Transapical Approach to Myectomy in Pediatric Patients with Hypertrophic Cardiomyopathy: Early and Mid-term Results

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Background
The transapical approach for myectomy in hypertrophic cardiomyopathy (HCM) has been utilized in the subset of HCM patients with mid- and apical cavity obliteration. However, minimal outcome data are reported after the use of transapical myectomy in pediatric cases.

Methods
We retrospectively reviewed the electronic medical records for pediatric patients (< age 21yrs) with HCM who underwent a transapical approach for myectomy from 2002-2016.

Results
Overall, 23 pediatric patients (12 males) with HCM had a transapical approach to myectomy performed. Transaortic approach was concomitantly performed in 16/23 patients (70%). The mean age at the time of operation was 14 ± 4.0 years (range 4 - 20). Preoperative symptoms included: dyspnea (91%), pre-syncope (61%), chest pain (65%), and syncope (35%). There were 19/23 (83%) patients with mid LV cavity obstruction. 4/23 patients (17%) had no obstruction, but surgical indication was to increase LV cavity size. In those patients, the mean left ventricular end systolic dimension (LVESD) by echocardiogram was 21.5 mm ± 4.6 mm.
Mid-ventricular obstruction was successfully relieved in 18/19 (95%) obstructive patients. Early complications included complete heart block in 3 patients requiring a pacemaker. One patient had ventricular tachycardia which was transient and did not recur. There was one aneurysm related to the apical incision. There were two early reoperations: one patient underwent mitral valve repair, and a second was listed for and underwent cardiac transplantation. Twenty two patients (96%) had post-operative follow-up available (median 3.5 years; IQR 1.6-5.6). Symptoms improved in 95% of patients. The number of patients in NYHA class 3 or 4 heart failure decreased from 10/23 (43%) to 3/23 (13%) post-operatively ($p<0.0001$). Overall survival at five years post-surgery was 100%.

Conclusion
The transapical approach in pediatric patients provides excellent exposure for mid ventricular and apical myectomy with reduction of gradient and symptoms.