

## **Utility of Three-Dimensional Ultrasound for Placenta Accreta Spectrum Disorder: A Pilot Study.**

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### **Background**

- The “tramline” sign on a three-dimensional (3D) ultrasound (US) aims to identify the depth of placental invasion/uterine dehiscence in the context of anterior placenta previa with suspected Placenta Accreta Spectrum Disorders (PASD)
- We performed a pilot study to evaluate the performance of the “tramline” sign on 3D US and its ability to correlate with pathology

### **Method**

- Prospective study in Placenta Accreta Center at a Level IV academic center between January and July 2023
- In addition to 2D US we performed 3D evaluation to assess the “tramline” sign, degree of placental invasion/uterine dehiscence and it’s correlated to histological results.

### **Results**

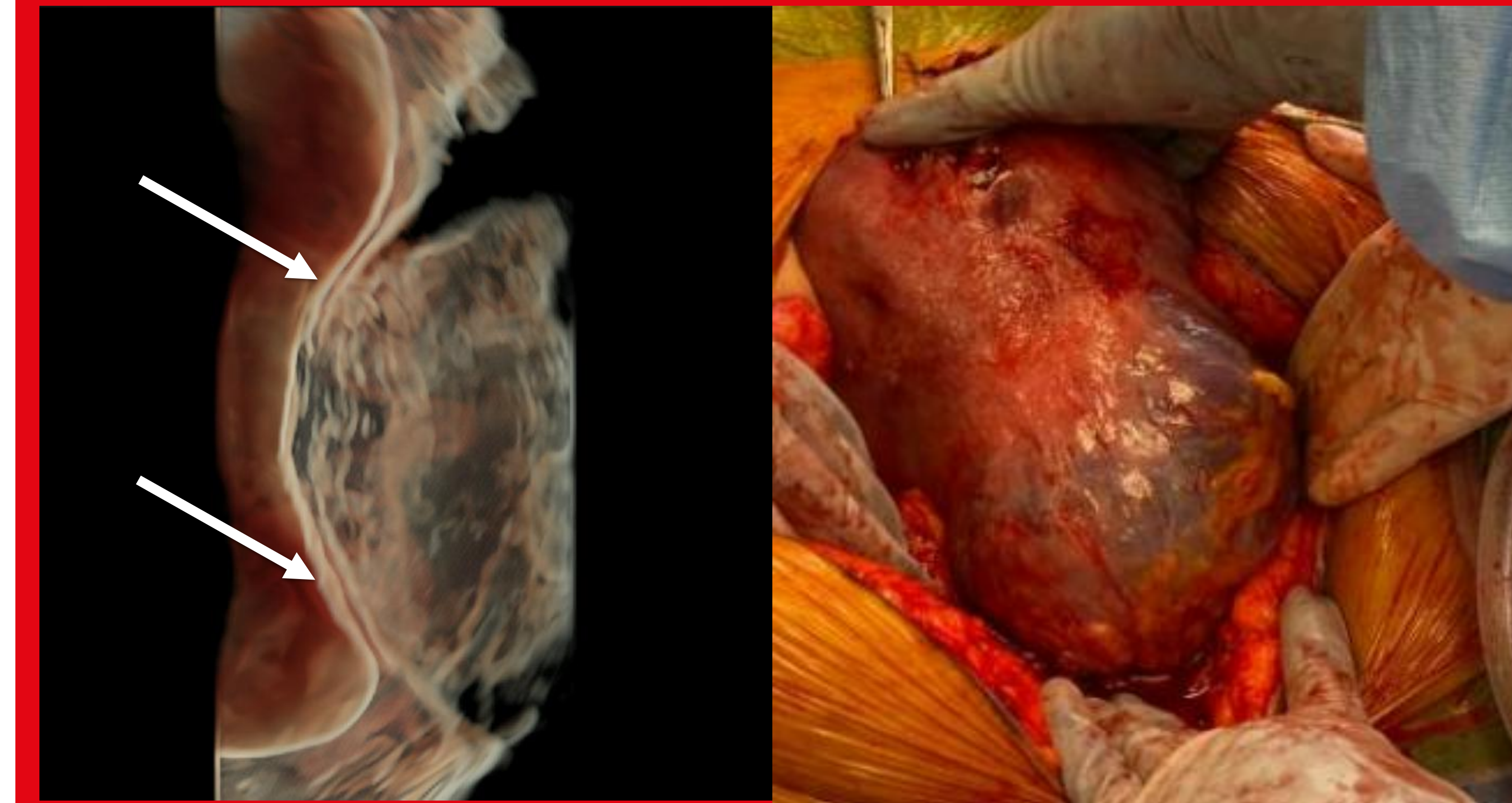
- A total of six patients were evaluated with 2D/3D US PASD protocol. 83% (5/6) had histology-confirmed PASD, 16.7% had no PASD.
- Out of all PASD patients, 83.3% were patients with percreta

### **Results (cont)**

- 2D US was able to accurately predict PASD in 4/6 (66.7%), failed to detect PAS in 1/6 (16.7%), and accurately ruled out PAS in 1/6 (16.7%).
- Three-dimensional US was able to accurately predict PAS in 4/6 (66.7%), ruled out PAS in 1/6 (16.7 %), one case was excluded from analysis due to deviation from the 3D US protocol (Table 1)
- In 80% (4/5) cases, “tramline” sign on 3D US was able prenatally accurately predict the depth of placenta invasion/uterine dehiscence of PASD that correlated to pathology results in contrast to 2D – 50% (3/3) (p=0.3)

### **Conclusion**

Using the “tramline” sign on 3D US has shown promising results in the ability prenatally identify presence of PASD and most importantly accurately determine the depth of placental invasion/uterine dehiscence which is of a great utility in for proper surgical planning



*Three-dimensional US with “tramline” sign (arrows) and intra-operative findings of the same patient.*

| #  | A<br>prior<br>risk,<br>% | Placenta accreta<br>index* |                               | 2D US                     | 3D US                     | MRI             | Pathology<br>(FIGO) |
|----|--------------------------|----------------------------|-------------------------------|---------------------------|---------------------------|-----------------|---------------------|
|    |                          | points                     | probability of<br>invasion, % |                           |                           |                 |                     |
| 1. | 11                       | 6                          | 69                            | Accreta/Increta           | Percreta 3A               | Percreta        | Percreta<br>3A      |
| 2. | 40                       | 5                          | 51                            | Low suspicion<br>for PAS  | No PAS                    | No PAS          | No PAS              |
| 3. | 67                       | 6.5                        | 83                            | Increta/Focal<br>percreta | Percreta 3A               | Accreta         | Percreta<br>3B      |
| 4. | >67                      | 8.5                        | 96                            | Increta/Percreta          | Percreta 3A               | Percreta        | Percreta<br>3A      |
| 5. | 61                       | 9                          | 96                            | Concern for<br>PAS        | Percreta 3A/3B            | Percreta        | Percreta<br>3A      |
| 6. | 67                       | 6.5                        | 83                            | No evidence of<br>PAS     | Deviated from<br>protocol | Accreta/Increta | Percreta<br>3A      |

*Table 1. Results of 2D/3D US, MRI, and pathology*