Myth of the Ideal Cesarean Section Rate

Ronald M. Cyr M.D.
UICOMP

September 4, 2008

Conclusions

1. Attempts to define an “ideal” C/S rate are futile, and should be abandoned.
2. C/S rate is a consequence of value-laden clinical decisions and not amenable to the methods of Evidence-Based-Medicine.
3. Like other population health indices, C/S Rate is indirectly related to American public policy during past century.
4. Without major changes in maternity-care delivery, incidence of C/S will continue to rise without improving population outcomes.

Introduction

- Since the earliest days of the “modern” C/S –the early 1880s—there has raged within the profession a debate about the appropriate indications for this operation.
- Until late 1960s –a few decades after the availability of antibiotics and blood banking– the C/S rate in USA was 4-6%.
- Between 1968 and 1978, the rate tripled to 15.2%.
- Discussion moved into the public domain.

Public Discussion

- 1980 NIH Task Force expressed concern about rising rate: qualified support for VBAC.
- By 1990s hospital C/S and VBAC rates in public domain and interpreted as quality indicators.
- 1991 “Healthy People 2000” advocated a 15% C/S rate by the year 2000.

Cesarean Childbirth 1980

NIH Consensus Conference

The rising cesarean birth rate is a matter of concern. The consensus statement reflects the judgment that this trend of rising cesarean birth rates may be stopped and perhaps reversed, while continuing to make improvements in maternal and fetal outcomes, the goal of clinical obstetrics today. The constructive steps that may be taken and goals for further research are recorded herein.

Healthy People 2010

NO CHANGE IN OBJECTIVE

16-9. Reduce cesarean births among low-risk (full-term, singleton, vertex presentation) women.

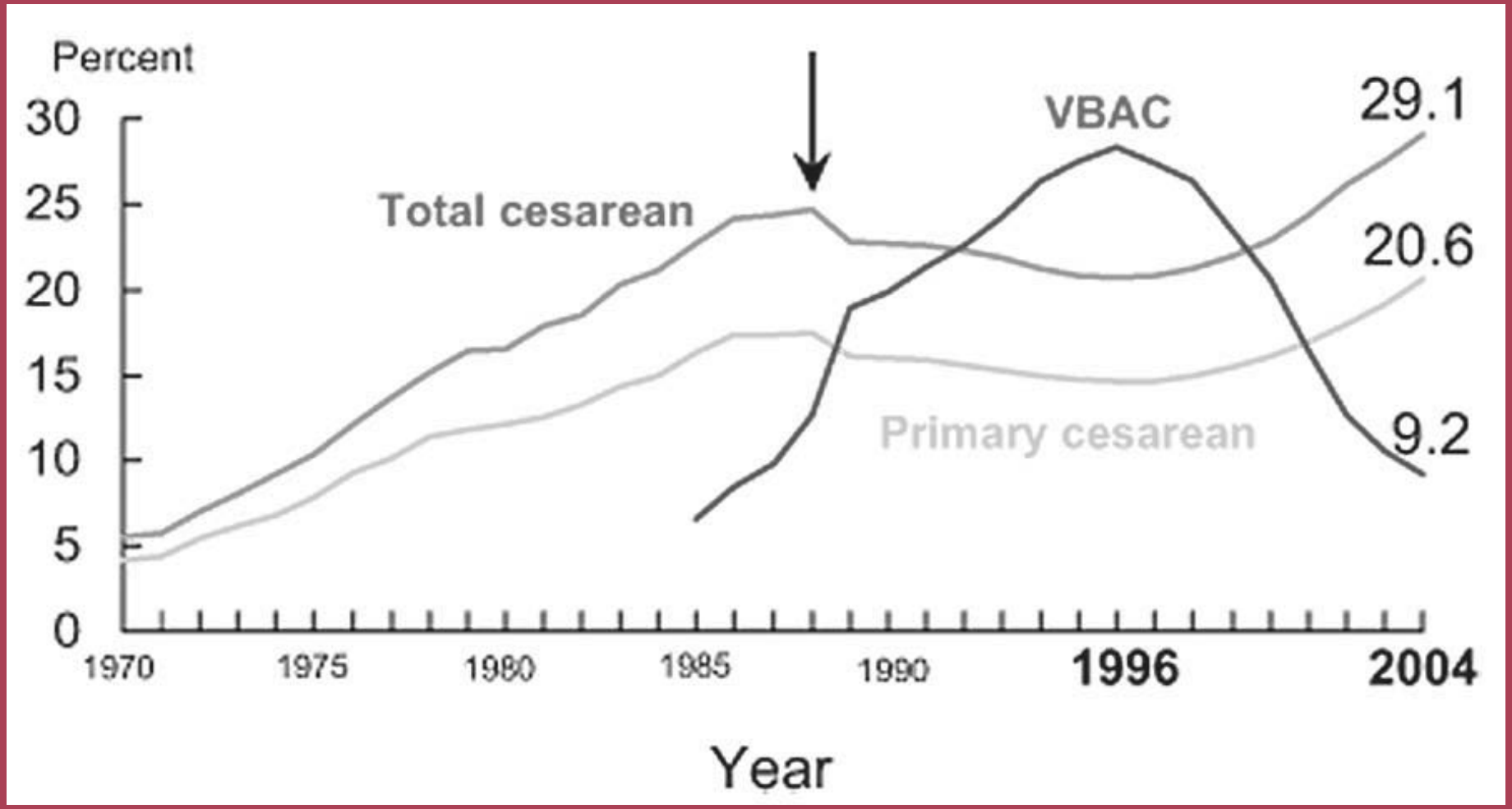
Target and baseline:

Objective	Reduction in Cesarean Births	1998 Baseline	2010 Target
		Percent of Live Births	
16-9a.	Women giving birth for the first time	18	15
16-9b.	Prior cesarean birth	72	63

Target setting method: Better than the best.

