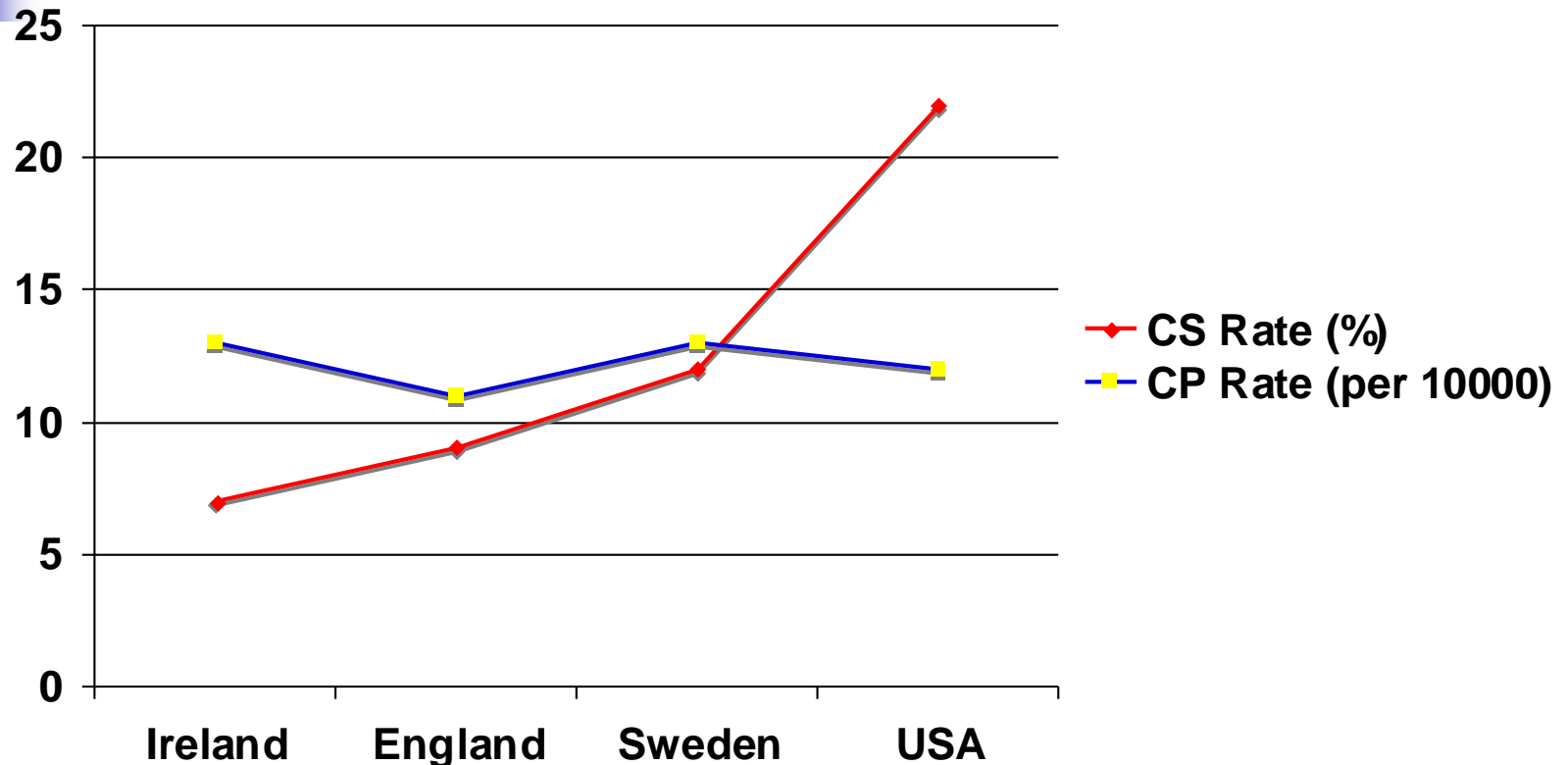
- Total CS rate rose to 25% by late 1980s
 - Expanded indications
 - Dystocia, breech, “fetal distress” (EFM), misc.
 - Decreasing use of forceps
 - Greater maternal safety
 - Medical-legal concerns
 - “Nobody ever sued for an unnecessary CS”
 - More primaries led to more repeats

Doing Lots But Accomplishing Little?



No evidence of improved perinatal mortality from inc CS

Doing Lots But Accomplishing Little?



