

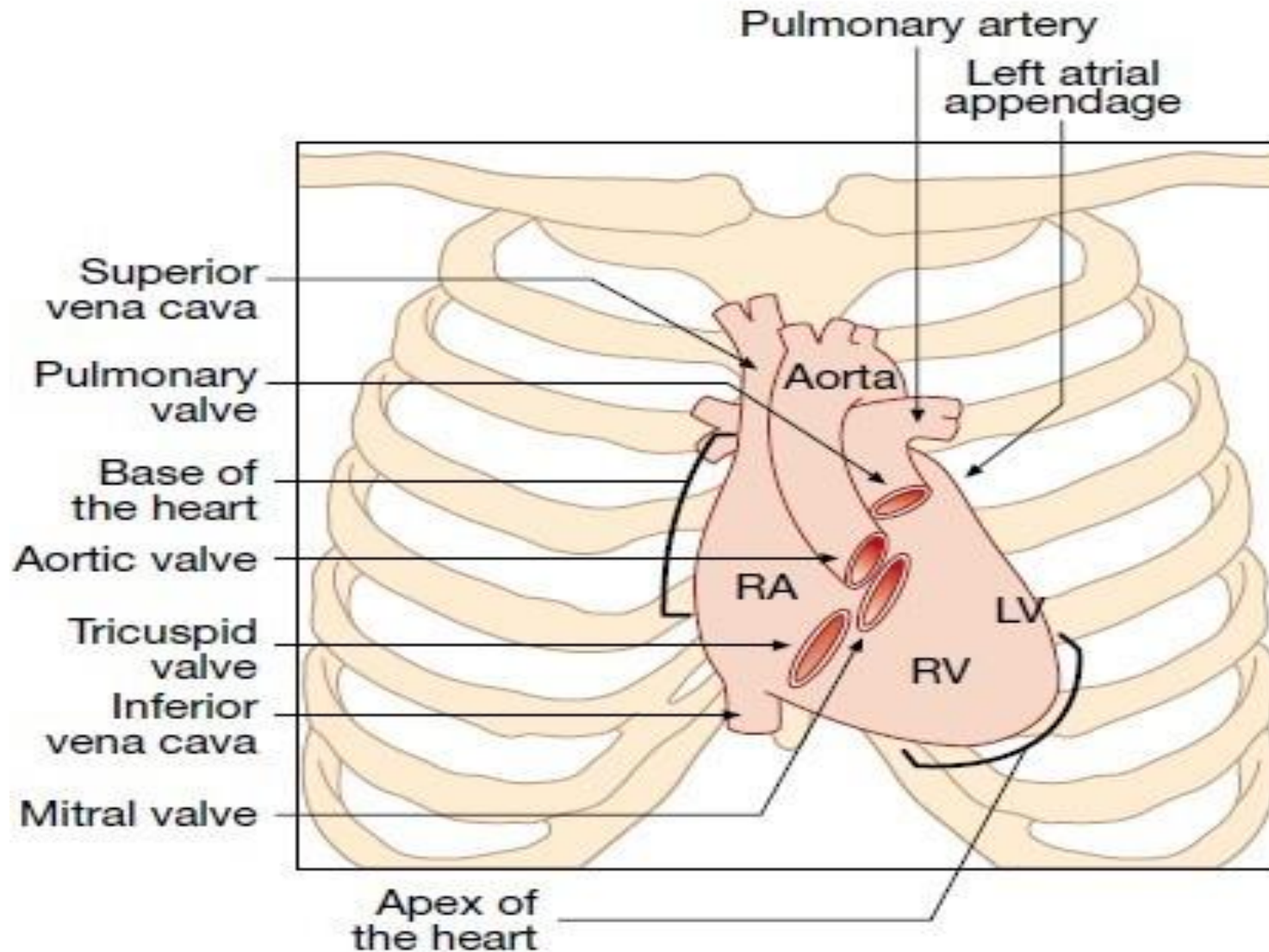
CVS EXAMINATION PART 2

DR UMMAR

AUSCULTATION

- Ideal stethoscope –
 - 1) well fitting earpieces
 - 2) Thick long tube – 25 cms length, 0.325 cms diameter.
 - 3) Diaphragm – 4 cm diameter, bell – 2.5 cm diameter.