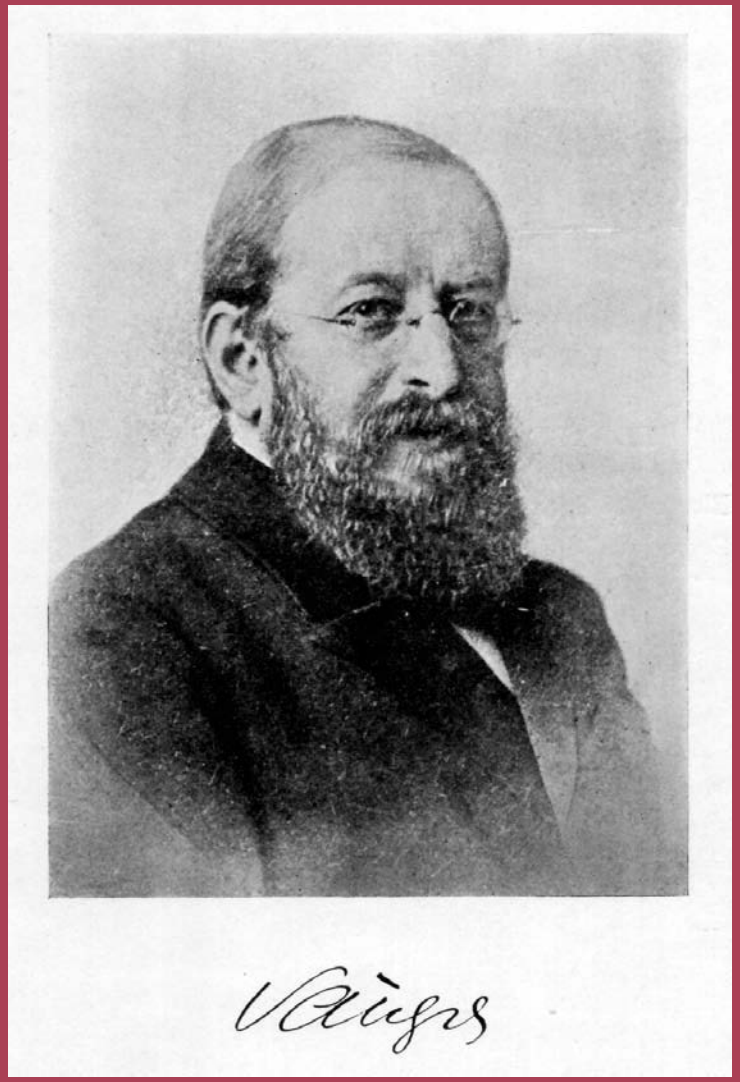
Data source: National Vital Statistics System (NVSS), CDC, NCHS.

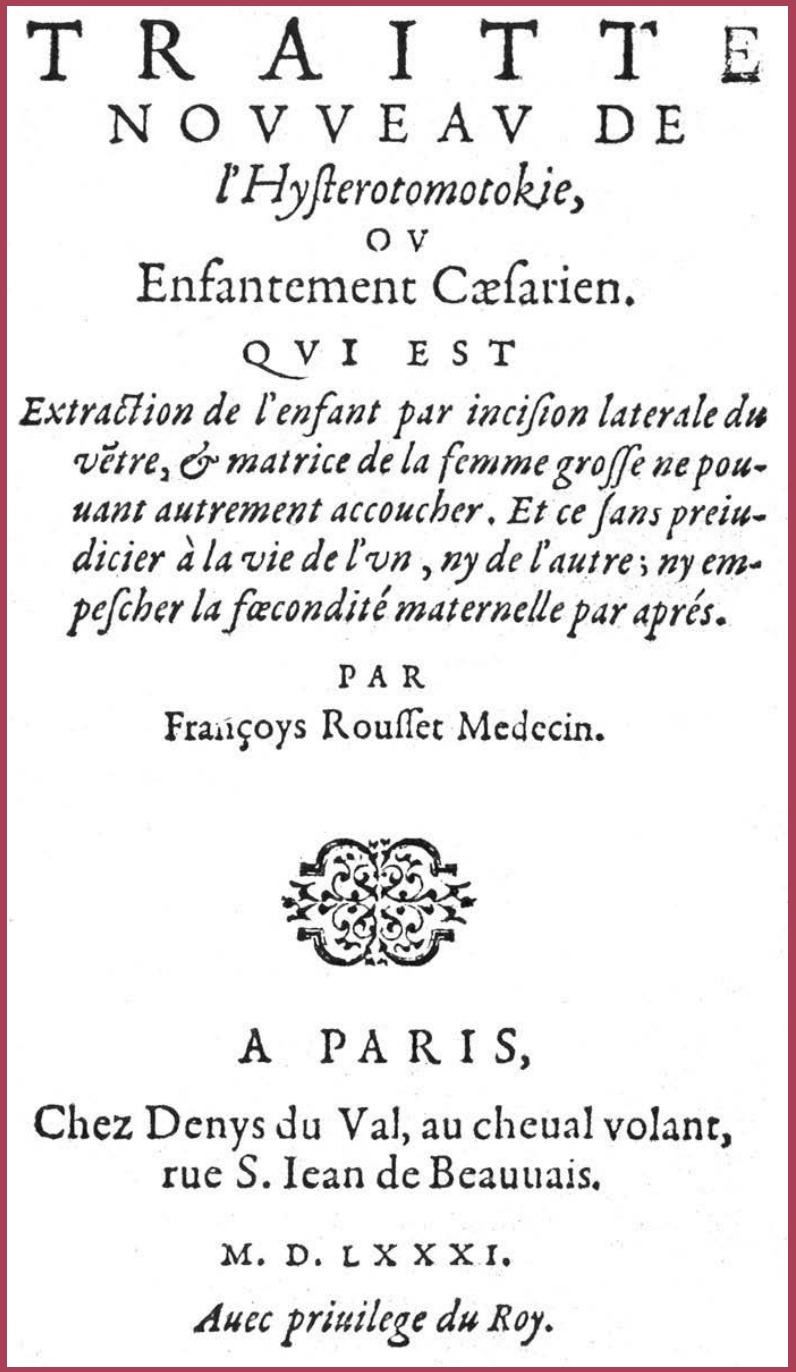
Cesarean & VBAC Rate USA



C/S – Historic Perspective

- Until Sänger standardized technique of “classical” cesarean, early 1880s, maternal mortality rate > 80%.
- Prior to that, isolated case reports.
- Success greater in home and countryside.
- Anesthesia not introduced until 1847