Cesarean and Neurologic Problems; Scheller & Nelson, OG 1994

No evidence of lowered cerebral palsy from inc CS

NIH 1981

- “The rising cesarean birth rate is a matter of concern... the trend of rising cesarean birth rates may be stopped and perhaps reversed...”
 - Cautious introduction of “VBAC” concept





Early Contraindications and Requirements

- Vertex AGA singleton with adequate PNC
- Only one previous LTCS and not for dystocia
- Normal continuous fetal monitoring
- No epidural, no oxytocin or ambulation
- Manually palpate scar after delivery
 - One by one, most contraindications fell away



Success Stories

- 60-80% success with TOL
 - Varies with factors and candidate selection
 - Obesity, postdates, macrosomia, oxytocin, and previous dystocia
 - Previous vaginal delivery = greater success
- Successful VBAC
 - Shorter stay; fewer infections, transfusions, and thromboembolism
 - Cost effective if success $\geq 70\%$

Pendulum Effect

- (Over)enthusiastic endorsement in 1990s
 - Some insurers would not pay for scheduled RCS
- VBAC rates increased (% candidates)
 - 4% in 1980
 - 20% in 1990
 - 28% in 1996
 - Total CS rate declined to 21%





Downside



- Double or nothing
 - Successful TOL is great! 😊
 - Labor → vaginal delivery
 - Unsuccessful TOL incurs worst of both worlds ☹️
 - Labor \ cesarean section and postpartum complications

Risks of Trial of Labor



- Perinatal mortality increased with TOL
 - High relative risk (2-11x) but low absolute risk (1/2000 – 1/10,000 TOLs)
 - UA pH<7.00 ≈2%
- Higher risk of uterine rupture with hysterectomy, and transfusion & endometritis if unsuccessful
- Overall, more fetal and less maternal risk



Elective Repeat Cesarean

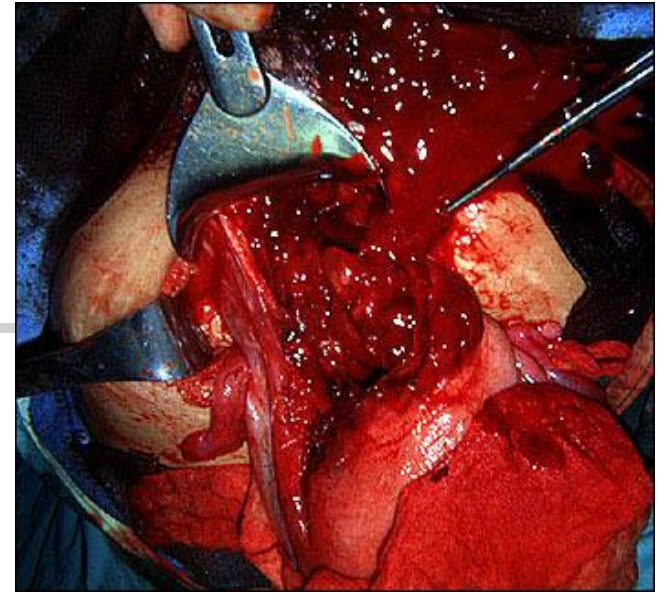
- Minimizes risk of uterine rupture and emergency CS complications
- Growing patient preference
 - Societal shift away from Natural Childbirth
 - Convenience, urogyn concerns
- Increases risk of future accreta/previa
 - The more cesareans, the more risk
 - TOL makes most sense when large family planned



V-Backlash

- More reports of uterine rupture
 - 10-75% perinatal morbidity and mortality
 - But very low maternal mortality
 - May be related to augmentation/induction
 - But even can occur before labor
 - Many earlier studies done in University Centers under controlled conditions

