The art of waiting is a difficult one, and not many obstetricians have either the courage or the patience to sit idly by whilst the breech delivers spontaneously; This becomes even more difficult if the impatient obstetrician has a century of tradition as well as the words and writings of all his contemporary teachers behind him.

Plentl and Stone, 1953
TRIALS OF THE TERM BREECH
A Historic Review

Dr. Dena Bloomenthal
May 13, 2011
Ambroise Pare 1510-1590
Francoise Mauriceau 1637-1709
Jacob Guillemeau 1550-1613
William Gifford 1756-1826
William Smellie
1697-1763

The Long Curved Forceps

Set of Anatomic Tables
1754
PIPER FORCEPS
Maternal mortality rate 1/154 hospital births
SPONTANEOUS DELIVERY OF BREECH IN UPRIGHT POSITION

Neck hyperextension
Lumbar lordosis
Simultaneous delivery of arms and shoulders
Normal fetal tone (baby alive)
Expulsive efforts (woman awake)

BRACHT MANEUVER

Albert Plentl and Raymond Stone
The Bracht Maneuver
Ob/Gyn Survey 1953

30 Reports
>3000 term breeches

1938  1939  1940  1941
8%  → 2.2%
Wright, Ralph. Reduction of perinatal mortality and morbidity in breech delivery through routine use of cesarean section. Obstet Gynecol, 1959

**DELIVERY PROBLEMS INHERENT TO BREECH**

1. Umbilical cord compression
2. Inadequately dilated cervix
3. Trauma to the unmolded head
4. Prolapsed cord
5. Difficulty predicting CPD

**Corrected Perinatal Mortality Rate for term breech**

- Vaginally: 4.7%
- Cesarean: 1.6%

**Fetal Injury Rate**

- Vaginally: 14/1000
- Low forcep 1.3/1000
CESAREAN SECTION RATE

- UK
- USA
- Canada

Medicolegal Pressures
Smaller Family size
Perfect baby
Breech Delivery at Term: A Critical Review of the Literature
Mary Cheng, Mary Hannah AJOG, 1993

Perinatal Morbidity
- Low 5 minute Apgar
- Brachial plexus / Erb palsy
- Fractured clavicle/humerus
- Skull fracture
- Cerebral hemorrhage
- Asphyxia/CP

OR 3.96

Perinatal Mortality
- Cord Prolapse
- Head Entrapment
- Cerebral Hemorrhage
- Asphyxia/CP

OR 3.86
RATE OF CESAREAN SECTION FOR BREECH CANADA

17% TBE
Survey of Canadian Obstetricians Regarding the Management of Term Breech Presentation.

Paula Penkin, Mary Cheng, Mary Hannah
**SOGC POLICY STATEMENT:**
**THE CANADIAN CONSENSUS ON BREECH MANAGEMENT AT TERM**

**SELECTION CRITERIA**
- Frank and Complete Breeches
- No Age or Parity Exclusions
- X-ray Pelvimetry Not Necessary
- Ultrasound (<4000g, no hyperextension)

**MEDICAL/OBSTETRIC ISSUES**

**INTRAPARTUM MANAGEMENT**
- Induction and Augmentation OK
- Duration of Labour
  - 0.5 cm/hour progress >3cm
  - 2 hours passive 2nd stage
  - 1 hour active 2nd stage
- Continuous EFM Unnecessary
- Vaginal Exam with Membrane Rupture
- No Routine Epidurals
- Amniotomy prn
- Intrapartum Consultation
- No total breech extractions
- Assisted Breech Delivery
Hannah et al. Planned caesarean section versus planned vaginal birth for breech presentation: a randomised multicenter trial
Lancet October 2000

COUNTRIES WITH LOW PERINATAL MORTALITY

No difference in perinatal/neonatal mortality between planned C-section and trial of labour.

Significant difference in short term neonatal morbidity in the vaginal delivery group (5.1% vs 0.4%)

Composite measurement of perinatal or neonatal mortality or short term morbidity was significantly higher in the vaginal delivery group (5% vs 1.6%)
“the best method of delivering a term frank or complete breech is by planned C-section”

March, 2001
ACOG Committee Opinion
Mode of Term Singleton Breech Delivery
Number 265, December 2001

“...planned vaginal delivery of a term singleton breech may no longer be appropriate.”
“Patients with breech presentation at term should undergo planned cesarean delivery.”

Hofmeyr GJ, Hannah M.
Planned caesarean section for term breech delivery. Cochrane Database of Systematic Reviews, Nov 2000

“planned caesarean section reduced perinatal or neonatal death or serious neonatal morbidity, at the expense of somewhat increased maternal morbidity.”