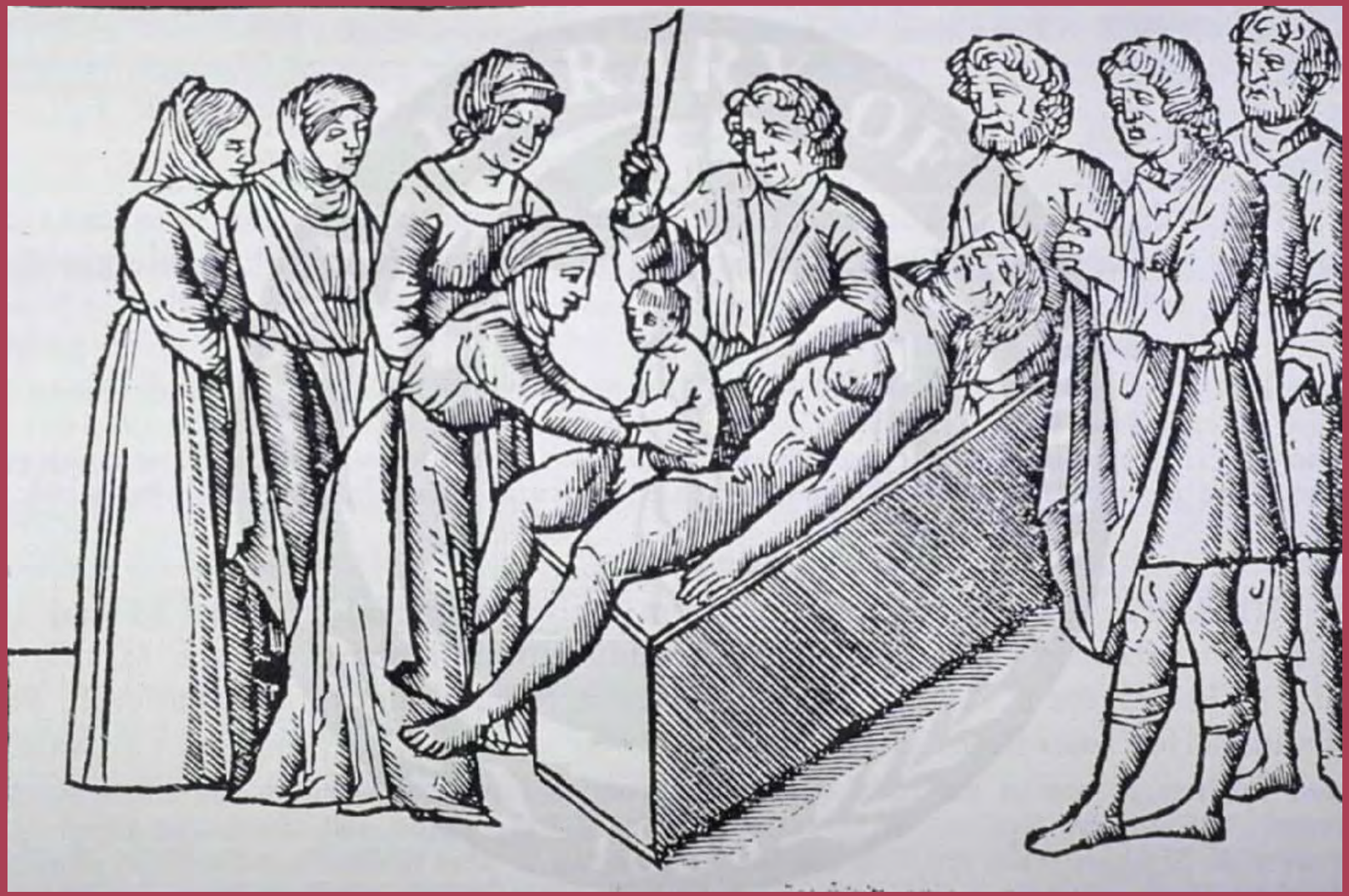


TRAITTE
NOVVEAV DE
l'Hyſterotomotokie,
OV
Enfantement Cæſarien.
QVI EST
Extraction de l'enfant par inciſion laterale du vẽtre, & matrice de la femme groſſe ne pouuant autrement accoucher. Et ce ſans preiudicier à la vie de l'vn, ny de l'autre; ny empeſcher la fœcondité maternelle par aprés.
PAR
Françoys Rouſſet Medecin.

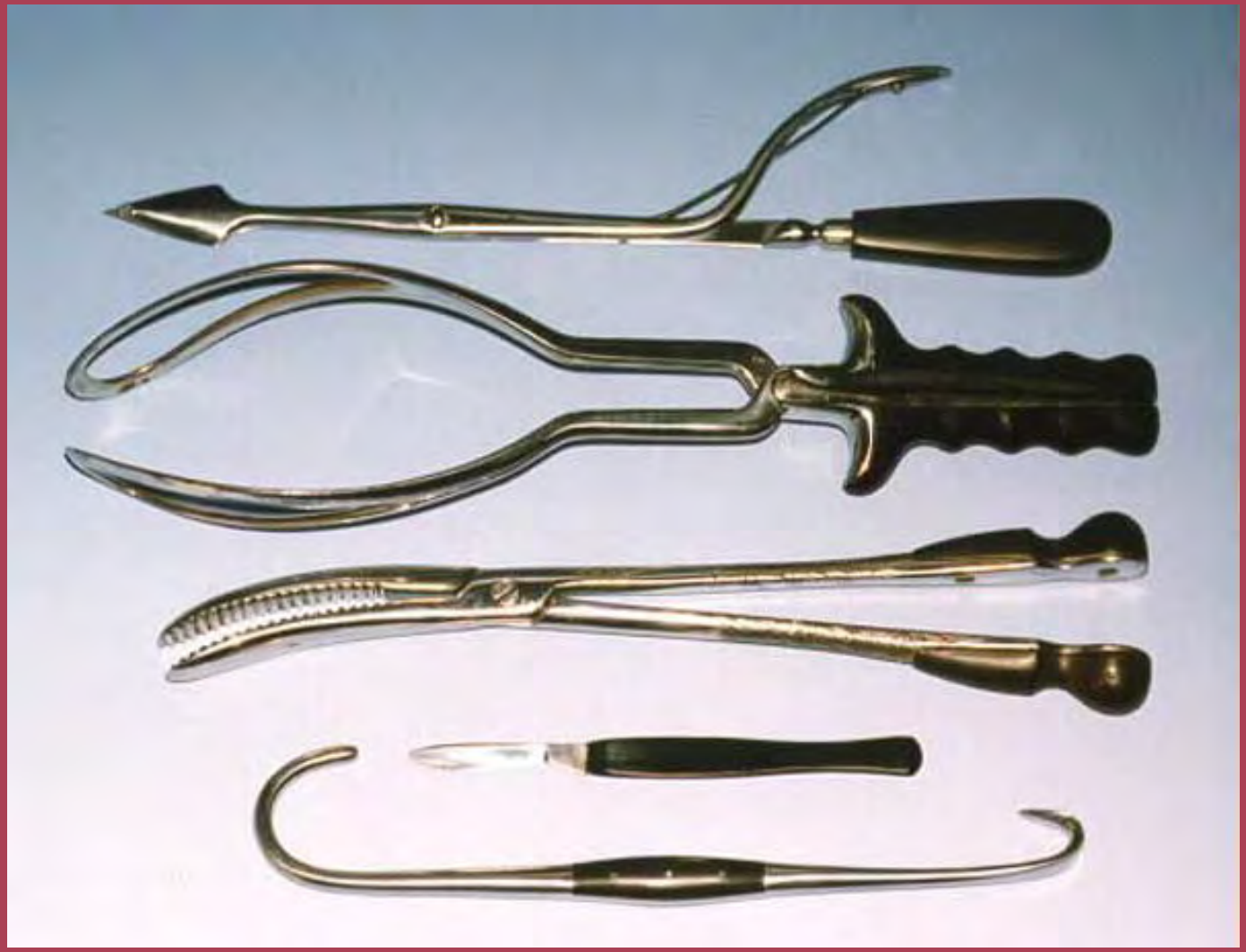
A PARIS,
Chez Denys du Val, au cheual volant, rue S. Iean de Beauuais.
M. D. LXXXI.
Auec priuilege du Roy.

