Cesarean Scar Pregnancy: A problem on the rise
Do All CSPs Become Placenta Accreta?

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Glossary
- CSP = Cesarean Scar Pregnancy
- AIP = Abnormal Implantation of Placenta (Europe)
- MAP = Morbidly Adherent placenta (USA – Canada)
- PAD = Placental Adherence Disorders (also used)
- PAS = Placenta Accreta Spectrum (new FIGO term*)

Prologue
No matter what you hear, read and think, or how you manage a cesarean scar pregnancy, it is a very dangerous kind of pregnancy

Errata
- Cesarean scar pregnancy (CSP) is NOT an ectopic pregnancy (EP), at least not according to a strict definition!
  - It is within the uterine cavity, embedded on the scar or in the dehiscence of a previous CD
  - Unless true EP CSP may result in a live newborn. It calls for a different evaluation, treatment and outcome
The question was:
Do all CSPs become cases in the PAS?

The answer is forthcoming.

Let me explain.

Despite of some dissenting voices, let me convince you that cesarean scar pregnancy (CSP) and placenta accreta spectrum (PAS) are the same disease.

I have to FIRST convince you that….

1. CSP is the precursor of PAS
2. CSP and PAS share a common histology
3. CSP and PAS have similar US markers
4. PAS can be diagnosed in the 1st trimester
5. There are EARLY 1st & LATE 1st trimester US markers of CSP
6. There is a practical US method to predict PAS from a 1st trimester transvaginal scan

Additional literature support for the fact that CSP is one of the precursors of placenta accreta

Identifying Sonographic Markers for Placenta Accreta in the First Trimester

Outcome of Cesarean Scar Pregnancies Diagnosed Sonographically in the First Trimester

Sonographic Findings of Morbidly Adherent Placenta in the First Trimester
The conclusion in the literature is that:

- CSP is a precursor of MAP,
- There is now ample evidence that can be used to counsel patients with CSP, to enable them to make an informed choice between a 1st TOP and continuation of the pregnancy, with its risk of premature delivery and loss of uterus and fertility.
- The question is: how accurate can we be?

Timor-Tritsch, Monteagudo, Cali et al UOG 2014

Cesarean scar pregnancy is a precursor of morbidly adherent placenta

- Ten patient with CSP progressed to attempt delivery of a live neonate
- 9 succeeded, 1 had intractable bleeding at 20 w and was terminated
- In this series all ten had hysterectomies
- In this series all ten had placenta percreta

Than I have to convince you that....

1. CSP is the precursor of PAS √
2. CSP and PAS share a common histology √
3. CSP and PAS have similar US markers
4. PAS can be diagnosed in the 1st trimester
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6. There is a practical US method to predict PAS from a 1st trimester transvaginal scan

I also need to convince you that....

1. CSP is the precursor of PAS √
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4. PAS can be diagnosed in the 1st trimester
5. There are EARLY 1st & LATE 1st trimester US markers of CSP
6. There is a practical US method to predict PAS from a 1st trimester transvaginal scan
First: US markers of PAS in 2nd & 3rd Δ

- The most used “classical” US signs are:
  - Placenta previa
  - Low* anterior** implantation
  - Placental lacunae
  - No clear anechoic space beneath the placenta
  - Increased vascularity
  - Bridging vessels within the placenta
  - Altered bladder line

- AND LATELY: Cervical lacunae and vascularity


Here are the sonographic markers of PAS in early pregnancy

1. Previous CD (Not US sign but “sine qua non)
2. Low anterior gestational sac
3. Placenta previa or low anterior placenta
4. Placental lacunae
5. Thin/no myometrium between placenta & bladder
6. Irregular or disrupted bladder line
7. Increased vascularity at bladder/placenta interphase

Already 15 years ago Chris Comstock wrote:

“In the 1st trimester placental invasion can be identified if the sac is implanted in the anterior lower uterine segment and suggests the possibility of placenta accreta”.

