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"Primary" Aortic Balloon Valvuloplasty in the Critically Ill: from the Emergency Room to the Cathlab

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Background: Critical aortic stenosis (AS) may present as decompensated heart failure that is refractory to medical therapy. Balloon aortic valvuloplasty (BAV) is a catheter-based option used for palliation of nonsurgical patients. BAV fell from favor due to perceived procedural complexity, suboptimal initial results, and high restenosis rate. Recent progress in therapy of high-risk AS patients widened the use of BAV in the acute treatment of critically AS patients. We report a single center one year experience with "primary" BAV – emergent valvuloplasty of decompensated AS patients, with direct transfer from the emergency room to the cath lab.
Methods and Results: From September 2008 to September 2009 four patients, ages 78-87, with critical decompensated AS were treated with BAV within 3 hours from hospital admission. Two patients suffered from cardiogenic shock and two from intractable pulmonary edema. Two of the four had pneumonia and one patient small bowel obstruction that necessitated urgent surgery. Valve area by echo was 0.4-0.6 cm2, and maximal AV gradients measured were 40-60 mmHg (50±9 mm Hg). These relatively diminished AV gradients were attributed to a poor LV function, in contrast with higher gradient measurements on prior echo examinations (75±12 mm Hg). Patients were admitted for emergency BAV 60-180 minutes from hospital arrival. BAV was successfully performed with a marked decrease in LV-aortic gradient from an average of 50±9 to 20±5 mmHg. Hemodynamic and clinical improvement was noted in all patients leading to hospital discharge after 10±4 days and successful small bowel operation in one patient on the day of the procedure. All patients are currently awaiting valve implantation.
Conclusions: Emergency BAV is an effective and safe therapeutic modality for decompensated severe aortic Stenosis. The "primary BAV" approach in this critical hemodynamic situation is warranted for stabilization, allowing a bridge for valve implantation.