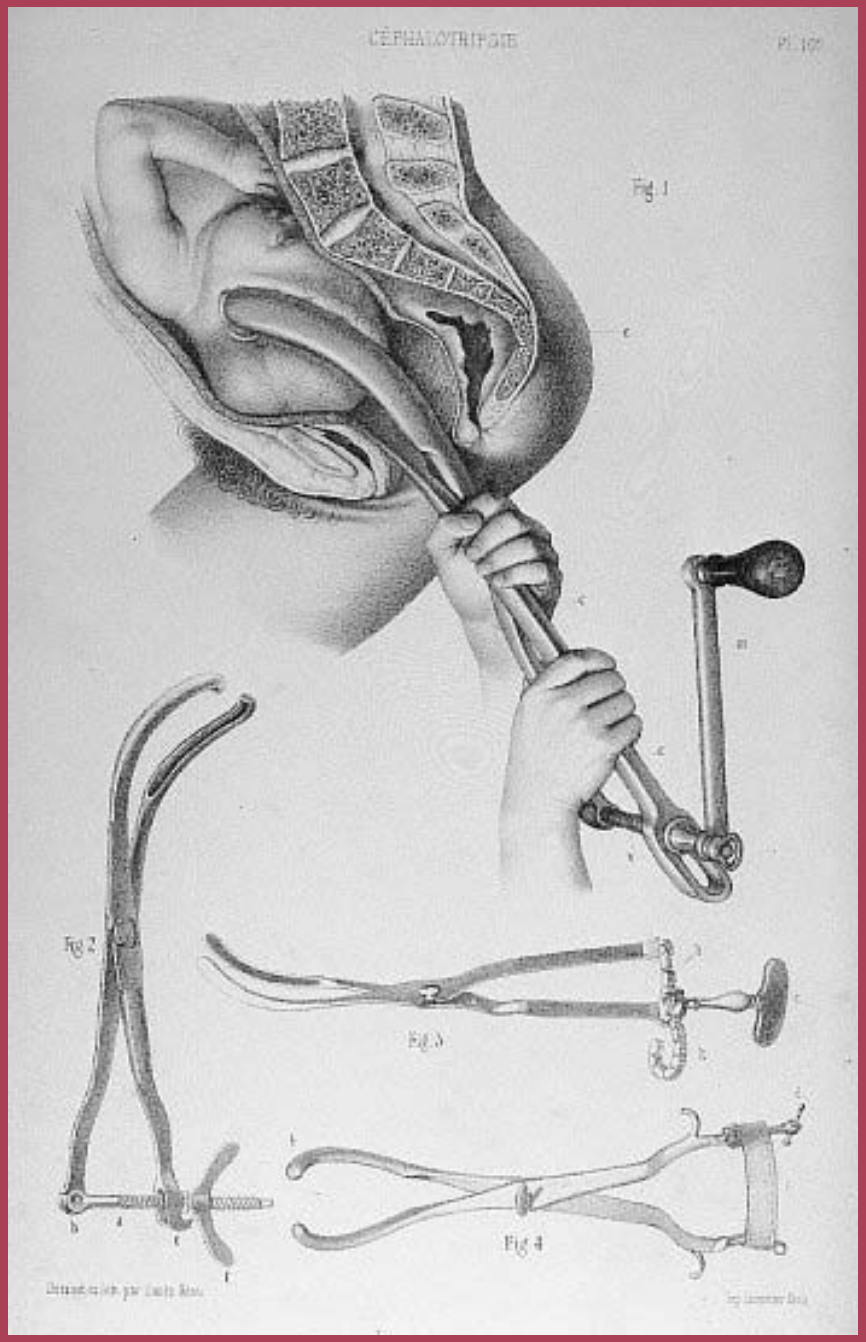
François Rousset
1581

Scipio Mercurio 1596



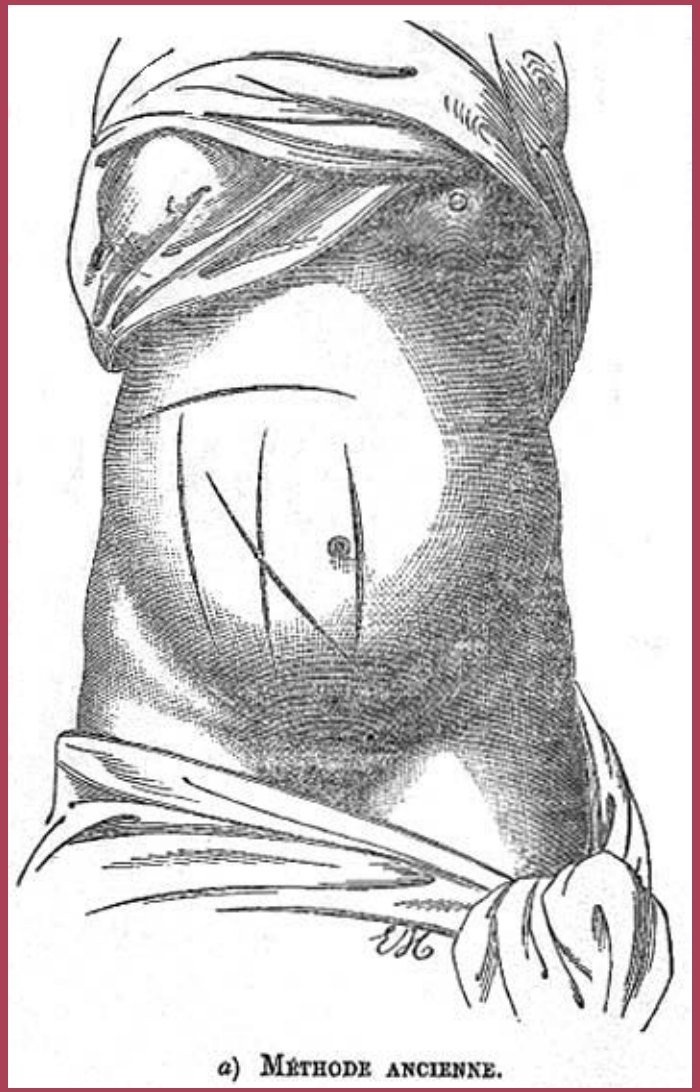
OBS Instruments





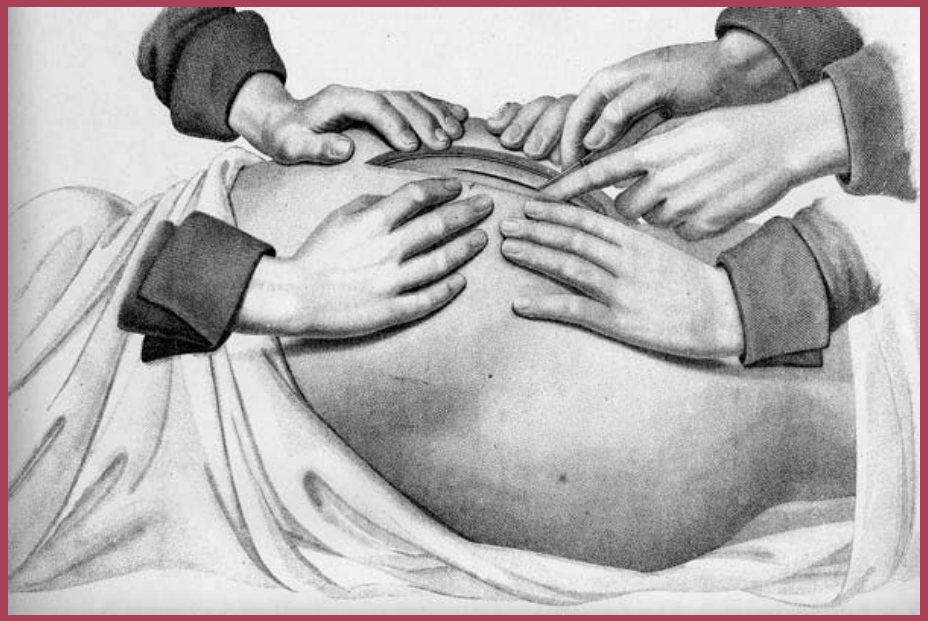
Cephalotripsy

C/S Incisions

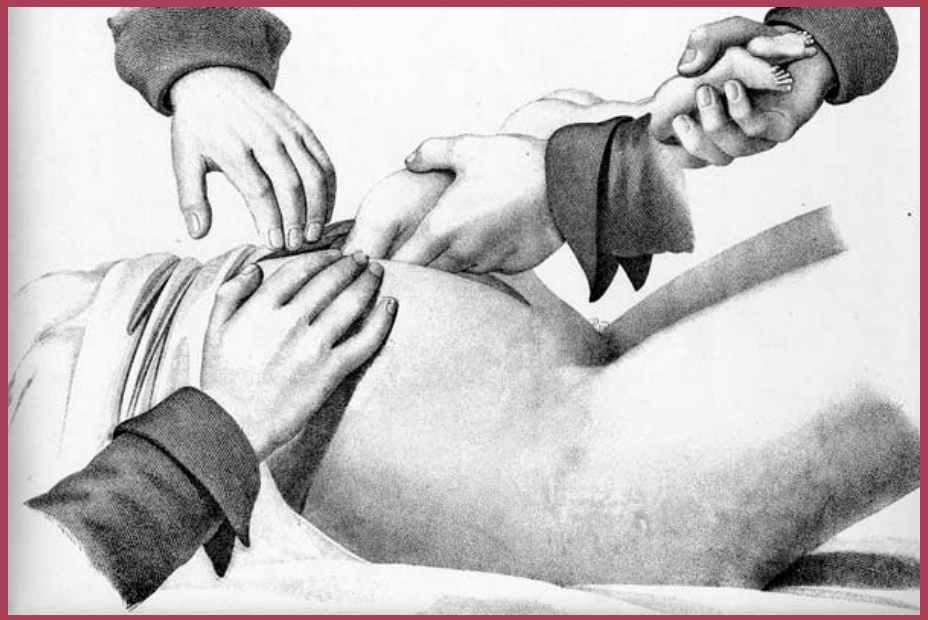


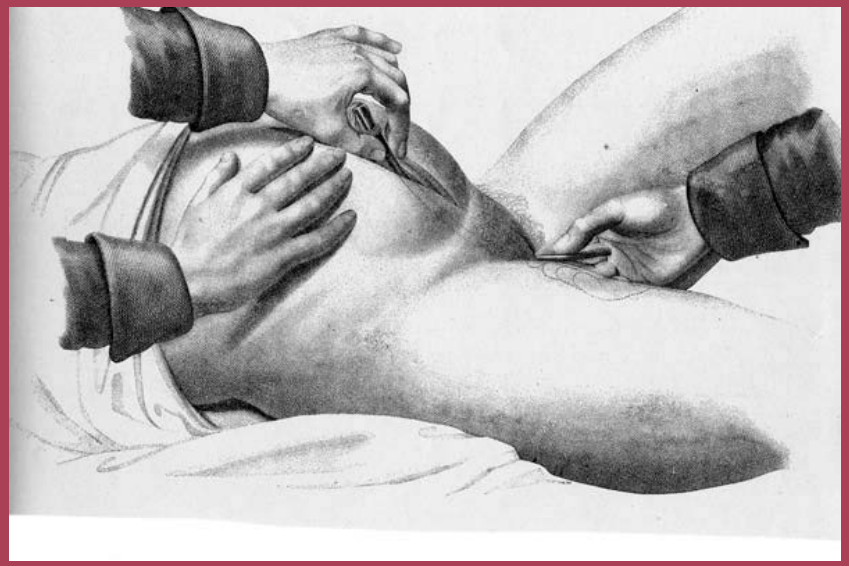
a) Méthode ancienne.

history-of-obgyn.com



Maygrier 1800s





- Application of surgery to midwifery attracted bold and ambitious personalities.

- Early reports reflected the views of enthusiasts:

…the cesarean section done by the expert before or early in labor is scarcely more dangerous than the average of labors as at present conducted in our great cities…