In other words: this description fits cesarean scar pregnancy


US markers of PAS in 2nd & 3rd Δ

- Placenta previa
- Lacunae
- Altered bladder line
- No clear anechoic space beneath the placenta
- Increased vascularity & bridging vessels

Are these classical US signs of PAS present already in the 1st trimester?

Answer: Yes they are:

Disappearance of the clear myometrial line Placenta previa

10 weeks 1 day

Large number of Lacunae

Unusually increased vascularity at the placental insertion

Recent studies provided clinical basis for it....

“US signs of AIP (MAP) PAS are already present during the 1st gestational trimester, especially before 11 weeks. These US signs are also typical of a caesarean scar pregnancy”


and....

- “During the early 1st trimester, indicators of AIP (MAP) PAS were very similar to those of a CSP”
- “Classical US signs of PAS were already present at 11-14 w for most patients.”

What does the literature teach us?

Summary of published literature on undiagnosed and diagnosed Cesarean scar pregnancies (CSPs) with significant complications

Laparotomy
UAE
PAS
I know!! It is hard to read! Let me help.

I must show you that....

1. CSP is the precursor of PAS ✓
2. CSP and PAS share a common histology ✓
3. CSP and PAS have similar US markers ✓
4. PAS can be diagnosed in the 1st trimester
5. There are EARLY 1st & LATE 1st trimester US markers of CSP
6. There is a practical US method to predict PAS from a 1st trimester transvaginal scan

Here are the “tools” or the sonographic markers to diagnose PAS in the 1st trimester

1A. Previous cesarean section

• Of course this is not an Ultrasound Sign, however a previous CD is a “sine qua non” (essential condition) for the Dx.
• Other uterine surgeries and manipulations have to be considered, however as a cause or association they are rare and in between.
2. Low, anterior implantation gestational sac

- No fetal parts in the uterine cavity or cervix
- Center of sac below the half point of uterus

8 weeks 2 days transvaginal view

8 w 2 d transabdominal view

5 weeks 5 days

8 w 2 d transabdominal view

8 weeks 2 days transvaginal view

Low implantation of the placenta is a reliable sign of a CSP. However passed 7-9 weeks the sacs of the CSPs slowly “push” towards the uterine cavity populating it, since this is the only available place for them too expand into.

On the way into the uterine cavity the sac leaves behind the placenta, which stays “anchored” in/on the scar

3. Placenta previa or- at least- low anterior placenta

Best detected after 7 weeks

4. Placental lacunae

Seen in early 1st trimester (5-8~W) ≈ 0% Seen at 11-14 W = 78-81%

5. Thin/no myometrium between placenta & bladder

- Seen in early 1st trimester (5-7W) = 0%
- Seen at 11-14 W = 92%


6. Irregular or disrupted bladder line

- Seen in early 1st trimester (5-7w = 0%  Seen at 11-14 w = 89%


Furthermore, I have to introduce you to a new concept in CSP:

1. CSP is the precursor of PAS √
2. CSP and PAS share a common histology √
3. CSP and PAS have similar US markers √
4. PAS can be diagnosed in the 1st trimester √
5. There are EARLY 1st & LATE 1st trimester US markers of CSP
6. There is a practical US method to predict PAS from a 1st trimester transvaginal scan

OBJ: To see if prevalence of US signs of PAS changes during pregnancy.

METHODS: US signs of PAS recorded at 4 different intervals during pregnancy:
- early 1st Δ (6-9w), 2nd Δ (11-14w), 3rd Δ (15-24w), 4th Δ (25-36). w.

RESULTS: There were 105 pregnancies included.

Low sac implantation was present on all US images from the early 1st Δ (6-9w) compared with on 23 of 83 (27.7%) images from 11-14 weeks.

Loss of the clear space, placental lacunae, bladder wall interruption, and uterovesical hypervascularity all increased (P<0.001) from early 1st trim onwards, & all be identified in a majority of patients at 11-14 w.

