Direct echocardiographic imaging of the Berlin Heart valves can aid in diagnosing valve dysfunction.

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Clinical Presentation:
We present a case of a seven year old male with Uhl's anomaly and heart failure. Due to progressive heart failure, he was placed on mechanical support including a Berlin Heart (BH) ventricular assist device biventricularly. Serial echocardiograms were performed with increasing BH valve regurgitation. Four days after the acute worsening of valve regurgitation the patient required a pump exchange which demonstrated clot in the circuit.
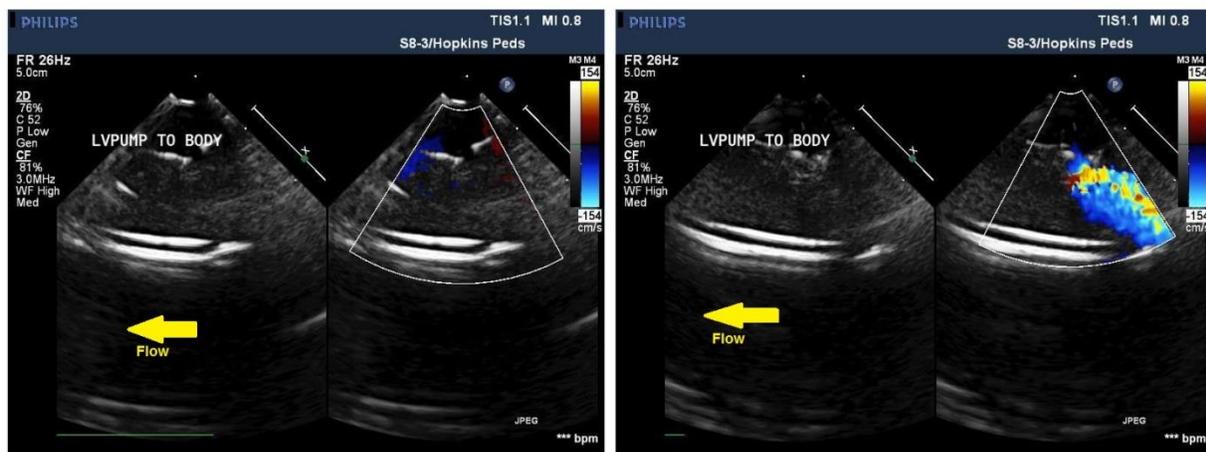
Imaging Findings:
Accurate images of inflow and outflow valves can be obtained bedside using a standard echocardiogram machine. Ultrasound gel is applied to the transducer and the transducer is placed directly onto the BH casing. The valve leaflets can be seen in 2D imaging and with color flow.

Role of Imaging in Patient Care:
Thrombi are difficult to visualize by 2D imaging alone but changes in color flow pattern representing increased valve regurgitation from thrombus formation can easily be seen. Another explanation for increased valve regurgitation could be increased afterload on the pump requiring a change in management.

Discussion:
The BH remains one of few options for infants and young children who require mechanical circulatory support. Unfortunately it carries a high risk of ischemic stroke. We present a new technique to monitor for the development of thrombus before it is visible. We have utilized this technique on several patients and believe there is an association between increasing valve regurgitation and need for pump exchange secondary to thrombus formation. Echocardiography can detect changes in valve regurgitation which should increase suspicion for early thrombus formation, which could lead to a decrease incidence in strokes. Direct imaging of BH valves can also detect changes in the afterload leading to regurgitation.