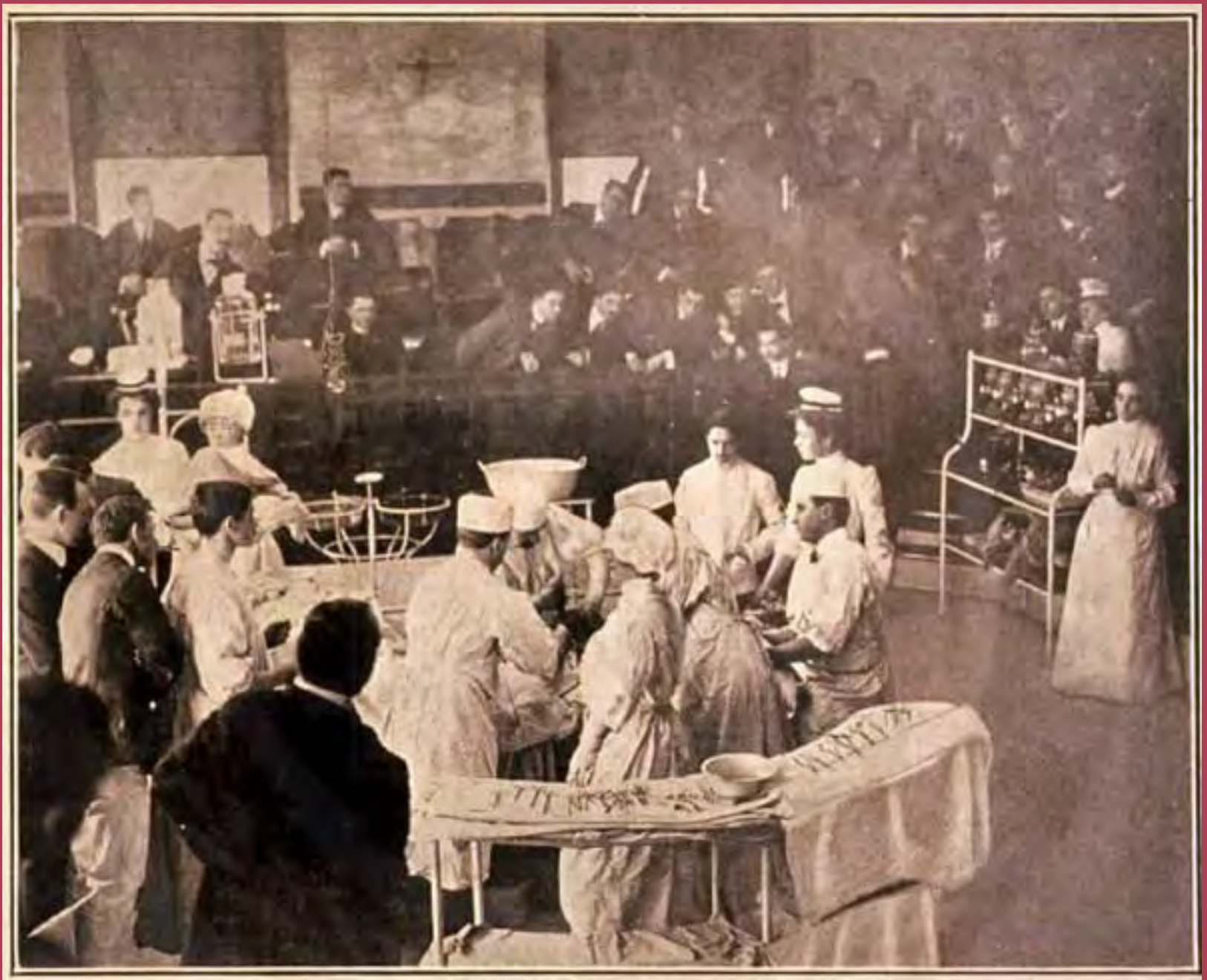
Noble (Philadelphia) 1893

- By early 1900s, MM following elective C/S had fallen to 3-4% in specialty hospitals.

- Indications widened: placenta previa, eclampsia…

- Reynolds (Boston) created a stir in 1906 by advocating elective C/S

…in an exceedingly small class of overcivilized women in whom the natural powers of withstanding pain and muscular fatigue are abnormally deficient.



CAESARIAN OPERATION,

Conservatism

- Despite rhetoric, weight of authority in academic circles was on the side of conservatism until quite recently.

- In 1888 Joseph Price (Philadelphia) wrote a paper on *The Abuse of Cesarean Section*

- J. Whitridge Williams (Hopkins) preached

*…the excellence of an obstetrician should be gauged not by the number of cesareans which he performs, but rather by those which he does not do…*1922

J. W. Williams Influence

- Early in his career, Williams advocated wider use of C/S in cephalo-pelvic disproportion as alternatives to craniotomy, symphysiotomy or high forceps.
- Later, formidable curmudgeon, opposed to most elective obstetric procedures.
- Particular contempt for widening C/S indications:

  Anybody who can use his hands and has a few tools can do a cesarean section…I take much more pride in getting my borderline cases through spontaneously than I do opening their abdomens. 1919

J. W. Williams Influence - 2

- Between 1900-1921, his C/S Rate 0.9%.
  - Knowing that morbidity increased with duration of labor yet, as a matter of principle unwilling to forego a proper trial of labor, he achieved respectable stats only by performing hysterectomy in 31% of his cases.
- Eponymic textbook, publications, residency program.
- Until his death in 1931, monopoly on filling academic chairs in the USA.

Weaver 1939

- Incidence of C/S is increasing alarmingly.
- C/S is still the most dangerous of all abdomino-pelvic operations: infection, hemorrhage.
- The nursing and medical professions, and the public, must realize that abdominal delivery is not the solution for every obstetric problem.

Reducing Maternal Risk 1935-1955

- Antimicrobials
  - Sulfa drugs, late 1930s
  - Penicillin, late 1940s
- Blood Banking

