Previa and Accreta:
Risks of Multiple Cesareans

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I have no commercial conflict of interest for any of the material presented in this lecture to disclose.

Placenta Previa and Accreta
A View from the Trenches

AIM Conference
Hotel Nikko
San Francisco, California
Friday, June 8, 2012
Learning Objectives
At the conclusion of this presentation, the participants will:

1. Be familiar with the increasing incidence of placental implantation abnormalities.
2. Be familiar with the diagnostic approach to placenta previa and placenta accreta.
3. Be familiar with a management algorithm for placental implantation abnormalities.
4. Be aware of the current controversies and evidence available for management.

The Problem

National Institute of Health
State-of-the-Science
Conference Statement

Cesarean Delivery on Maternal Request
March 27-29, 2006
Bethesda, Maryland

Cesarean Delivery on Maternal Request

Cesarean delivery on maternal request is defined as a cesarean delivery for a singleton pregnancy on maternal request at term in the absence of any medical or obstetric indications.
The New Yorker
Annals of Medicine

THE SCORE
How Childbirth Went Industrial

Atul Gawande
October 9, 2006

Then comes what still seems surreal to me. You reach in, and, instead of finding a tumor or some other abnormality, as surgeons usually do when we go into someone’s belly, you find five tiny wiggling toes, a knee, a whole leg. And suddenly you realize that you have a new human being struggling in your hands.

You almost forget the mother on the table.

THE SCORE
How Childbirth Went Industrial

Every obstetrician today is comfortable doing a C-section. The procedure is performed with impressive consistency.

Straightforward as these operations are, they can go wrong.

Cesarean Delivery on Maternal Request

- Cesarean section rates are rising in the U.S.A. and were at an all time high of 29% in 2004 (Census Bureau 2004).

- “Perfect Storm” of medical, legal and personal choice issues” and “Lack of an opposing view”

- Cesarean section rate in 2007 ~ 32%

Ref: Flamm, OBGYN News, December 15, 2005
Ref: NCHS Data Brief, #85, March 2010
NIH State-of-the-Science Conference:

- **Insufficient** evidence to recommend one mode of delivery over the other
- Decision for CDMR should be **individualized**, consistent with ethical principles
- More prospective research needed

**SOGC**—Society of Obstetricians and Gynaecologists of Canada  
**NICE**—National Institute for Health and Clinical Excellence  
**RCOG**—Royal College of Obstetricians and Gynaecologists  
**FIGO**—International Federation of Gynecology and Obstetrics

Ref: Contemporary OB/GYN  
Vol. 51, No 12.  
www.contemporaryobgyn.net
What do Professional Organizations say?

**ACOG:** Committee on Ethics' surgical consent used CDMR as an example:
- CDMR is justified if OB believes overall health of patient and fetus greater with CDMR than with vaginal
- CDMR is not justified if OB does not believe CDMR is beneficial over vaginal

**SOGC:** "Vaginal birth remains preferred approach and safest option for most women, and carries with it less risk of complication in pregnancy and subsequent pregnancy.”

**NICE/RCOG:** "Maternal request is not on its own an indication for CS. An individual clinician has the right to decline a request for CS in the absence of an identifiable reason...she should be offered referral for second opinion.”

**FIGO (WHO):** Absence of evidence of benefit; potential drain on resources. **Not ethically justified.**

Risks in Future Pregnancies

Women considering planned cesarean delivery should consider the consequences of this decision on future pregnancies.

- Increased risk of placenta previa and accreta
- Increased risk of uterine rupture
- Complications from multiple abdominal surgeries

<table>
<thead>
<tr>
<th>Number of Cesareans</th>
<th>Previa (%)</th>
<th>Accreta (%)</th>
<th>Accreta in patients with previa (%)</th>
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<tr>
<td>Two</td>
<td>1.33</td>
<td>0.31</td>
<td>11</td>
</tr>
<tr>
<td>Three</td>
<td>1.14</td>
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<tr>
<td>Five</td>
<td>2.33</td>
<td>2.33</td>
<td>67</td>
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<tr>
<td>Six or more</td>
<td>3.37</td>
<td>6.74</td>
<td>67</td>
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</tbody>
</table>

