

SYSTOLIC MURMURS

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Murmurs which occurs during any part or whole of systole.

It may be

- Ejection systolic murmurs
- Pansystolic murmurs
- Late systolic murmurs

Ejection systolic murmurs

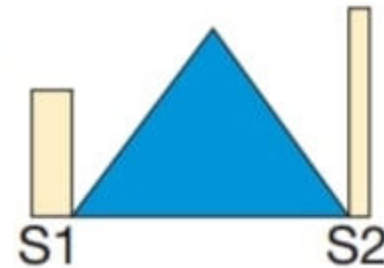
It occurs in mid systole.

Causes:

- Increased flow through normal valves
 - Severe anemia, fever, athletes, pregnancy
 - Atrial septal defect [pulmonary flow murmur]

- Normal or reduced flow through stenotic valve
 - Aortic stenosis
 - Pulmonary stenosis
- Subvalvular obstruction
 - Hypertrophic obstructive cardiomyopathy

Ejection systolic murmur
(aortic stenosis, pulmonary
stenosis, aortic or
pulmonary flow murmurs)



Pansystolic murmurs

- Pansystolic murmurs maintain a constant intensity
- Extend from the first heart sound throughout systole to the second heart sound
- They occur when blood leaks from a ventricle to a low pressure chamber at an even or constant velocity.

- Causes:
 - Mitral regurgitation
 - Tricuspid regurgitation
 - Ventricular septal defect

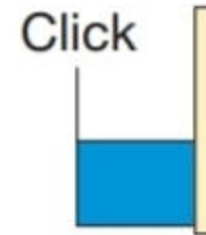
Pansystolic murmur
(mitral regurgitation,
tricuspid regurgitation,
ventricular septal defect)



Late systolic murmurs

- Unusual
- Causes:
 - Mitral valve prolapse
 - If mitral regurgitation confined to late systole
 - If dynamic obstruction occurs in late systole

Late systolic murmur
(mitral valve prolapse)





18.26 Features of some common systolic murmurs

Condition	Timing and duration	Quality	Location and radiation	Associated features
Aortic stenosis	Mid-systolic	Loud, rasping	Base and left sternal edge, radiating to suprasternal notch and carotids	Single second heart sound Ejection click (in young patients) Slow rising pulse Left ventricular hypertrophy (pressure overload)
Mitral regurgitation	Pansystolic	Blowing	Apex, radiating to axilla	Soft first heart sound Third heart sound Left ventricular hypertrophy (volume overload)
Ventricular septal defect (VSD)	Pansystolic	Harsh	Lower left sternal edge, radiating to whole precordium	Thrill Biventricular hypertrophy
Benign	Mid-systolic	Soft	Left sternal edge, no radiation	No other signs of heart disease