CONCLUSIONS: Prevalence of US signs of PAS varied throughout pregnancy.

During early 1st Δ indicators of PAS were similar to those of a CSP

Classical US signs of PAS were already present at 11-14w in most patients.

[Further details and references]
First trimester diagnosis of abnormally invasive placenta: a systematic review and meta-analysis

**Conclusions:** US signs of PAS are already present during the 1st trimester of pregnancy, especially before 11 weeks of gestation; they are those typical of a CPS.

−Low implantation of the gestational sac was the most common US sign associated with PAS in the first trimester of pregnancy

D’Antonio1, Timor-Tritsch, Palacios-Jaraquemada, Monteagudo, Buca, Forlani, Minneci, Foti, Manzoli, Acharya, Calì. Ultrasound in Obstetrics and Gynecology 2017

Pictorial summary: What is the frequency that sono markers are seen in the 1st trimester?

- Low, anterior implantation: 100% at ≤10w
- Lacunae
- No anechoic space
- Increased vascularity
- Altered bladder line

At 11-14 weeks: 75-85% of the cases


Gestational age at the scan determines the rate of prediction of PAS at term or near term

Diagnostic accuracy of first-trimester ultrasound in detecting abnormally invasive placenta in high-risk women with placenta previa (AIP PAS) in 188 high-risk women overall and according to severity of AIP PAS

11/20/2019
### Diagnostic accuracy of different 1st trimester US signs for AIP PAS overall according to severity

<table>
<thead>
<tr>
<th>PAS TYPE</th>
<th>US SIGN</th>
<th>Sensit. %</th>
<th>Specif. %</th>
<th>+LR (95% CI)</th>
<th>-LR (95% CI)</th>
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</thead>
<tbody>
<tr>
<td>ALL TYPES</td>
<td>Loss of clear zone</td>
<td>84.3</td>
<td>81.9</td>
<td>4.7</td>
<td>0.2</td>
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<tr>
<td></td>
<td>Placental lacunae</td>
<td>78.3</td>
<td>81.0</td>
<td>4.1</td>
<td>0.3</td>
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<tr>
<td></td>
<td>Bladd wall interruption</td>
<td>75.9</td>
<td>99.1</td>
<td>79.7</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>Ut. vesical vascularity</td>
<td>50.6</td>
<td>100.0</td>
<td>0.0</td>
<td>0.5</td>
</tr>
<tr>
<td>ACCRETA/INCRETA</td>
<td>Loss of clear zone</td>
<td>77.5</td>
<td>62.2</td>
<td>2.1</td>
<td>0.4</td>
</tr>
<tr>
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<td>Placental lacunae</td>
<td>76.5</td>
<td>62.2</td>
<td>2.1</td>
<td>0.4</td>
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<tr>
<td></td>
<td>Bladd wall interruption</td>
<td>64.4</td>
<td>75.5</td>
<td>2.6</td>
<td>0.5</td>
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<tr>
<td></td>
<td>Ut. vesical vascularity</td>
<td>42.2</td>
<td>83.9</td>
<td>3.8</td>
<td>0.7</td>
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<td>PERCRETA</td>
<td>Loss of clear zone</td>
<td>92.1</td>
<td>64.0</td>
<td>2.6</td>
<td>0.1</td>
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<tr>
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<td>81.6</td>
<td>64.0</td>
<td>2.3</td>
<td>0.3</td>
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<tr>
<td></td>
<td>Bladd wall interruption</td>
<td>89.5</td>
<td>80.0</td>
<td>4.5</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>Ut. vesical vascularity</td>
<td>60.5</td>
<td>87.3</td>
<td>4.1</td>
<td>0.3</td>
</tr>
</tbody>
</table>

G. CALI et al UOG 2018

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### When I single out LACUNAE here is the result:

- **Definition of Lacunae:** Placental lacunae, defined as the presence of numerous (at least three) lacunae, often containing turbulent flow visible on gray-scale or color Doppler ultrasound
- **During the first trimester:** for all 3 types of AIP placental lacunae had sensitivity of 78.3% (95% CI, 67.9 – 86.6%) specificity was 81.0% (95% CI, 72.1– 88.0%)
- For placenta percreta placental lacunae had a sensitivity 81.6% (95% CI, 65.7–92.3%,

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### Comment

It appears to be clear that all the studies used patients who were scanned with a combination (at best) of TAS and TVS.

If we ever will suggest a first trimester evaluation of patients at risk for MAP/AIP it has to include a technical caveat: **It should be done with TVS if at all possible.**

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### And finally, I have to suggest that....

1. CSP is the precursor of PAS ✓
2. CSP and PAS share a common histology ✓
3. CSP and PAS have similar US markers ✓
4. PAS can be diagnosed in the 1st trimester ✓
5. There are EARLY 1st & LATE 1st trimester US ✓ markers of CSP
6. There are practical US methods to predict PAS based upon a 1st Δ transvaginal US scan
Several methods were published to define risk of PAS based upon location of the pregnancy

- **Comstock:** “Low lying: versus–surrounded by myometrium”
- **Twickler:** < 1mm predicted MAP
- **Naji:** away from scar, close to scar, crossing the scar, inside the scar (CSP)
- **Rac:** smallest anterior myometrial thickness on 1st ∆ sonography significantly improved detection of morbidly adherent placenta.

Integration of first trimester assessment in the ultrasound staging of placenta accreta spectrum disorders

- There are several predictive methods to estimate the occurrence of late trimester PAS
- Some of them are presented here

We evaluated **three published methods** to prognosticate PAS in the 3rd trimester based upon 1st trimester US

Here are the three methods:

Measure bladder-to-sac distance

- The literature is not only confusing as to the sac location, but.....
- Rarely is there information about bladder-to-sac distance or overlying myometrial thickness
- Furthermore, usually there is no distinction between “gestational sac” and “placenta”
- Lastly, there is rarely any mention about location of placental vascularity

Prognostic signs based upon the depth of implantation

We tried to learn if there is a difference in pregnancy outcome as a function of the distance between the gestational sac and the anterior uterine surface/bladder (i.e. myometrial thickness) and the location of the center of the sac related to the cervix and the fundus

1. The “crossover sign”
CONCLUSIONS:
Ultrasound assessment of the relationship between the gestational sac of a CSP and the endometrial line (the COS) may help to determine whether a CSP will progress towards a less severe form of MAP, amenable to postnatal treatment, and successful pregnancy outcome.

Definition of EARLY sonographic appearance: Placenta implanted “on the scar”...

The relevant thickness has yet to be determined

 Definition of EARLY sonographic appearance: Placenta implanted “in the niche”...

- We assessed the natural development and pregnancy outcomes of 17 CSPs implanted either “on the scar” or “in the niche”
- Measured: Myometrial thickness overlying the placenta
- No such studies are available
Cesarean scar pregnancy implanted “on the scar”

Cesarean scar pregnancies implanted “in the niche”

Results

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Group A: 'On scar'</th>
<th>Group B: 'In niche'</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>6</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>GA @ delivery (wks)</td>
<td>38</td>
<td>34</td>
<td>0.001</td>
</tr>
<tr>
<td>Mode of delivery</td>
<td>6 cd 1 with MAP</td>
<td>10 cd all with MAP</td>
<td></td>
</tr>
<tr>
<td>Cesarean hysterectomy</td>
<td>1 C-Hyst for MAP</td>
<td>10 C-Hyst MAP</td>
<td></td>
</tr>
<tr>
<td>Cesarean hysterectomy</td>
<td>1 C-Hyst MAP</td>
<td>1 gravid hyster @ 20 weeks for bleeding</td>
<td></td>
</tr>
<tr>
<td>Est blood loss (ML)</td>
<td>700</td>
<td>1200</td>
<td></td>
</tr>
<tr>
<td>Myometrial thickness @ the scar</td>
<td>5mm (range 4-9)</td>
<td>1mm (0-2)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

What did we learn?