The effect of cesarean delivery rates on the future incidence of placenta previa, placenta accreta, and maternal mortality

KARLA N. SOLHEIM, TANIA F. ESAKOFF, SARAH E. LITTLE, YVONNE W. CHENG, TERESA N. SPARKS, & AARON B. CAUGHEY

The Journal of Maternal-Fetal and Neonatal Medicine 2011;Early online, 1-6

Results

- If primary and secondary cesarean rates continue to rise as they have in recent years, by 2020 the cesarean delivery rate will be 56.2%, and there will be an additional:
  - 6236 placenta previas,
  - 4504 placenta accretas
  - 130 maternal deaths annually
- The rise in these complications will lag behind the rise in cesareans by approximately 6 years.

Conclusions

If cesarean rates continue to increase, the annual incidence of placenta previa, placenta accreta, and maternal death will also rise substantially.

The Diagnosis
**Diagnosis**

Placenta previa should be suspected in any woman beyond 24 weeks of gestation who presents with painless vaginal bleeding (3-4%).

Absence of abdominal pain and uterine contractions has been the distinguishing feature between:
- placenta previa (22%)
- abruptio placentae (31%)

Some women with placenta previa have uterine contractions in addition to bleeding.

Diagnosis of placenta previa must be determined by sonographic examination.

Ref: UpToDate 2006 - Lockwood

**Ultrasonography**

**Transabdominal**

- Transabdominal sonography has a diagnostic accuracy as high as 95% in detecting placenta previa, with a false negative rate of 7%.

- Over-distended bladder can compress the lower uterine segment to give the appearance of an anterior previa.

- The diagnosis of anterior placenta previa should not be made without confirming placental position after the patient has emptied her bladder.

Ref: UpToDate 2006 - Lockwood

**Transvaginal**

- Transvaginal sonography has become the gold standard for the diagnosis of placenta previa.

- It is a safe and effective technique, with diagnostic accuracy greater than 99 percent.

- The probe does not need to come into contact with the cervix to provide a clear image.

Ref: UpToDate 2006 - Lockwood

Both the transabdominal and transvaginal approaches should be used as complementary diagnostic studies.

Initial transabdominal examination, with transvaginal sonography if there is any ambiguity in the placental position.

Translabial ultrasound imaging is an alternative technique that provides excellent images of the cervix and placenta.
MRI

MRI has been used to provide a more precise method of placental localization.

MRI should only be used for diagnosis of placenta previa in select circumstances and possibly to rule out accreta:

- High cost
- Limited availability
- Safety and accuracy of TVS

Ref: UpToDate 2006 - Lockwood

Results

- The PPV of an ultrasound diagnosis of accreta was 68% and NPV was 98%. Ultrasound had a sensitivity of 89.5%.

- Compared with previa alone, accreta had an odds ratio (OR) of 89.6 (95% CI, 19.44–412.95) for estimated blood loss >2 L, an OR of 29.6 (95% CI, 8.20–107.00) for transfusion and an OR of 8.52 (95% CI, 2.58–28.11) for length of hospital stay >4 days.

Ref: Ultrasound Obstet Gynecol 2011;37:324-327
Conclusion

- Placenta accreta is associated with greater morbidity than is placenta previa alone.

- Ultrasound examination is a good diagnostic test for accreta in women with placenta previa.

- This is consistent with most other studies in the literature.

Ref: Ultrasound Obstet Gynecol 2011;37:324-327

Figure 1 Ultrasound findings suggestive of placenta accreta include: loss of bladder wall-uterine border (a); placental lacunae (b); increased vascularity on color Doppler next to the bladder wall (c). The calipers in (a) are measuring the cervix.
Diagnosis - Intraoperative

The Management

Placenta Previa
Conservative Management of Stable Preterm Patients

- Delivery may be deferred and conservative management initiated in 75% of women with a symptomatic placenta previa.
- In one large series, for example, 50% of women with an initial hemorrhagic episode exceeding 500 mL did not require immediate delivery and mean prolongation of pregnancy in this group was 17 days.
- Overall, pregnancy can be prolonged by at least four weeks in 50% of women with a symptomatic previa.