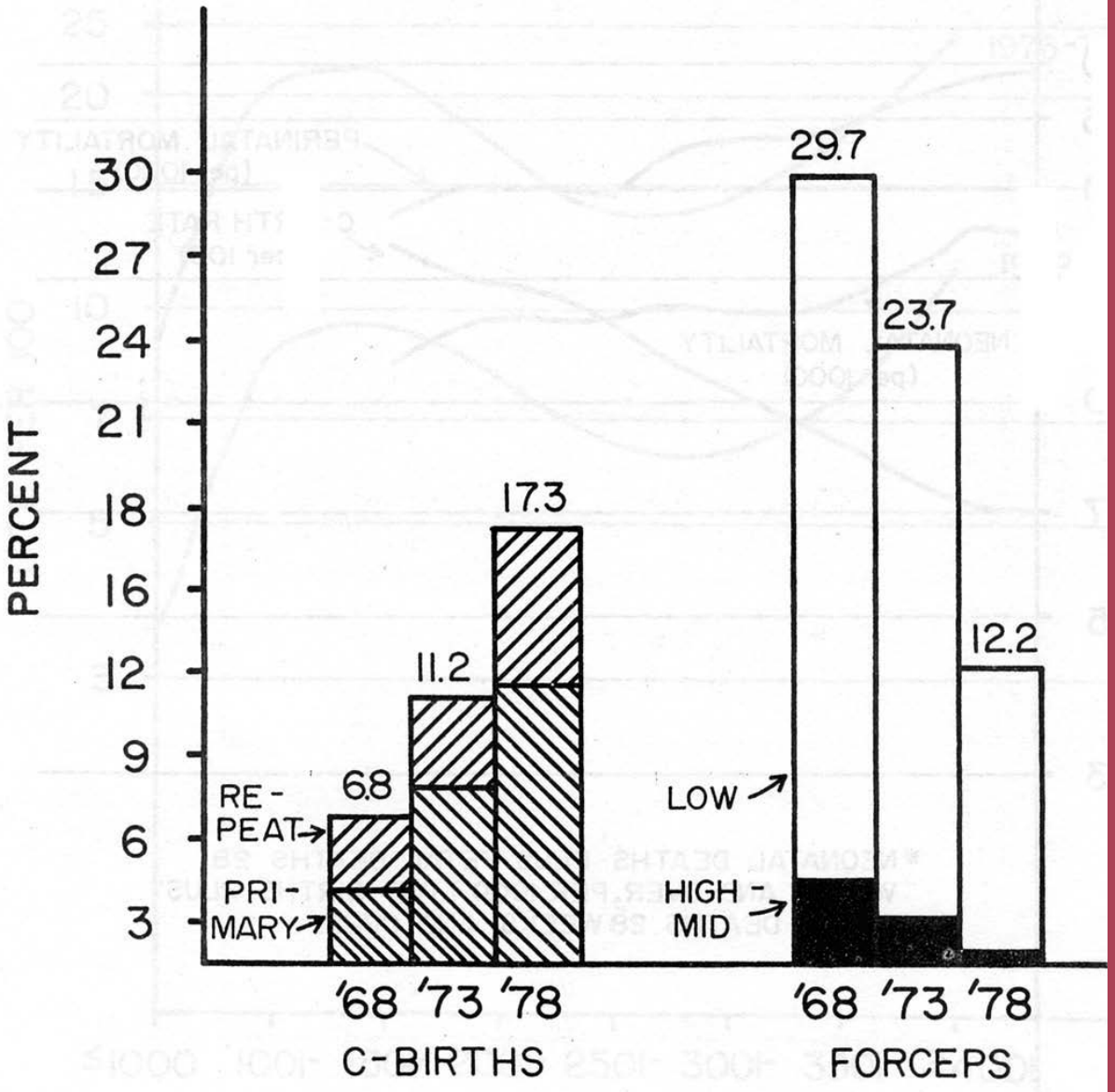
Dumoulin & Martin 1957

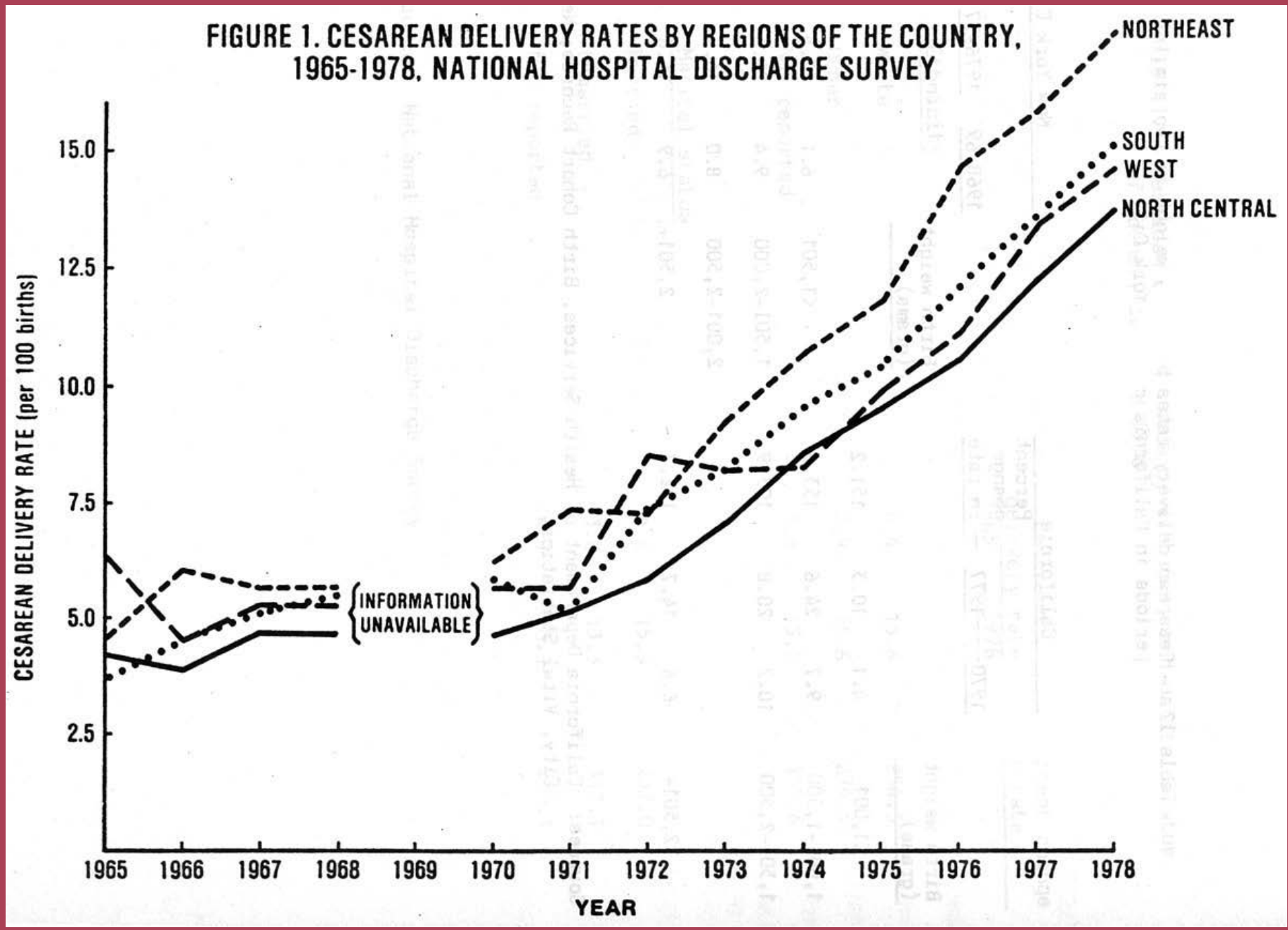
It is only in the last 10 years that fetal distress has been accepted as an indication for cesarean section. There are still those who consider such treatment as extremely radical.

TABLE 1. Changes in cesarean delivery rates by obstetrical indication, based on literature survey, 1931-1975*

Indication	Cesarean delivery rate (percent) and part of that rate contributed by each indication		
	Mean 1931-1949	Mean 1950-1968	Mean 1969-1975
Total cesarean rate	4.10	5.26	9.50
Repeat cesarean	1.18	2.11	3.50
Cephalopelvic disproportion**	1.52	1.06	2.30
Uterine inertia***	0.26	0.23	0.97
Malpresentation****	0.09	0.34	1.16
Fetal distress*****	0.04	0.38	1.32
Placental abruption	0.26	0.21	0.24
Placenta previa	0.28	0.25	0.30
Toxemia	0.43	0.09	0.67
Diabetes	0.02	0.08	0.29
Other******	0.50	0.61	0.61

Figure 1. C-BIRTHS AND FORCEPS RATES
NEW YORK CITY, 1968, 1973, 1978





Defining an Ideal C/S rate

No case should ever be decided with one eye on the statistics of the hospital.

Cosgrove (*New Jersey*) 1939

- Most academics had opinions about this:
  - Plass (Iowa) in late 1940s thought 4-5%
  - This was his rate on teaching service.
  - Open secret rate was as high as 15% on private service.
- In 1995, 23 experts concluded that the rate was too high.

Rate that would minimize the sum of all maternal and fetal risks.

Maternal

- Mortality
- Morbidity
  - Short-Term:
    - Febrile
    - Transfusion
    - Re-admission
    - Length-of-stay
  - Long-Term:
    - Repeat C/S
    - Placentation
    - Uro-Gyn
    - Dyspareunia
    - Psychological: QOL

Fetal

- Mortality
- Morbidity
  - Trauma
    - Fractures
    - Erb's Palsy
    - Sub-galeal bleed
    - Cephalhematoma
  - Asphyxia
  - Iatrogenic prematurity
    - RDS, PH

Hard *v.* Soft Data

- What level of maternal risk contraindicates C/S for fetal indications?
- Is there a level of fetal risk from vaginal birth that mandates C/S?
- What level of long-term maternal morbidity associated with vaginal birth outweighs the risks of C/S?
- Who decides?

Who decides?

- Wide range of C/S rates world-wide, and by different birth attendants, even within the same hospital =

  Individuals –parents and providers alike– perceive the same level of risk differently.