AUSCULTATORY AREAS OF HEART



Mitral valve- apical area

Tricuspid valve- lower Lt sternal edge

Aortic valve – 2nd right ICS

Pulmonary Valve- 2nd left ICS

AUSCULTATORY EVENTS

Sounds

S1

S2

S3 or S4

Clicks

☐ Systolic murmurs

☐ Diastolic murmurs

☐ Pericardial rub

Abnormalities of S1

Soft S1	Loud S1
<p>Regurgitant lesions are usually soft</p> <p>MR</p> <p>TR</p> <p>MS/TS with calcified valve</p> <p>Obesity</p>	<p>Stenotic lesions are usually loud</p> <p>MS</p> <p>TS</p> <p>High output states</p>

Abnormalities of S2

Soft S2	Loud S2		Single S2
AS/PS with calcified valve	Loud A2 ↓ Syst HTN Atherosclerosis	Loud P2 ↓ Pulm HTN	D/to absent A2/P2
			Absent A2 - AS
			Absent P2- PS, TOF.

Splitting of S2

Wide splitting of S2	Reverse splitting of S2
Early A2 / Late P2	Late A2 / Early P2
MR, VSD, ASD	AS, HOCM
RBBB	LBBB
LV ectopics	RV ectopics
LV pacing	RV pacing
RV failure	Syst HTN

S3 AND S4

Comparing the 3rd and 4th heart sounds

LearnTheHeart.com

S3 - "ventricular gallop"	S4 - "atrial gallop"
Occurs in early diastole Occurs during passive LV filling May be normal at times Requires a very compliant LV Can be a sign of systolic CHF	Occurs in late diastole Occurs during active LV filling Almost always abnormal Requires a non-compliant LV Can be a sign of diastolic CHF

Causes of S3

Physiological S3	Pathological S3
<ul style="list-style-type: none">• Children• Young adults• Athletes• Pregnancy	<ul style="list-style-type: none">• High output states• CHD – ASD, VSD, PDA• MR, TR, AR• IHD• Syst HTN• Pulm HTN

Causes of S4

- Whenever atria has to contract forcefully.
- 1) LVH,
2) HOCM,
3) Syst HTN,

Ejection clicks

- Produced by the opening of semilunar valves.
- Aortic ejection click – AS. & Pulm ejection click – PS.

Differentiating Features between Aortic and Pulmonary Ejection Clicks

<i>Features</i>	<i>Aortic ejection click</i>	<i>Pulmonary ejection click</i>
Site	Aortic area	Pulmonary area
Conduction	Heard all over precordium	Localised to pulmonary area
Accentuation with respiration	No change with respiration	Intensity increases with expiration

Pericardial rub

- d/to sliding of the 2 inflamed layers of the pericardium
- Scratching, grating/creaking in character,
- Triphasic (during mid-systole, mid-diastole & pre-systole).
- Best heard along the left sternal edge in 3rd & 4th ICS.

MURMURS

- Musical sounds created by turbulent flow across an abnormal valve or abnormal flow across a normal valve

DESCRIBE

- 1) Pitch (High/Low pitched)
- 2) Timing & character,
- 3) systolic / diastolic,
- 4) Character,
- 5) Area where it is best heard,
- 6) Intensity (Grading),
- 7) Whether best heard with the bell or diaphragm,
- 8) Conduction of murmur,
- 9) Variation with respiration,
- 10) Posture in which murmur is best heard,
- 11) Variation with dynamic auscultation.