Stanford University Medical Center
Lucile Salter Packard Children’s Hospital

**Bleeding Placenta Previa 24 – 37 weeks**

- Admit to L & D
- Tocolysis PRN
- Continuous EFM
- Laboratory studies and blood product availability
- Anesthesia, Surgical (Onc), IR consultation (individualize)
- Steroids
- Rhogam for Rh Negative

SUMC – LPCH

**Outpatient Management**

**Consider if:**
- Patient hemodynamically stable: No bleeding – 48 to 72 hours
- Reassuring fetal status (No IUGR, etc…)
- Close proximity to the hospital
- Stable social situation
- Availability of transport
- No accreta - Individualize

SUMC – LPCH

**Preparation for Delivery**

- Amniocentesis is performed at 36 weeks to assess pulmonary maturity ~ Controversial and decision made by attending MFM.
- Scheduled abdominal delivery upon confirmation of pulmonary maturity ~ Controversial and decision made by attending MFM.
- Counseling and consent for hysterectomy, IR and blood products.
- Obvious benefits of avoiding maternal hemorrhage and emergency surgery.
Delivery

- Scheduled cesarean section during regular hours
- May need to be performed in main operative room suite ~ individualized
- Anesthesia Consultation
- Interventional Radiology Consultation for select cases
- Surgical Consultation (Onc)
- Blood Bank Consultation

Ref: UpToDate 2006 - Lockwood

Delivery

- Try to avoid disruption of the placenta when entering the uterus.
- Preoperative localization helpful for hysterotomy incision.
- Vertical incision or high transverse incision may be carried out above a low-lying anterior previa – individualize surgical management.

Ref: UpToDate 2006 - Lockwood

Delivery

- Blood products available for delivery.
- Appropriate surgical instruments for performance of a cesarean hysterectomy should also be available since there is a 5 to 10% risk of placenta accreta.

Ref: UpToDate 2006 - Lockwood

When Should Women with Placenta Previa Be Delivered? A Decision Analysis

Journal of Reproductive Medicine
2010 Sep-Oct;55(9-10):373-81

Mary G. Zlatnik, MD, MMS, Sarah E. Little, MD, Puja Kohli, MD, Anjali J. Kaimal, MD, Naomi E. Stotland, MD, and Aaron B. Caughey, MD, PhD.
Objective

- To determine the optimal gestational age of delivery for women with placenta previa by accounting for both neonatal and maternal outcomes.

Results

- Delivery at 36 weeks, 48 hours after steroids, for women with previa optimizes maternal and neonatal outcomes.
- In sensitivity analyses, these results were robust to a wide range of variation in input assumptions. If it is assumed that steroids offer no neonatal benefit at this gestational age, outright delivery at 36 weeks' gestation is the best strategy.

Conclusion

Steroid administration at 35 weeks and 5 days followed by delivery at 36 weeks for women with placenta previa optimizes maternal and neonatal outcomes.

What is the optimal time to deliver a woman who has placenta previa?

OBG Management
Vol. 23 No. 4, April 2011

Expert Commentary
John T. Repke, MD
Professor and Chair, Department of OBGYN
Penn State College of Medicine
Milton S. Hershey Medical Center
I think that most clinicians would agree that:

1) carrying a pregnancy complicated by placenta previa to 39 weeks’ gestation is not a good idea and
2) earlier delivery would certainly not be considered “elective.”
3) Moreover, it would be unwise to attempt to temporize in the setting of a bleeding previa in the late third trimester.
4) An alternative would be to delay delivery until 37 weeks.

The Management

Placenta Accreta

The incidence of placenta accreta has increased 10-fold in the past 50 years and now occurs with a frequency of 1 per 2,500 deliveries. Women who have had two or more cesarean deliveries with anterior or central placenta previa have nearly a 40% risk of developing placenta accreta.

If the diagnosis or strong suspicion of placenta accreta is formed before delivery, the patient should be counseled about the likelihood of hysterectomy and blood transfusion.

