

Ultrasound Mapping in Placenta Accreta Spectrum – Case Presentation

Why the US Probe is the Surgeon's Best Ally?

R. Socolov¹, A. Pruteanu¹, D. Gafitanu¹, R. Gemanariu¹, D. Socolov¹, G. Dumachita Sargu²
¹ Maternal and Child Medicine · ² Anatomy – "Grigore T. Popa" University of Medicine and Pharmacy, Iași, Romania

TWO CASES OF PLACENTA PERCRETA

Both delivered at 35 weeks under a multidisciplinary protocol. Pre-incision Doppler mapping – determined the hysterotomy site and the bladder dissection strategy.

BACKGROUND

PAS complicates roughly 1 in 300 deliveries and rises in step with cesarean rates. With placenta praevia and a previous cesarean, the risk of accreta placentation is **3%, 11%, 40%, 61% and 67%** after one to five or more cesareans [1, 2].

Standardised sonographic descriptors correlate with depth of invasion, blood loss, transfusion and surgical complications [3–5].

Aim. To show how grey-scale and colour Doppler mapping – including a scan with the patient already on the operating table – determined the hysterotomy site, the bladder dissection strategy and haemorrhage preparedness.

METHODS

- ✓ Two singleton pregnancies, anterior placenta praevia, previous cesarean; delivered at 35 weeks ("Elena Doamna" Hospital, Iași).
- ✓ MRI performed weeks earlier, reported as suggestive of invasion.
- ✓ Grey-scale and colour Doppler mapping repeated in theatre, immediately before skin incision.
- ✓ Team assembled in advance: obstetrician, anaesthetist, urologist, neonatologist; massive transfusion protocol ready.
- ✓ Classical (corporeal) hysterotomy away from the placental bed; no placental separation; hysterectomy of necessity.

SONOGRAPHIC MARKERS ASSESSED

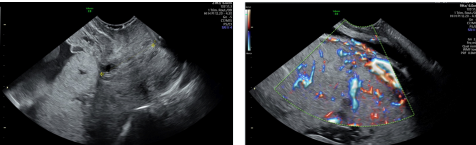
Grey-scale · placental lacunae with turbulent flow · myometrial thinning < 1 mm · bladder wall interruption · placental bulge · focal exophytic mass.

Colour Doppler · uterovesical and subplacental hypervascularity · bridging vessels · lacunar feeder vessels.

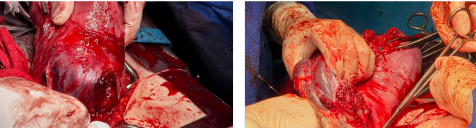
Descriptors per EW-AIP [5] and the SMFM PAS Ultrasound Marker Task Force [3]; stage graded per Cali et al. [4].

CASE 1

P.A., 30 y · G2 P2 · one previous cesarean (2023) · 35 weeks



Grey-scale: lacunae and loss of the clear zone at the uterovesical interface (calipers). Colour Doppler: dense subplacental and uterovesical hypervascularity with bridging vessels towards the bladder.



Intraoperative correlate: placental tissue breaching the uterine serosa over the anterior lower segment, with the neovascular network predicted on Doppler.

MRI (weeks earlier) placenta 8 mm from the internal os, anterior and right lateral; no clear plane with the superior bladder wall; over 10–15 mm.

Pre-incision ultrasound upper placental margin identified and marked; marked uterovesical hypervascularity → hazardous bladder dissection anticipated.

Surgery classical cesarean above the placental bed; total interadnexal hysterectomy of necessity; placenta left in situ.

Neonate female, 2400 g, breech, Apgar 8.

Outcome EBL ≈ 1000 mL. Hb 11.5 → 8.9 g/dL, 1 U PRBC → 2 U PRBC.

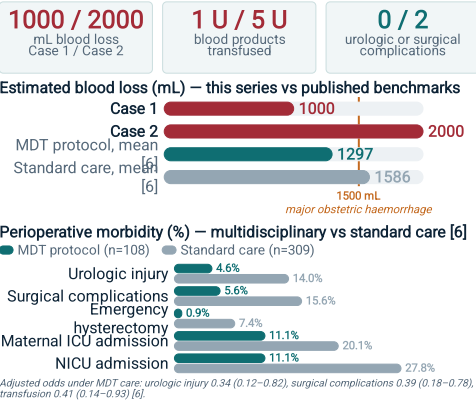
WHAT THE SCAN CHANGED

The scan on the table fixed the hysterotomy above the upper placental margin; the placenta was never transected, and the initial bleed was avoided rather than treated.

FROM IMAGE TO INCISION

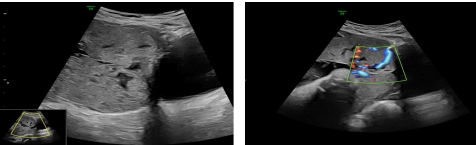
Sonographic finding	Intraoperative decision
Upper placental margin located	Level of the classical hysterotomy – uterus opened above the placental bed
Lacunae, number and turbulent flow	Expected blood loss; blood products cross-matched and in theatre before incision
Uterovesical hypervascularity, bridging vessels	Bladder dissection hazardous – urologist scrubbed, dissection plane chosen in advance
Lateral extension of neovascularisation	Parametrial dissection and ureteric risk anticipated (left side, Case 2)
Loss of clear zone / bladder wall interruption	Hysterectomy of necessity over conservative management; placenta left in situ

OUTCOMES

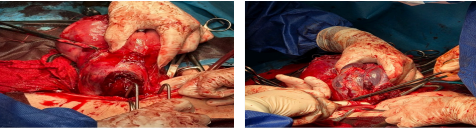


CASE 2

M.G., 28 y · G3 P3 · two previous cesareans · 35 weeks



Serial mapping. Left, 29+4 weeks: irregular lacunae with loss of the retroplacental clear zone. Right, 35+3 weeks: bridging vessels crossing the serosa towards the bladder and the left parametrium.



Intraoperative correlate: distended, hypervascular lower uterine segment; the lateral extension seen on Doppler translated into a demanding left parametrial dissection.

MRI (weeks earlier) placenta anterior and left lateral, 22 mm from the internal os; suggestive of accreta with the bladder interface reported as preserved.

Pre-incision ultrasound extensive lacunae and dense bridging vessels with lateral extension – a heavier vascular burden than the MRI implied; blood products brought into theatre.

Surgery classical cesarean; low subtotal hysterectomy of necessity with bilateral salpingectomy.

Neonate male, 2900 g, transverse lie, Apgar 7.

Outcome EBL ≈ 2000 mL. Hb 11.2 → 6.2 g/dL, 3 U PRBC + 2 U FFP → 7.8 g/dL. No complication. Discharged POD 5.

WHAT THE SCAN CHANGED

Doppler revealed a heavier vascular burden than the MRI implied. Blood products were in theatre before incision, so the 2000 mL loss was anticipated and controlled – not discovered.

CONCLUSION

MRI provided a static snapshot, weeks old by the day of surgery. Doppler ultrasound was repeatable, immediate and available at the point of care – and it was the pre-incision scan, not the MRI report, that fixed where the uterus was opened and how the bladder was approached.

The intensity of the Doppler signal was an advance warning of how difficult haemostasis would be, letting the team prepare rather than react.

Ultrasound turns PAS surgery from an exploration into a navigated procedure. The probe belongs in the operating theatre.

REFERENCES

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