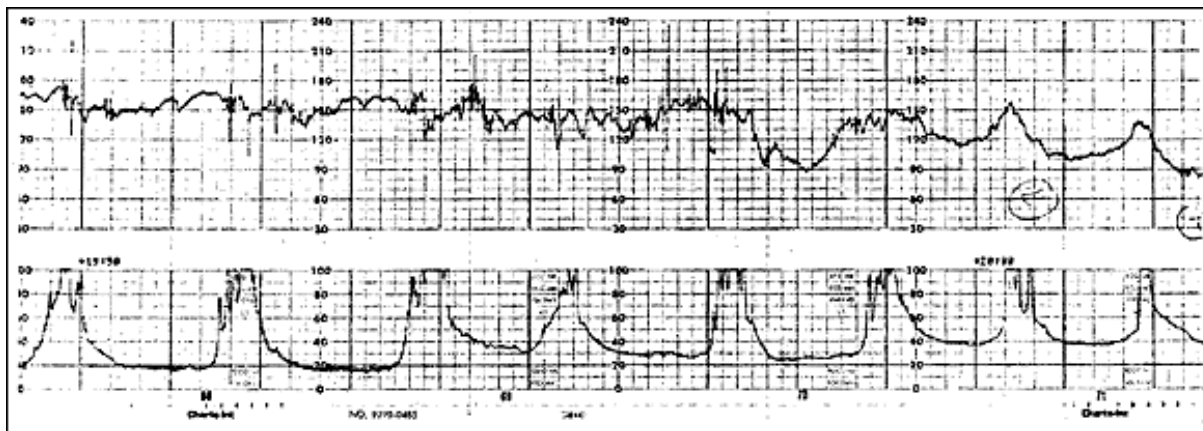
Uterine Rupture



- Uterine rupture rate
 - <1% for one LTCS
 - Rate roughly doubles for every additional LTCS
 - Low vertical incision similar to 2 LTCS
 - T-incision similar to classical (5-10% risk)
 - Higher risk with short inter-pregnancy interval, no vaginal deliveries, and possibly with single layer closure
- Rupture versus dehiscence

Possible Signs & Symptoms

- Pain, bleeding, abnormal FHTs, elevated presenting part, maternal shock, (loss of IUPC tone/pattern)
 - Of these, FHTs most accurate (but not very)





1999 ACOG Recommendations

- Most women with one (or two?) LTCS are candidates for VBAC and should be offered TOL
 - Physicians immediately available
 - Availability of anesthesia and OR personnel
 - Decision is between patient and physician
 - Controversy about women with unknown scar, breech, twins, etc.



“Immediately Available”

- In the hospital? Within 5 minutes?

Similar rules do not apply to cord prolapse, severe abruption, post-partum hemorrhage, and other unlikely-but-possible reasons for STAT surgery

If similar rules did apply, most US hospitals would not be able to offer OB care



ACOG and Prostaglandins

- Induction rate rose along with prostaglandin use
- Uterine rupture associated with PG
 - Wing (1998) & Lydon-Rochelle (2001)
 - Mostly misoprostol
 - Probable association with oxytocin too (meta-analyses)
- ACOG (1999 and 2002)
 - No misoprostol or PGE₂ if prior uterine surgery



2004 ACOG Recommendations

- Low-vertical, unknown incision, and twins are not necessarily contraindications
- PG may be okay for 2nd trimester inductions
- Thorough counseling
- ECV, epidurals, and oxytocin allowed
- Continuous EFM