ACOG Committee Opinion #266, January 2002

Effect of Predelivery Diagnosis in 99 Consecutive Cases of Placenta Accreta

C.R. Warshak, MD, G.A. Ramos, MD, R. Eskander, MD, K Benirschke, MD, et al

Obstet and Gynecol, Vol 115, No. 1 January 2010
Objective

To estimate the effects of prenatal diagnosis and delivery planning on outcomes in patients with placenta accreta.

Methods

- A review was performed of all patients with pathologically confirmed placenta accreta at the University of California, San Diego Medical Center from January 1990 to April 2008.
- Cases were divided into those with and without pre-delivery diagnosis of placenta accreta.
- Patients with prenatal diagnosis of placenta accreta were scheduled for planned en bloc hysterectomy without removal of the placenta at 34-35 weeks of gestation after betamethasone administration. Maternal and Neonatal outcomes were assessed.

Conclusion

- Pre-delivery diagnosis of placenta accreta is associated with decreased maternal hemorrhagic morbidity.
- Planned delivery at 34-35 weeks of gestation in this cohort did not significantly increase neonatal morbidity.

Retreat ~ June 2010

Division of Maternal-Fetal Medicine
Department of Obstetrics and Gynecology
Stanford University Medical Center
Lucile Packard Children’s Hospital
Stanford University School of Medicine
Program for Placental Disorders
Clinical Director: Dr. Deirdre J. Lyell

- Housed within Fetal and Maternal Center
- Goals
  - Minimize morbidity and mortality for mother and newborn
  - Maximize coordination of care
  - Research the problem of abnormal placentation
- Referrals to Fetal and Maternal Center
  "One Stop Shopping"

Diagnosis

- Ultrasound
  - 93% Sensitivity, 71% Specificity
- MRI
  - 80% Sensitivity, 65% Specificity

Antepartum Management and Delivery
Discussion Points

- Hospital Admission
- Gestational age
- Institutional Resources
- IR ~ No proven difference in major morbidity
  - 15.8% complication rate from catheters
- Uterine preservation and/or delayed hysterectomy?

Suggested Best Practices

- Q4 week ultrasounds - All agree
- Weekly nonstress tests - Starting at 28-30 wk
- Routine MRI? - If diagnosis is unclear or if suspicious for percreta. If diagnosis OF ACCRETA is clear, may refrain from MRI
- Routine Gyn Onc consult? – Yes
Discussion Points

IR? - Will discuss **NEED ON A CASE BY CASE BASIS** with Gyn Onc. If we decide to use this type of adjuvant service, we will also explore use of IR vs. vascular surgery.

Routine hospitalization? - **Timing to be determined by MFM** based on imaging/pt's distance from hospital etc. Generally consider at 32-34 weeks.

Discussion Points

Timing of delivery? Plan to give all BMZ **AT TIME OF HOSPITALIZATION AND BY 34 weeks**. Delivery 34-36 wk.

Should we offer uterine preservation or delayed hysterectomy? We will potentially discuss this for future patients. We may discuss this to reduce maternal surgical morbidity – **LESS SO FOR FERTILITY**.

The Results

Our Experience

To Determine Factors Associated with Maternal and Neonatal Morbidity in Patients with Placenta Previa or Invasive Placentation

Authors: Langen ES, Lee H, Park M, El-Sayed YY, Druzin ML
Stanford University Medical Center

Accepted:
Poster Presentation
31st Annual Society for Maternal-Fetal Medicine
2011, San Francisco, CA
Study Design (N = 114)

- Retrospective review of pregnancies with a diagnosis of placenta previa, accreta, increta, and percreta delivered at a tertiary hospital between July 2005 and July 2009.

- The placentation abnormality was defined by pathological diagnosis when available and otherwise by clinical description at delivery.

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Results

- **35/114 (31%)** had maternal morbidity

- Maternal morbidity was more common in women with **invasive placentation**
  
  - 77.3% vs. 19.6%  
  - *p* < 0.0001

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Results

**Bleeding episodes (All Patients)**

- **88/114 (77%)** had a bleeding episode (from the first to third trimester).