- Patients with CSP implanted “on the scar” had a substantial better outcome compared to patients with CSP “in the niche”.
- Myometrial thickness below 2mm in the 1st trimester US was associated with Morbidly Adherent Placenta at delivery.

3. The “below-the line & above-the-line” signs

On a panoramic, longitudinal, sagittal scan determine the location of the gestational sac. Divide the uterus in half by an imaginary line.

Sensitivity = 93.0%, Specificity = 98.9%, PPV = 96.4%, NPV = 97.9%.
Logistic regression models evaluating the potential independent predictors of a 3rd \( \Delta \) diagnosis of PAS-3, and comparison of the Receiver Operating Characteristic (ROC) curves of each model

<table>
<thead>
<tr>
<th>Covariates</th>
<th>Adjusted OR (95% CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, 1-year increase</td>
<td>1.05 (0.93-1.19)</td>
<td>0.4</td>
</tr>
<tr>
<td>Gestational age at birth, 1-week increase</td>
<td>0.91 (0.63-1.26)</td>
<td>0.6</td>
</tr>
<tr>
<td>Parity, 1-category increase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 1 previous birth (ref. 0)</td>
<td>0</td>
<td>--</td>
</tr>
<tr>
<td>- 2 previous births</td>
<td>1.52 (0.47-4.99)</td>
<td>0.5</td>
</tr>
<tr>
<td>- ≥3 previous births</td>
<td>2.96 (0.47-9.06)</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Model 1:
- COS, 1-category increase
  \[ 7.91 (4.03-15.5) \] \(<0.001\)

Model 2:
- Implantation, "in the niche" vs "on the scar"/normal
  \[ 29.1 (8.1-104) \] \(<0.001\)

Model 3:
- Implantation site, below vs above the endometrial line
  \[ 38.1 (1.26-1.21) \] \(<0.001\)

We combined the 3 sonographic methods to strengthen the predictive power of PAS in the 3rd trimester......

......and propose:

The “Anterio-Inferior PAS Risk Triangle” of pregnancy implantation

Results of the predictive value combining the three prediction models are not yet available

Should we screen for CSP in the early first trimester (5-7 w) pregnancy??

The question was:
Do all CSPs become cases in the PAS i.e. accreta/increta/percreta?

The answer is:
No!! However......

....almost all cases proven to demonstrate clinical and US features of Placenta Accreta Spectrum start out as CSPs
And finally:

- Indeed, not all CSP become cases of PAS
- However, all PAS spectrum cases started out with deep implantation on-to-the-scar or in-the-niche created by the previous CD
- Advances in the understanding of the US signs across the three trimesters bring us closer to plan, be ready and able to confront the challenges of this serious disease

Last Suggestion:
Early recognition of CSP starts with Patient and Physician education therefore:

1. When discharging patients from the hospital after a C/D instruct patients that in a future pregnancy to present to the Ob/Gyn the day after the 1st positive pregnancy test to have a transvaginal US scan between 6-7 weeks. In fact, we should make this MANDATORY!!