“Individual women should be informed of the risks of vaginal breech delivery.”
IMPACT OF THE TERM BREECH TRIAL

72% offered vaginal breech birth before TBT and 20% after (Phipps, 2003).

C-section rate for breech rose from 49% in 1998 to 75% in 2003.

Within two months of TBT, overall C-section rate for breech rose from 50% to 80% (Reitberg, 2003).
95% of Canadian maternity centers adopted a policy of planned C-section for term breech following the TBT (Daviss, 2010)

Graph showing the percentage of breech term fetuses delivered by cesarean section from 1960 to 2000.
CRITICISMS OF THE TERM BREECH TRIAL

1. Use of short-term morbidity as a marker for long-term neurologic impairment
2. Combined trial endpoints misleading
3. High degree of crossover
4. Protocol Violations (ultrasound, experienced clinician, stillbirths, anomalies)
5. Inappropriateness of intention to treat analysis
6. Variation of standard of care between centers

OUTCOME OF CHILDREN 2 YEARS AFTER TBT
Whyte, 2004

923 parents completed ASQ questionnaires

Result:
No difference in risk of death or neurodevelopmental delay between vaginal and cesarean groups.
SELECTION CRITERIA

INTRAPARTUM MANAGEMENT

- **>3.2 million singleton term newborns 1991-1999**
  - 93%
  - 97%
- **100,667 Breech (3%)**
- **4952 Vaginal Breech (4.9%)**

#### Mortality, Asphyxia, Brachial Plexus Injury, and Birth Trauma

<table>
<thead>
<tr>
<th></th>
<th>Mortality</th>
<th>Asphyxia</th>
<th>Brachial Plexus Injury</th>
<th>Birth Trauma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nullipara</td>
<td>OR 9.2</td>
<td>OR 5.7</td>
<td>OR 33.9</td>
<td>OR 5.8</td>
</tr>
<tr>
<td>Multipara</td>
<td>OR 1</td>
<td>OR 3.9</td>
<td>OR 22.4</td>
<td>OR 4.2</td>
</tr>
</tbody>
</table>

.. ethnic minority, less education, uninsured...were more likely to have VBD
The Dutch Perinatal Database
33,824 term breeches
(1995-1999)

Vaginal breech delivery or
Intrapartum emergency cesarean section

- 7-fold increase low Apgar score
- 3-fold increase birth trauma
- 2-fold increase in perinatal mortality

Compared to elective cesarean section

Decrease in perinatal mortality rate, birth trauma and low Apgar scores

175 elective cesareans to prevent one perinatal death

50% TBT 80%
Alarab et al. Singleton vaginal breech delivery at term: Still a safe option.
Obstet Gynecol, 2004

641 Term Breech 1997-2000

Elective C-section 343 (54%)

Trial of vaginal delivery 298 (46%)

Vaginal Delivery 146 (49%)
Nullip: 37% VD
Multip: 63% VD

Selection Criteria
- 2500-3800 g
- Frank/Complete
- No hyperextension
- Normal growth & fluid
- No pelvimetry

Labour Management
- No inductions/augmentations
- 1 cm/hr progress
- 30 min–1 hr active 2nd stage
- Routine episiotomy
- Epidural by choice (53%)
- Assisted breech delivery
- Experienced obstetrician

No nonanomalous perinatal deaths, significant trauma or neurologic dysfunction
“There is insufficient current evidence to allow systematic performance of a C-section in the case of breech presentation.”

CNGOF, 2000

“Current obstetrical practices in France concerning the breech presentation are very different than those described in the Term Breech Trial.”

CNGOF, 2000
There is insufficient current evidence to allow systematic performance of a C-section in the case of breech presentation.

French College of Gynecologists and Obstetricians
Criteria For Vaginal Breech Delivery (2000)

- Normal pelvimetry
- No hyperextension of fetal head
- EFW 2500-3800 g
- Frank breech
- Continuous monitoring
- Patients informed consent

- No inductions w unripe cervix
- No VBAC
- Progress of Labour
  - 1-1.5 cm/hr first stage
  - 30 minute 2nd stage
- Membrane preservation
- Assisted Breech Delivery
  - Lovset, Bracht, Mariceau
- Oxytocin (75%), epidural (>60%), Episiotomy (>60%) common
THE PREMODA STUDY

Fetal/Neonatal death < 28 days (excl congenital anomalies)

or 1 or more of the following:

Seizures < 24 hours
5 minute Apgar < 4
Intubation/Ventilation x 24 hours
Tube feeding x 4 days
NICU x > 4 days

