# Thromboelastography-Guided Neuraxial Anesthesia in a Parturient with Delta Storage Pool Disease

Thaha Afridi, Arun Karuppiah MD, Victor Saxena MD

## Background

**Delta-Storage Pool Disease (δ-SPD):**

- Rare disorder that presents with **<3-10 dense granules/platelet**
- Dense granules store and release small molecules for platelet activation, aggregation and stabilization at sites of vascular damage
  - Contain high concentration of $Ca^{2+}$, ADP, serotonin and polyphosphates
- **Clinical picture:** mucocutaneous bleeding, bruising, and possible cytopenia

δ-SPD has difficult diagnostic pathology

- Requires specialized labs that utilize EM to evaluate platelet granules

Standard Treatment

- Desmopressin Acetate and Antifibrinolytics
- Platelet transfusion in times of emergency

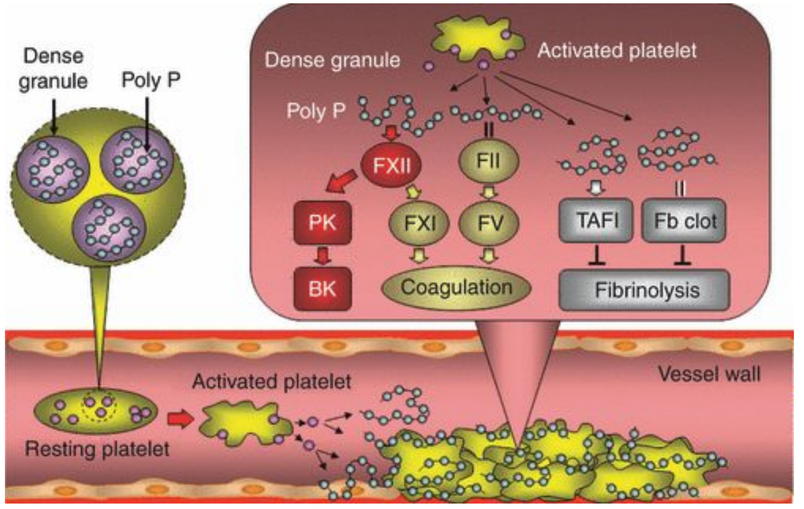



Figure 1: Coagulation Cascade[2]

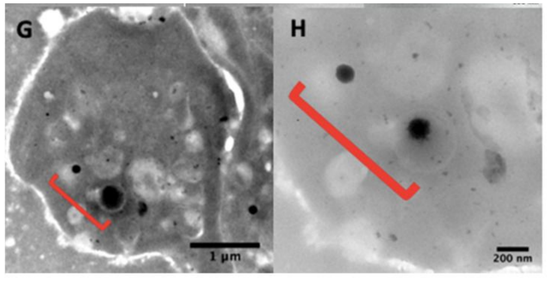



Figure 2: Dense Granules under EM[1]

# Case Description

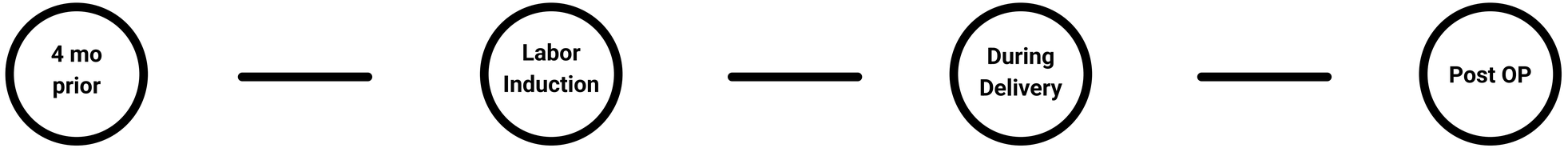
**Patient:** 27-year-old F, G2P0, ASA III, BMI >40

- Platelet electron microscopy→ **2.73 δ-granules/platelet**

TEG (on day of delivery):

| Component (Reference Range) | Values |
|---|---|
| R (5.0-10 min) | 5.2 min |
| K (1.0-3.0 min) | 1.4 min |
| Angle (53.0-72.0 degrees) | 69.6 degrees |
| Max Amplitude (50.0-70.0 mm) | 71.4 mm (elevated) |
| Anti-Coagulation Therapy | No Anticoagulant |

Normal coagulation profile with slightly increased clot strength; no evidence of hypocoagulability




## Abnormal Bleeding History

**ISTH-BAT Score of 10** → high risk for neuraxial analgesia

Planned for induction due to worsening chronic HTN

Labs (4 months prior)

| Component (Reference Range) | Values |
|---|---|
| Platelets (172 – 440 x $10^3$/μL) | 301 x $10^3$/μL |
| PT (12.3 - 14.8 sec) | 12.7 sec |
| INR (≤4.9) | 0.9 |
| APTT (25-36 sec) | 27 sec |

## Normal TEG and Labs

Received nitrous oxide and remifentanil PCA

Poor pain control, NRFS with Category 2 tracing → discussion about c-section

Patient presentation, TEG, basic coag labs, CBC (Platelets: 314 x $10^3$/μL) → **no contraindication for neuraxial anesthesia**

## C-Section

General anesthesia vs Neuraxial anesthesia for c-section

**Spinal block** with prophylactic Desmopressin Acetate and IV tranexamic acid administered

## Hemodynamically Stable

Estimated blood loss of 915 mL

Received oral tranexamic acid postoperatively

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# Teaching Points

## Anesthesia Approach Comparison:

General anesthesia risks: mild persistent asthma, Obstructive Sleep Apnea, high BMI, dysautonomia

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Neuraxial anesthesia reduces 30-day mortality risk, shortens lengths of hospital stay, and lowers risk of serious complications

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**Spinal Neuraxial Anesthesia**

Reduced Bleeding Risk

OR

Epidural Neuraxial Anesthesia

Placement and Removal Risk

## Key Points:

- Neuraxial anesthesia in δ-SPD can be considered with a comprehensive assessment of patient symptoms, presentation during day of L&D, labs including TEG, bleeding history, and severity of the diagnosis
- Neuraxial anesthesia may reduce maternal morbidity compared with general anesthesia in bleeding disorders

## References


1. Dupuis A, Bordet JC, Eckly A, Gachet C. Platelet δ-Storage Pool Disease: An Update. J Clin Med. 2020 Aug 4;9(8):2508. doi: 10.3390/jcm9082508. PMID: 32759727; PMCID: PMC7466064.
2. Beirat AF, Menakuru SR, Kalra M. Platelet Delta (δ)-Storage Pool Deficiency: A Case Series and Review of the Literature. Hematol Rep. 2023 Jun 29;15(3):405-410. doi: 10.3390/hematolrep15030041. PMID: 37489371; PMCID: PMC10366910.
3. The Ohio State University Wexner Medical Center. Storage Pool Platelet Disorder. Patient education document. The Ohio State University Wexner Medical Center; accessed November 30, 2025. https://healthsystem.osumc.edu/pteduc/docs/StoragePoolPlateletDisorder.pdf
4. Peterson W, Martin R, Arnold D, Carvalho B, Cuker A, Gadsden J, Provan D, Rydz N, Shore E, Kuter D, Kouides P, Lavin M, James P, Engen D, Sholzberg M. Delphi consensus recommendations for neuraxial anesthesia in adults with platelet disorders and coagulation defects: communication from the ISTH SSC Subcommittee on von Willebrand Factor. J Thromb Haemost. 2025 Jun;23(6):2039-2049. doi: 10.1016/j.jtha.2025.01.019. Epub 2025 Feb 12. PMID: 39952359.


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