



## **EMERGENCY MANAGEMENT OF ACUTE STENT (PDA) THROMBOSIS - ROLE OF THROMBOLYTIC THERAPY WITH RECOMBINANT TISSUE PLASMINOGEN ACTIVATOR (TENECTEPLASE)**

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### **Introduction:**

Ductal stenting is a well-established alternative to Blalock-Thomas-Taussig shunt in ductal-dependent pulmonary circulation. Intraprocedural stent thrombosis is a rare but life-threatening complication of ductal stenting that requires immediate measure to re-establish pulmonary blood flow. We describe the use of recombinant tissue plasminogen activator (rTPA) as an emergency treatment to re-establish blood flow in acute stent thrombosis.

### **Case description:**

An infant with tricuspid atresia, and restrictive ventricular septal defect was referred for severe cyanosis. Ductal stenting was performed using Avant Garde 3.5 x 16mm at 3 months old. At 1 year old, she underwent diagnostic catheterization for hemodynamic assessment prior to Bidirectional Glenn Shunt. 50 U/kg heparin was given prior to the procedure. The stent flow was severely restrictive due to in-stent stenosis. While attempting crossing of the stent with coronary wire and pigtail catheter, she developed sudden hypoxia with subsequent bradycardia and hypotension necessitating cardiopulmonary resuscitation (CPR). Angiogram revealed total occlusion of stent presumably due to acute thrombosis provoked by intimal injury. Urgent balloon dilatation was performed to mechanically disrupt the thrombus. Another dose of 50 U/kg heparin was given. Despite that in-stent thrombosis recurred. Balloon dilatation was repeated multiple times due to rapid recurrence of thrombosis. CPR was intermittently performed as circulatory collapse developed with each new episode of thrombosis. The PDA was re-stented using Kaname stent 4 x 15mm but there was recurrence of thrombosis even on the new stent. Repeated balloon dilatation was performed while preparing for Tenecteplase. 100 U/kg of Tenecteplase bolus was administered directly into the stent. Repeated balloon dilatation was performed and pulmonary blood flow was successfully restored with no recurrence of thrombosis. Patient's hemodynamics and oxygenation stabilized. Patient was kept on Tenecteplase infusion for 6 hours in PICU. Tenecteplase infusion was changed to Heparin infusion due to continuous oozing of blood at puncture sites. She had



hypoxic seizures during her stay but there was no major bleeding complication. There were no neurological deficits and she was awaiting surgical repair.

**Learning Points:**

1. Acute stent thrombosis during ductal stent is a rare but major life-threatening complication.
2. There are no established guidelines in dealing with this major complication. Rapid restoration of
  - pulmonary blood flow is critical for survival.
    - Mechanical disruption of thrombus with balloon dilatation and heparin administration is possible but served as a temporary measure and may not break the thrombotic cascade.
    - Critical obstruction of pulmonary flow and circulatory collapse may not permit timely establishment of ECMO
3. Thrombolytic therapy with rTPA has been shown to be life-saving and effective as an emergency
  - treatment in this patient without major bleeding complication.
4. Much is still unknown regarding the dosage, regimen and bleeding complications in infants.