- There was an average of **2.69 episodes** of bleeding with a range of 1-9 episodes of bleeding prior to delivery.

- There was no difference in morbidity among women who had bleeding episodes vs. those who did not:
  
  - 34.1% vs. 19.2%,  
  - *p* = 0.15

- The use of tocolytics during pregnancy was also **not associated** with higher morbidity.
  
  - 34.6% vs. 27.1%  
  - *p* = 0.39
Results

- For the entire cohort, being delivered on a scheduled basis rather than for active bleeding did not significantly reduce morbidity.
  - 25.4% vs. 37.3%  \( p = 0.17 \)

Results

- In stepwise multi-variable logistic regression, only invasive placentation was associated with maternal morbidity.
  - AOR 17, 95% CI 5, 58

Results

- When considering only those women with invasive placentation (n=22), being delivered at a scheduled time rather than for active bleeding was associated with decreased maternal morbidity.
  - 61.5% vs. 100%  \( p = 0.03 \)

Conclusion

- For women with invasive placentation, delivery at a scheduled time was associated with decreased maternal morbidity.

- Neonatal morbidity in this cohort was largely due to preterm birth. Patients who delivered prematurely, had more episodes of bleeding (2.5 vs. 0.8, \( p<0.0001 \)).
The Discussions

What do the experts say?

Placenta Accreta

1. Typically, there should be no planned attempt to remove the placenta before hysterectomy is undertaken.

2. In rare circumstances, removal of the uterus will not be possible or will be deemed too dangerous because of extensive invasion into surrounding pelvic tissues.

3. Case reports and small case series have described successful conservative therapy in which the placenta and uterus are left in situ, or compressive sutures are applied to the uterus.

4. The potential need for delayed hysterectomy due to recurrent bleeding should be considered.
Placenta Accreta

5. Post-operative methotrexate therapy and selective arterial embolization have been reported in some cases under this circumstance.

6. The safety and efficacy of these interventions are unknown, and serious complications have been reported with conservative management (e.g., severe hemorrhage, septic shock, pulmonary embolism).

Preterm Delivery

Recommendations:

- Placenta Previa – 36 0/7ths to 37 6/7ths
- Placenta Accreta – 34 0/7ths to 35 6/7ths
- Amniocentesis – Clinical judgment
  - Not strongly recommended

Deliver – Maternal Indications

- 34 Weeks
  - Severe preeclampsia remote from term
  - HELLP Syndrome

Obstetrics and Gynecology

Timing of Indicated Late-Preterm and Early-Term Birth

Catherine Y. Spong, MD, et al
Vol. 118 No. 2, Part 1
August 2011
The Ten Commandments of Placenta Accreta

**Thou Shalt**

1. Use **ultrasound** for diagnosis
2. Deliver at **34-35 weeks**
3. Administer **ANCS** prior to delivery
4. Refer to Center with facilities, schedule surgery with maximal availability of resources including surgical expertise such as GYN/ONC
5. Deliver through vertical/classical c/s *(hands off the placenta)*

**Thou Shalt Not**

1. Use **MRI** as a primary diagnostic tool (MRI only for suspicion percreta)
2. Delay delivery to prevent late preterm gestation
3. Rely on amniocentesis to guide delivery
4. Keep patients in hospital with limited resources. Schedule surgery after hours or on weekends/holidays or on L and D if resources for major surgery are unavailable.
5. Deliver the placenta

6. **Plan hysterectomy**
7. Have **adequate blood** available
8. **Give 1:1 PRBC/FFP**
9. **Not use I.R. for all cases**

6. Perform heroic measures for uterine preservation
7. Hesitate to give blood and lots of it!!
8. Only give RBC's
9. Use I.R. selectively
### The 10th and Final Commandment

<table>
<thead>
<tr>
<th>Thou Shalt</th>
<th>Thou Shalt Not</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. <strong>REMEMBER</strong> that this disorder can <strong>KILL!!</strong></td>
<td>10. <strong>DELAY</strong> intervention and <strong>IGNORE</strong> High Risk for Maternal Morbidity and Mortality.</td>
</tr>
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**Thank You**

*Maurice L. Druzin, MD*