2004 ACOG Contraindications

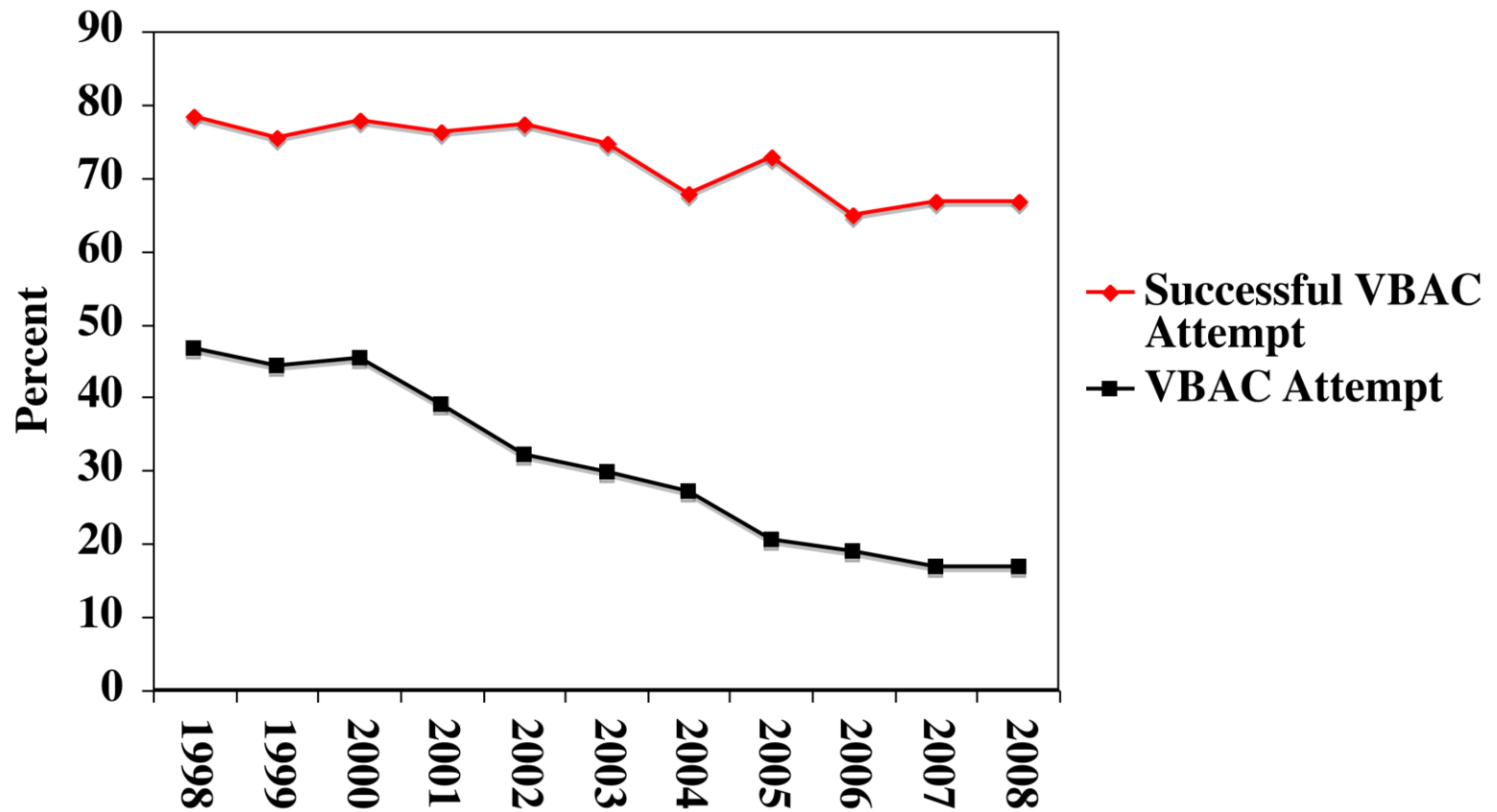
- Previous classical or T-incision, extensive trans-fundal surgery, or uterine rupture
- Inability to perform emergency CS due to unavailable staff (“physicians immediately available”)
- *Two prior LTCS with no vaginal deliveries*