Levine & Freeman's grading of murmurs

- Systolic murmur :-

- I. Very soft (heard in quiet room)
- II. Soft
- III. Moderate
- IV. Loud with thrill
- V. Very loud with thrill (Heard with stethoscope)
- VI. Very loud with thrill
(Heard even when stethoscope is slightly away from skin)

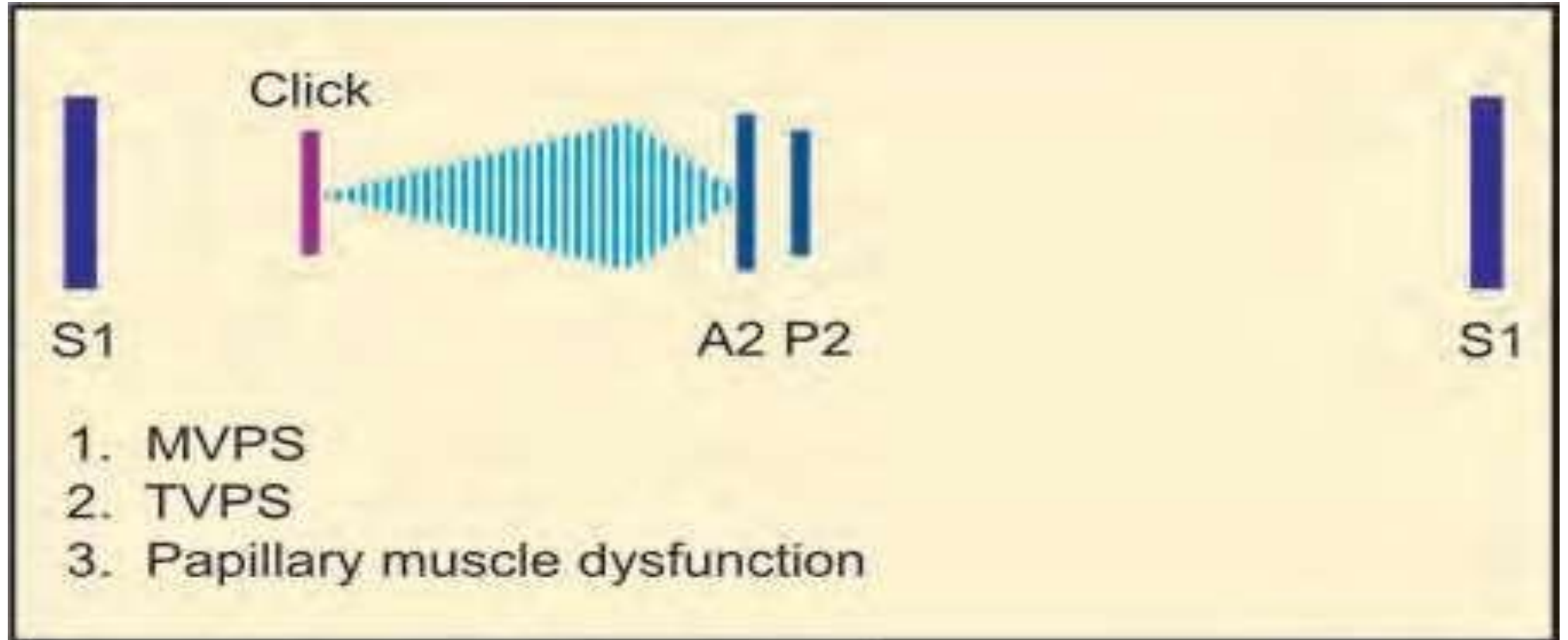
Diastolic murmurs

- I – Very soft
- II - Soft
- III - Loud