Birth Trauma
Subdural hematoma
Intracerebral bleed
Intraventricular bleed
Spinal cord injury
Basal skull fracture
Peripheral nerve injury
Genital injury
### STUDY DIFFERENCES

<table>
<thead>
<tr>
<th></th>
<th>TBT</th>
<th>PREMODA</th>
</tr>
</thead>
<tbody>
<tr>
<td>US preceeding labor</td>
<td>&lt;70%</td>
<td>100%</td>
</tr>
<tr>
<td>Pelvimetry</td>
<td>10%</td>
<td>82%</td>
</tr>
<tr>
<td>Passive 2(^{nd}) stage &gt;1hr</td>
<td>3%</td>
<td>18%</td>
</tr>
<tr>
<td>Active 2(^{nd}) stage &gt; 1 hr</td>
<td>5%</td>
<td>0.2%</td>
</tr>
<tr>
<td>FHR monitoring</td>
<td>33%</td>
<td>100%</td>
</tr>
<tr>
<td>Mortality/Serious Morbidity</td>
<td>5.7%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Senior Obstetrician at delivery</td>
<td>&lt;80%</td>
<td>92.3%</td>
</tr>
</tbody>
</table>

#### Planned Vaginal Delivery
- **2526 (31.2%)**

#### Vaginal Delivery
- **1796 (71%)**

Fetal/neonatal mortality or serious morbidity excluding lethal malformations: 1.59%

**OR 1.10**

Significantly more common in Vaginal Delivery Group:
- 5 minute Apgar < 4 (OR 8.9)
- Total Newborn Injuries (OR 3.9)
- Intubation (OR 1.8)

Fractured clavicle, humerus, skull fracture, brachial plexus injury, sternocleidomastoid injury, hematoma, contusions.

Almost 20% of deliveries required maneuvers for extended arms or an entrapped head.
In light of recent studies that further clarify long-term risks of vaginal breech delivery, ACOG recommends that the decision depend on the experience of the health care provider. Cesarean will be the preferred mode for most physicians because of diminishing expertise... Planned vaginal delivery may be reasonable under hospital-specific protocol guidelines for eligibility and labor management.”
Planned vaginal delivery is reasonable in selected women with a term singleton breech fetus.

“With careful case selection and labour management, perinatal mortality occurs in 2 per 1000 births and serious neonatal morbidity in approximately 2% of breech infants.”
### Intrapartum Management

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Intrapartum Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frank and Complete Breeches</td>
<td>Induction not recommended</td>
</tr>
<tr>
<td>No Age or Parity Exclusions</td>
<td>Augmentation OK</td>
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<td>Ultrasound (&lt;4000g, no hyperextension)</td>
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<td>Medical/Obstetric Issues</td>
<td>Intrapartum Consultation</td>
</tr>
<tr>
<td></td>
<td>Assisted/Spontaneous Breech Delivery</td>
</tr>
<tr>
<td><strong>Duration of Labour</strong></td>
<td></td>
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<tr>
<td>5-10 cm in under 7 hours</td>
<td></td>
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<tr>
<td>1.5 hours passive 2nd stage</td>
<td></td>
</tr>
<tr>
<td>1 hour active 2nd stage</td>
<td></td>
</tr>
<tr>
<td><strong>Continuous EFM preferable 1st stage, mandatory second stage</strong></td>
<td></td>
</tr>
<tr>
<td>Vaginal Exam with Membrane Rupture</td>
<td></td>
</tr>
</tbody>
</table>
CONCLUSIONS

Problems inherent to the breech position, which place the fetus at risk during delivery, include cord compression, cord prolapse, entrapped aftercoming fetal parts (nuchal arms, entrapped head) and traumatic birth injuries.

These fetal complications have been described in the literature for decades preceding the Term Breech Trial.
CONCLUSIONS

The cesarean section rate for the term breech has been steadily rising since 1950. Contributing factors include the relative safety of cesarean section, medicolegal pressures, social and societal issues and the “hands off” approach to the term breech.

The Term Breech Trial re-enforced the importance of an experienced care provider, swift labour progress, limited active second stages, universal ultrasound accessibility and close operating room proximity.
CONCLUSIONS

The recommendations of the TBT assume all women and circumstances are the same.

Vaginal breech deliveries based on selective patient criteria and stringent intrapartum management may be safely accomplished. The stricter the criteria, the better the safety outcomes.

Those labours which start spontaneously and are progressive in nature are least likely to pose a problem.
The art of waiting is a difficult one, and not many obstetricians have either the courage or the patience to sit idly by whilst the breech delivers spontaneously; This becomes even more difficult if the impatient obstetrician has a century of tradition as well as the words and writings of all his contemporary teachers behind him.

Plentl and Stone, 1953