

A Novel Minimally Invasive Device (Septulus) for Treating Hypertrophic Obstructive Cardiomyopathy

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Keywords: Hypertrophic Obstructive Cardiomyopathy, HOCM, Minimally Invasive, Myectomy, Surgical Device.

1 OBJECTIVES

Hypertrophic obstructive cardiomyopathy (HOCM) is a not uncommon heart disease with similar clinical presentation and prognosis as aortic stenosis (Maron et al., 2011). Treatment modalities for this condition has been alcohol septal ablation, pacemaker and open heart surgery (Maron et al., 2011; Maron, 2007). Surgery with myectomy is considered the treatment with the best outcome in terms of symptom relief and long-term survival. However, this is an invasive procedure that requires cardio-pulmonary bypass and a longer recover, as well as other risks for complications associated with cardiac surgery. We have developed a device (Septulus, figure 1) for minimally invasive surgical resection of the septal bulge found in HOCM that does not require sternotomy or cardiopulmonary bypass.

2 METHODS

An experimental porcine model was used. Two adult pigs (~80 kg) were anesthetized. The device was introduced transapically and resection was performed with ultrasound guidance.

3 RESULTS

The animal tests could conclude that the novel Septulus device could be used: 1 – transapical access through an introducer; 2 – Septum could be resected in a controlled manner with ultrasound guidance; 3 – The procedure was performed on beating heart with hemodynamical stability; 4 – The transapical access could be closed after the procedure; 5 – after the

experiment the animal could be sacrificed and the outflow tract of the left ventricle could be examined and a resection in the correct position had been obtained (Figure 2).

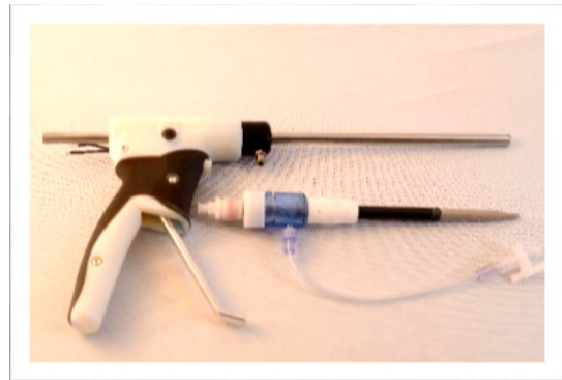


Figure 1: The Septulus Device.

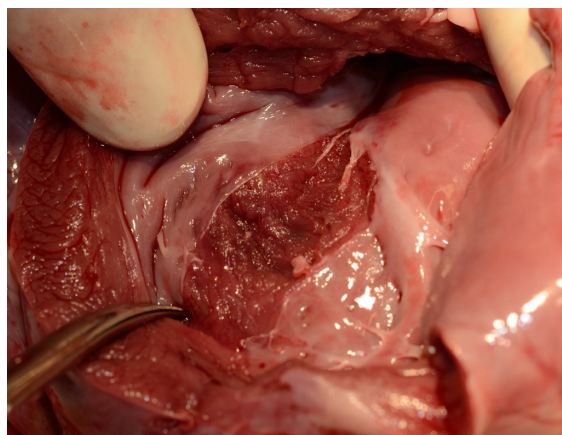


Figure 2: Resected tissue.

4 DISCUSSION

The novel device for minimally invasive treatment of HOCM seems to meet the expectation in terms of efficacy and safety, and could therefore be future option in treating patients with this condition.

REFERENCES

- Maron B. J, Yacoub M., Dearani J. A. Controversies in cardiovascular medicine. Benefits of surgery in obstructive hypertrophic cardiomyopathy: bring septal myectomy back for European patients. *Eur Heart J.* 2011;32(9):1055-8.
- Maron B. J. Controversies in cardiovascular medicine. Surgical myectomy remains the primary treatment option for severely symptomatic patients with obstructive hypertrophic cardiomyopathy. *Circulation.* 2007;116(2):196-206; discussion