- IV – Loud with thrill

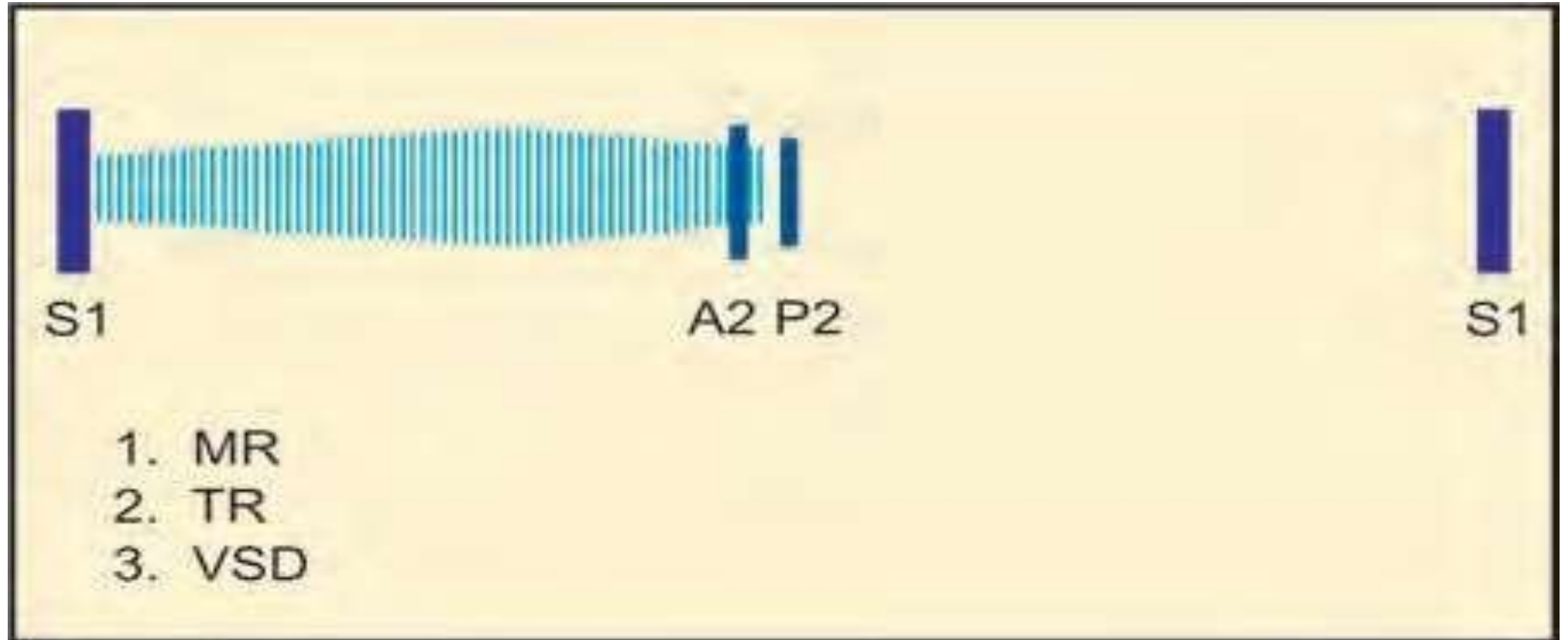
Ejection systolic murmur



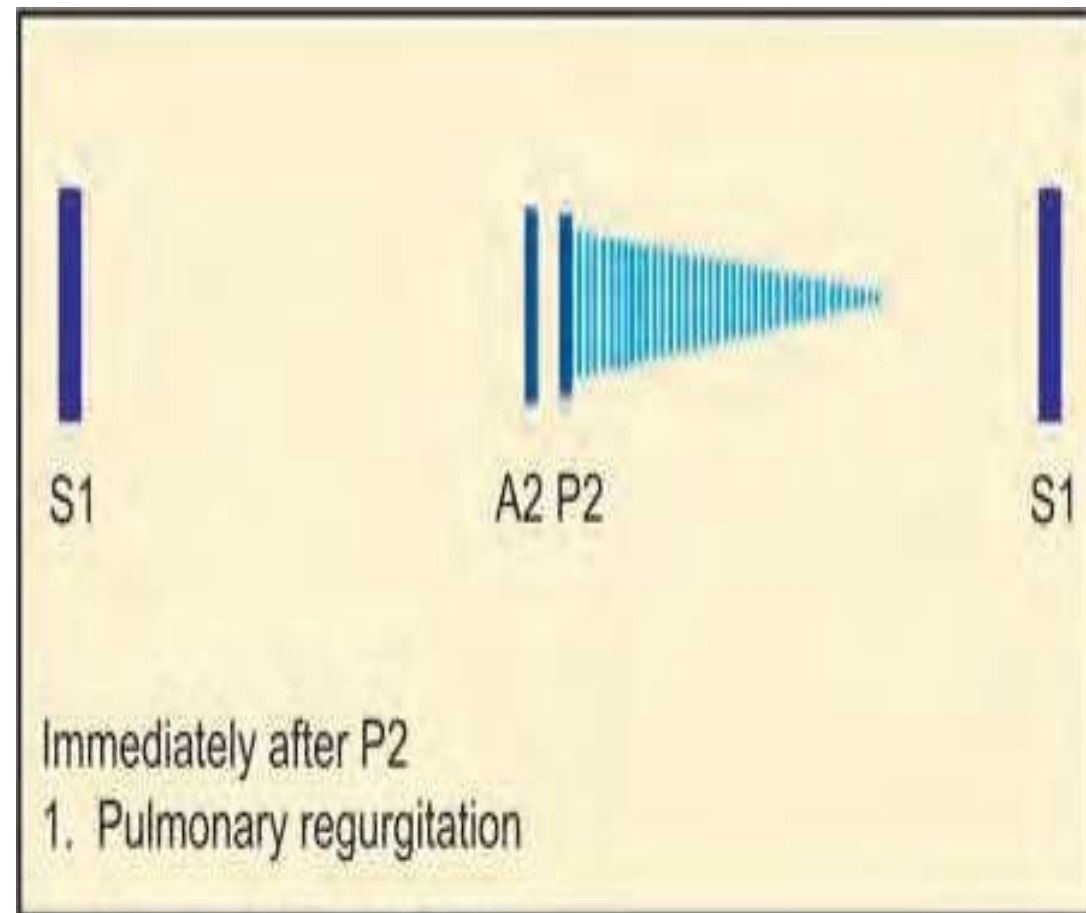
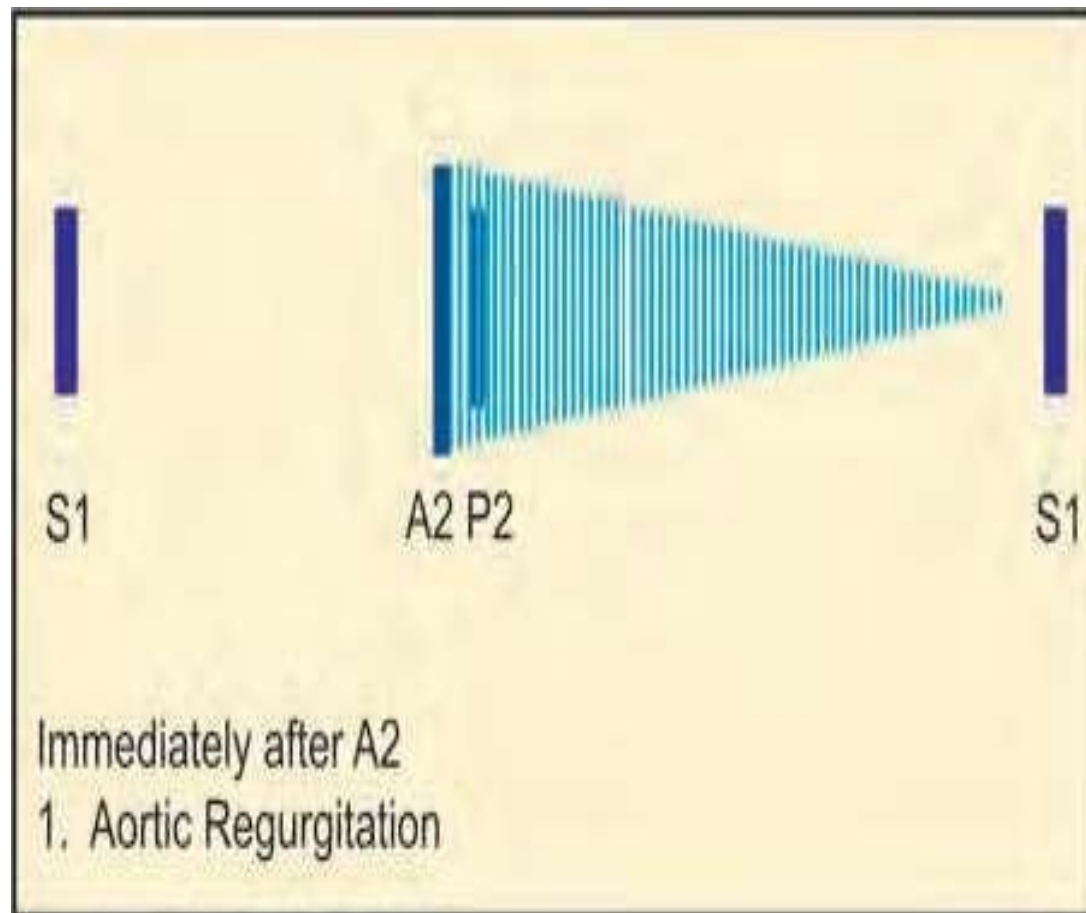
Late systolic murmur