2. We, OB/Gyns, should report a placenta previa in patients who had previous C/Ds since the combination of PP and C/D are the highest risk factors for a MAP

Please upload your CSP cases to the International CSP Registry: www.CSP-registry.com

Questions about the registry: ilan.timor@nyumc.org

US markers of PAS in 2nd & 3rd Δ

- The most used “classical” US signs are:
  - Placenta previa
  - Low* anterior** implantation
  - Placental lacunae
  - No clear anechoic space beneath the placenta
  - Increased vascularity
  - Bridging vessels within the placenta
  - Altered bladder line
  - AND LATELY: Cervical lacunae and vascularity

Placental Lacunae

- Commonly reported in association with PAS.
- Described as numerous, large, and irregular echolucencies within the parenchyma of the placenta. Raise the concern for PAS.
Placental Lacunae

- Described as low-velocity flow in some reports, others report turbulent high-velocity flow
- Finberg & Williams, in 1992 proposed a grading:
  - grade 0 → no placental lacunae,
  - grade 1+ → one to three small lacunae,
  - grade 2+ → four to six larger and irregular lacunae, and
  - grade 3+ → with many large and “bizzare” appearing lacunae through out.
- Grade 3+ raising high degree of concern for PAS.

Yang et al. In 51 pregnancies at risk for PAS, with prior CD and placenta previa the need for cesarean hysterectomy and maternal complications positively correlated with the number of lacunae. Conversely: the absence of lacunae in pregnancies with placenta previa and prior CD delivery is a reassuring sign with negative predictive values ranging from 88-100% for PAS.

Abnormal Utero-Placental Interface:

- Loss of the retroplacental hypoechoic zone, myometrial thinning & vascularity on color Doppler.
- Variation in definition & predicting PAS.
- The classic definition of myometrial thinning is =<1 mm.
- Only 50% of studies provided definition of this marker.
- Is often seen in advancing gestation in prior CD cases.
- Can be produced and/or ↑↑ transducer pressure.

Belfort MA. Placenta accreta. AOG. 2010;203;430-439.

Utero-vesical interface:

- Utero-vesical interface markers include bridging vessels, ↑↑ vascularity between the uterus and bladder, and interruption of the bladder wall.
- Bridging vessels represent neovascularity atop the uterine serosa and the utero-vesical interface.
- This neovascularity is found in the majority of cases of PAS.
- Hypervascular interface reflects dilatation of the uteroplacental vasculature and the chaotic vascular growth and flow within this space.


- Sensitivity and specificity of hypervascular utero-vesical interface is variably reported as ranging from 11-100% and 36-100%, respectively.
- CAVE!! Bladder varicosities are often seen in the absence of PAS and in the setting of placenta previa.

Belfort MA. Placenta accreta. AOG. 2010;203;430-439.
Gray scale US: ‘Bladder line’ interruption

Loss of the normal bladder line

Can also be seen with Color Doppler

Best seen with 300ml urine/fluid in bladder!!!

Hypervascularity of uterine serosa-bladder wall interface

Serial sagittal plane cine

Placenta previa accreta 20 weeks C/Sx2

Hypervascularity of uterine serosa-bladder wall interface

Rotational cine loop

Placenta previa accreta 20 weeks C/Sx2

The vascularization along the transverse incision line

Miscellaneous markers

• Other markers have been described.

• The placental bulge:
  • Described as a deviation of the uterine serosa, away from expected planes, changing uterine contour.\(^{13,23}\)
  • In a small study comparing ultrasound and MRI, had specificity of 88%, making this as a reassuring sign when absent.\(^ {23}\)
Miscellaneous markers

- **An exophytic mass**: a protrusion of placental tissue outside the uterus is diagnostic of placenta percreta with a maximal sensitivity of 42%.23,34,61
- Absence of this finding is reassuring with a 80-100% specificity.23,34,61
- In one systematic review of PAS, only cases of placenta increta and percreta had an exophytic mass, highlighting their relative rarity in clinical practice.46

Miscellaneous markers

- **Bridging vessels** extending from the placenta across the myometrium and/or beyond the uterine serosa.
- This is one of the ‘classic markers’ of PAS but, has lacked consistency in its definition.
- They run perpendicular to the long axis of the uterus, are often associated with a placental bulge.
- Unlike other markers which can often be seen in cases without PAS, this marker is rarely seen in cases without PAS.10

Combined markers

- When US markers are combined, their performance improves substantially, yielding:
  - sensitivity of 81.1% (95% CI, 69-94),
  - specificity of 98.9% (95% CI, 98-100),
  - positive predictive value of 90.9% (95%CI: 82-100), and
  - negative predictive value of 97.5 (95%ci: 96-99).18
- **Thinning** of the myometrium and **loss** of the retroplacental clear zone appear to have the highest interobserver agreements.12
- Most data regarding the predictability of PAS US have been derived in single centers with relatively high volume of PAS cases.
- The true sensitivity of these markers in the community setting remains unknown.