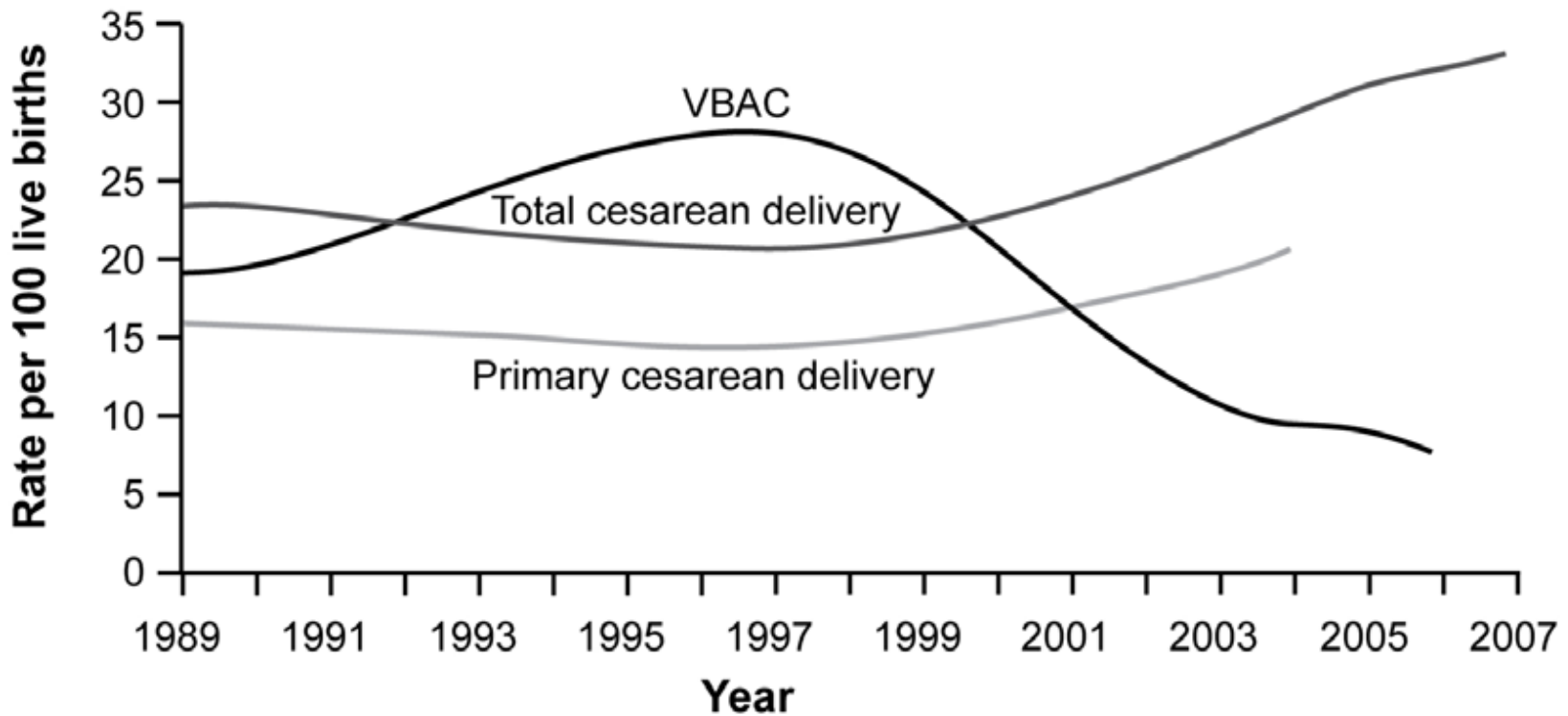
Subsequent Effects

- Most small hospitals stopped offering TOL
- Larger hospitals generally still offer it
 - But much less enthusiastically
- Less patient demand as “elective cesarean” philosophy takes hold
 - Still some demand for TOL though

VBAC Attempts and Success



Center for Health Statistics





2010 NIH Consensus Conference

- “We are concerned about the barriers that women face in gaining access to clinicians and facilities that are able and willing to offer trial of labor. *Given the low level of evidence for the requirement for “immediately available” surgical and anesthesia personnel in current guidelines,* we recommend that ACOG and the Am Soc Anesth reassess this requirement...”



2010 NIH Consensus Conference

- “Health care organizations, physicians, and other clinicians should consider making public their trial of labor policies and VBAC rates, as well as their plans for responding to obstetric emergencies.”
- “We are concerned that medical-legal considerations add to, and in many instances exacerbate, these barriers to trial of labor. Policymakers, providers, and other stakeholders must collaborate in developing and implementing appropriate strategies to mitigate the chilling effect the medical-legal environment has on access to care.”



ACOG's Response

- Practice Bulletin #115, August 2010
 - “TOLAC” and Intent-to-treat
- Success generally 60-80%
 - ↑ Spontaneous labor, prior vaginal birth
 - ↓ CPD/FTP, increased maternal age, non-Caucasian, GA>40wks, obese, preeclampsia, LGA



ACOG's Response

- If $\geq 60\%$ of success, TOLAC has less maternal morbidity
- Still recommends staff “immediately available”
 - “Intent not to limit VBAC availability”



ACOG's Response

- If patient wants TOLAC, options are:
 - 1. Refer to higher-level hospital
 - 2. Document limited resources, increased risk, and alternatives
 - Respect patient autonomy, and allow TOL



ACOG's Response

- Have clear policy for response to emergency
- Do not *forbid* TOLAC if she wants it
 - As long as she accepts increased risks
 - But do your Risk Managers accept increased risks?

Current Status



Versus





Conclusions

- TOL is an option for selected patients
 - Follow ACOG guidelines
 - TOL usually successful at acceptable risk
 - Discuss risks so patient makes informed decision
 - The larger the desired family, the better the option of TOL
 - No PG and avoid aggressive oxytocin



Conclusions

Avoid marginally indicated inductions when cervix is unfavorable (even if no previous CS!)

Fewer primaries

 **Fewer repeats**

