Surgical Treatment of Left Ventricular Hypertrophy and Outflow Tract Obstruction

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I. Etiologies:

a. Aortic Stenosis

b. Sub-aortic valvular stenosis: obstruction of the left ventricular outflow tract below the aortic valve
   i. Obstruction occurs at a point between the aortic valve and the anterior leaflet of the mitral valve
   ii. Spectrum of defects and a variety of etiologic factors

c. Supravalvular aortic stenosis
   i. Obstruction of the left ventricular outflow tract above the aortic valve
   ii. Three forms: sporadic, familial, and Williams' syndrome

d. Hypertrophic Cardiomyopathy

II. Diagnosis

a. Echocardiography – test of choice
b. Cardiac cath
c. Sequential intra-cardiac pressures
d. CT scan
e. MRI

III. Management
a. Medical – beta blocker, calcium channel blocker, ACE-I, diuretics  
b. Permanent pacemaker, AICD  
c. Alcohol septal ablation  
d. Surgical resection

IV. **Operative Strategy**

a. Aortic Stenosis  
   i. Conventional AVR  
   ii. Partial sternotomy AVR  
   iii. Transcatheter valve replacement  
   iv. Ballon valvuloplasty

b. Subaortic Stenosis  
   i. Localized form  
      - Resect the fibrotic membrane  
      - Consider septal myectomy  
      - Enlarge the aortic root if complex  
   ii. Diffuse form  
      - Aortoseptal approach between the right and left coronary cusps  
      - Preserve the aortic valve if normal vs. Repair or replace aortic valve  
      - Septal resection or patch; if the septum is patched, the aortic valve must be replaced

c. Supravalvular Aortic Stenosis  
   i. Asymmetric localized form - Use the classical non-coronary sinus patch
ii. Symmetric localized form - 2 patch technique (more frequent), 3 patch technique, or resection may be employed

iii. Pericardial patches may be used for sinus enlargement in the 3-patch technique

iv. Diffuse form - Extended patch with "endarterectomy" of the thickened media.

d. Hypertrophic cardiomyopathy
   i. Septal myomectomy transaortic vs. transatrial
   ii. Sternotomy vs. minimally invasive
   iii. Papillary muscle relocation
   iv. Mitral valve repair vs. replacement

V. **Results**
   a. Mortality – long-term
   b. SAM
   c. Recurrent obstruction
   d. Need for pacemaker

VI. **Case Presentations**