Number of positive sonographic diagnostic criteria for morbidly adherent placenta (MAP) in 187 patients with placenta previa and history of uterine surgery

<table>
<thead>
<tr>
<th>Number of criteria</th>
<th>No MAP (n=141)</th>
<th>MAP (n=41)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIVE</td>
<td>0</td>
<td>8 (all percreta)</td>
</tr>
<tr>
<td>FOUR</td>
<td>0</td>
<td>8 accreta + 8 percreta</td>
</tr>
<tr>
<td>THREE</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>TWO</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>ONE</td>
<td>49</td>
<td>0</td>
</tr>
<tr>
<td>NONE</td>
<td>97</td>
<td>0</td>
</tr>
</tbody>
</table>

Gray scale and color Doppler. Evolution of the placenta

1. Clear space
2. Bladder line
3. Lacunae
4. Tortuous vessels
5. Vessels under bladder

10w 1d!!
Sonographic features (markers) of CSP in the 1st trimester

Counseling 1st Δ patients with CSP without heart activity?

• Expectant management of CSP with no cardiac activity may be a reasonable option in view of the low likelihood of maternal complications requiring intervention, although close surveillance is advisable to avoid adverse maternal outcome.

The use of a double, cervical ripening balloon catheter as a single, minimally invasive treatment of CSP and CxP

Lately: New, minimally invasive treatment: Placing a double cervical ripening balloon

Reasons for its use:
– Simultaneously terminates pregnancy and prevents bleeding
– Simplify treatment; Minimize patient discomfort
– Adapt a catheter familiar to Ob in the L&D to treat CSP
– Also effective for cervical pregnancies
Conclusion
Over the last several years an increasing number of authors gathered significant experience that allows to provide evidence based counseling to patients presenting with a CSP
We are almost at a point where we can translate the experience gained looking at the 1st trimester CSP into reliable risk assessment for PAS
More research & clinical observations are needed please upload your cases to www:csp-registry.com
We need to introduce routine US scanning at 6-8 weeks for all patients with a history of previous CS

Last Suggestion:
Early recognition of CSP starts with Patient and Physician education therefore:
1. When discharging patients from the hospital after a C/D instruct patients that in a future pregnancy to present to the Ob/Gyn the day after the 1st positive pregnancy test to have a transvaginal US scan between 6-7 weeks. In fact, we should make this MANDATORY!!
2. We, OB/Gyns, should report a placenta previa in patients who had previous C/Ds since the combination of PP and C/D are the highest risk factors for a MAP

Suggested management of CSP

- FH + CSP
- No FH

- Patient requests TOP
- Patient interested in continuing pregnancy

- Select appropriate Rx
- Stop heart without delay: Inject; Double balloon: Hysterotomy or Gravid hysterectomy?
- Monitor hCG & US weekly. Watch for possible EMV
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- FH +
- Available evidence based counseling

- No FH
- Recheck q 3 days

- Determine if placenta/ gestational sac is on the scar or in the niche. MEASURE MYOMETRIAL THICKNESS

- "on the scar" or ≥ 5mm: high risk for MAP (incr, percreta) and cesarean hysterectomy
- "in the niche" or ≤ 5mm: low risk for MAP (accreta) and cesarean hysterectomy

- No FH after 3 scans or at 7 wks by reliable dating

- Follow by US and by hCG until period

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