- C/S rate a consequence of subjective clinical decisions:
  - Cannot be pre-ordained.
  - Cannot be defined outside framework of individual values and assumptions.

C/S Rates & Evidence-Based Medicine

- 1972 Cochrane awarded his “wooden spoon” to OBS as the specialty least influenced by evidence.
- Since then many academic careers founded on the application of statistics to obstetrics.
- EBM dominates clinical teaching, if not often practice.
- Can EBM techniques be applied to the C/S rate?

C/S and RCTs

- Critics of high C/S rate cite observational studies showing ↑ maternal morbidity *v.* vaginal birth.
- As long as C/S is “of necessity”, will be performed under suboptimal conditions.
- RCT of planned C/S at term in general population:
  - Yield accurate risk data
  - Confirm that many handicaps unrelated to birth asphyxia or trauma

RCT Dilemmas -1

- If RCT showed + risk/benefit of elective C/S, birth could be reduced to a clinical algorithm, much like breech management today.

- At 1st glance C/S just another method of delivery. Yet, discussion is passionate:
  - Elective C/S challenges central paradigm of midwifery: pregnancy, labor and delivery are physiologic processes that should not be interfered-with in the absence of specific indications.
  - Many women, and their providers would refuse to participate in such RCTs, compromising external validity.

RCT Dilemmas - 2

- Limit RCTs to groups of women already at high risk of C/S.
- RCT requires a hypothesis that is simple, specific, and stated in advance:
  - C/S rate is calculated *post-hoc*
  - Possible approach:
    - Multiple arms, each having a different proportion of women by intended method of delivery: 100-0, 50-50, 0-100.
    - For specified outcome variables, an ideal rate could be estimated retrospectively.
- Ideal rate depends on how much weight is assigned to maternal *v.* fetal morbidity – all subjective criteria.

Theory v. Practice
RCT v. Clinical Judgment

- Emphasis on EBM overshadows need for individualization in OBS.
- RCTs “gold standard” evidence but often limited external validity:
  - Recruitment biases.
  - Investigators not random sample of providers:
    - Clinical judgment and technical ability normally distributed within profession.
    - The two rarely equally developed in same individual.
    - No evidence academic achievement correlates positively with clinical excellence.
- In light of such counfounders, maintain healthy skepticism about conclusions of any study.

Future of Cesarean Section

…we have all regretted that we have not done a cesarean in certain cases, but I have yet to regret one that I have done.

Humpstone (NY) 1920

- Few OBs would disagree with this thought.
- With this attitude, is there an upper limit to the C/S rate?
  - Population: older, heavier, primiparous.
  - Reluctance or inability to perform operative vaginal deliveries.
  - Patient-choice C/S becoming routine in high-risk patients.
  - Because labor is “normal” only in hindsight, it will be difficult for OBs to deny requests for elective C/S from women with no traditional risk factors.

The Malpractice Crisis

- Within profession, “malpractice crisis” gets good share of blame for rising C/S rate.
- Failure to perform C/S *in a timely manner* is a common allegation in cases of trauma or asphyxia. Difficult to fault Obs for practicing a *if in doubt, cut it out* philosophy.
- National Practitioner Data Bank shows little change in paid claims over last 13 years (~1/3100 births) despite rising C/S rate.
- Since litigation = bad outcome, there is mismatch between C/S and women/babies who might benefit from them.

Quality Improvement

- Censuring OBs or hospitals on basis of crude C/S rates is time-honored activity that does nothing to improve care.
- Don't criticize decisions without thorough review. Unfortunately, such scrutiny reserved for "sentinel event", which are uncommon.
- Since good luck alone prevents the worst consequences of bad obstetrics, QI better served by regular chart reviews, looking for deficiencies of:
  - Obstetric conscience
  - Judgment
  - Documentation

Public Policy and C/S Rates

- In past 100 years, USA has lagged behind other industrialized countries in every measure of health care quality, including maternal and neonatal M&M.
- Sad indictment of national priorities that millions of working Americans have no health insurance and inadequate prenatal care.
- In Europe, better perinatal outcomes, lower C/S rates, with less spending on health care.
  - In those countries, midwives manage most low-risk pregnancies, while Obs act as consultants.
  - How did procedure-oriented specialists come to perform midwifery in the USA?

Why OBs in America?

- 100 years ago most births at home.
- Apparent simplicity of OBS = poor teaching (*see one, do one*), low-status and remuneration.
- DeLee 1913: OB would never achieve professional status until *the pathologic dignity of obstetrics* was recognized.
  - This meant accepting premise that all births are potentially abnormal and must be managed by experts.
  - Midwives systematically eliminated on the grounds that they were “dirty”, poorly-trained, and a threat to the “science” of obstetrics.

Why OBs in America? - 2

- Residency programs multiplied as births moved to hospitals during 1920s and 30s.
- ABOG created in 1930 and formalized the notion that obstetrics was a specialty practiced by surgeons.
- By 1950s, birth in USA became a standardized hospital ritual presided-over by procedure-oriented male doctors in solo, fee-for-service practice:
  - High-volume OB was/remains bread & butter of community specialists.
  - Drudgery offset by promise of busy GYN practice in middle-age.
- This was Golden Era for Obs in USA:
  - Having promoted themselves as sole purveyors of expert maternity care, they took credit for the improvements in maternal and fetal welfare observed from 1940s-1970s.

Wither OB in America?

- Since the 1970s:
  - ↑ subspecialization.
  - ↑ technology.
  - ↑↑ cesarean rate.
- Benefits to population have not been commensurate with the increase in C/S rate.
- All this has raised patient expectations of perfect outcome to unrealistic levels, fueling litigation.
- Time to re-examine the way OB practiced in USA.

What next in the USA?

- Goals:
  - Improved access to health care.
  - Greater choice of birthing options.
    - Trained midwives provide safe OB care with lower C/S rates.
    - Only 7% of US births, usually in regions where they don't compete economically with Obs.
- So long as most women with insurance don't complain about their care, there is no political incentive to change the American way of birth.

What next in the USA? - 2

- Forces creating a shortage or maldistribution of maternity care providers:
  - Fewer family practitioners doing OB.
  - ↑ sub-specialization = ↓ generalists.
    - Marginalization of skills in larger centers.
    - Emphasis on primary care.
    - *…most [OBGYNs] are overtrained for the jobs they do, and many are undertrained for what they attempt.* Willson 1970.
  - More part-time OBs.
  - Reduced resident work hours.
  - Institutional requirements for in-house coverage 24/7.
- Alternate model for OB care:
  - Phase out generalist.
  - Self-regulated midwifery profession with MFM support.

Conclusions

- Don’t expect the C/S rate to drop in the near future.
- Re-educate public and profession that most births proceed normally without interference.
- Many adverse outcomes cannot be anticipated, nor prevented by cesarean.
- Cultural change takes time, inspired leadership and grassroots support.
- In the meantime, let everyone practice the best obstetrics they know.
- Let the C/S rate seek its own level.