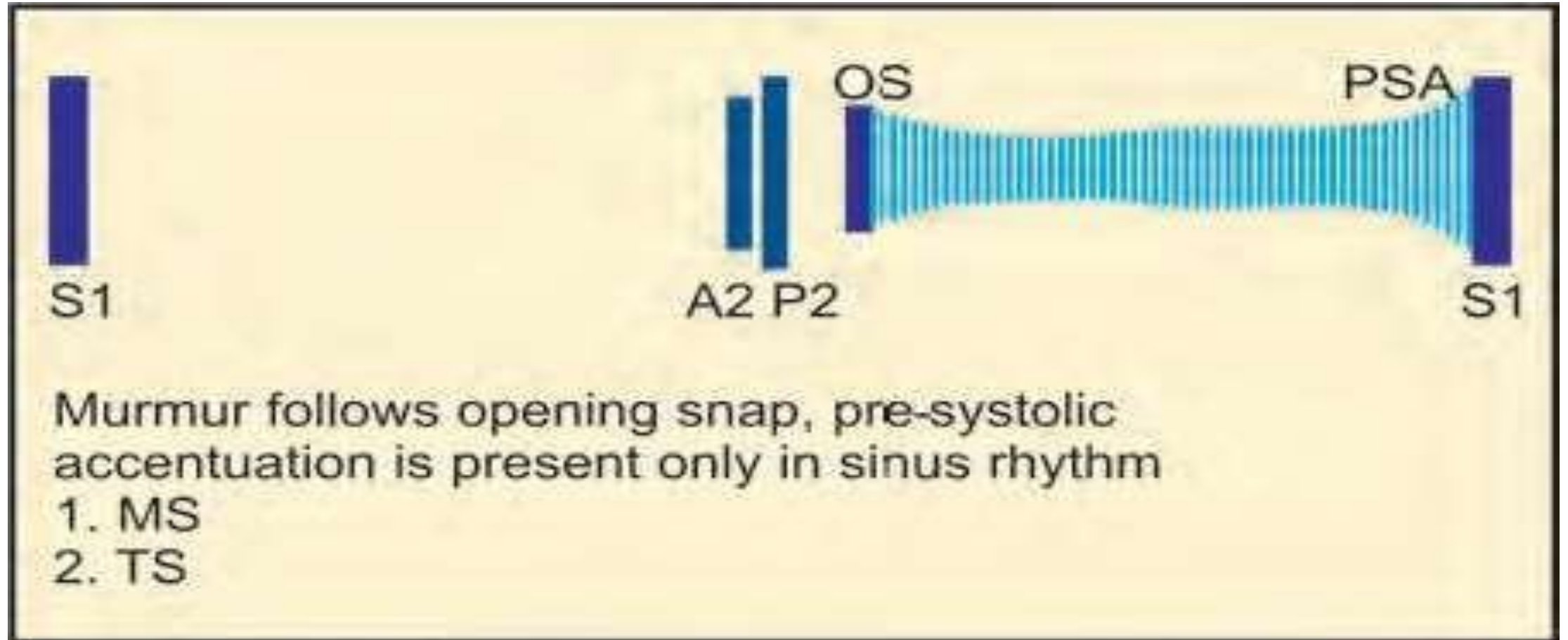
Pansystolic murmur



Early diastolic murmur



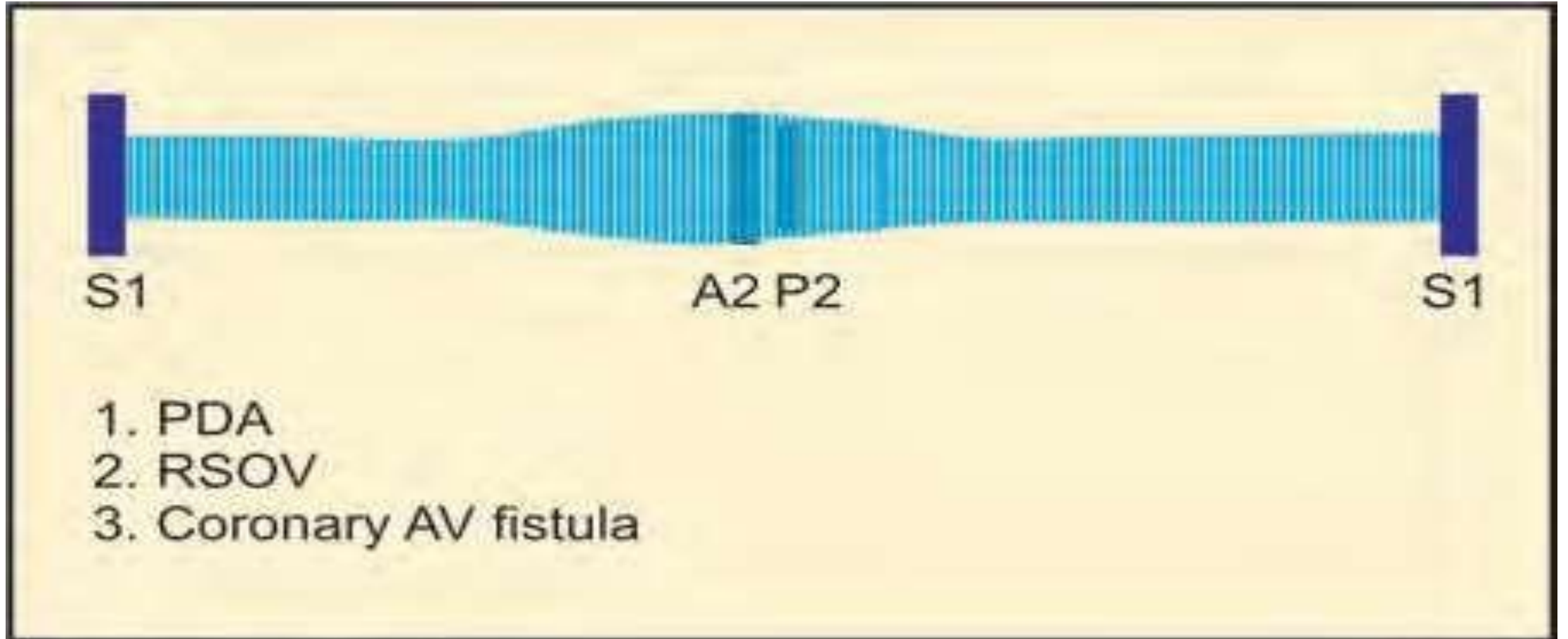
Mid diastolic murmur



Late diastolic murmur

- Causes :-
- MS,
- TS,
- Atrial myxomas

Continuous murmur



Quality of murmur

- Rumbling :MS,TS
- Blowing:MR,TR,AR
- Machinery murmur :PDA

Pitch of murmur

- High pitched:MR,TR,AR
- Low pitched:MS,TS
- Harsh :VSD,AS

Radiation of murmur

- MR: Axilla and interscapular area
- AS: Carotids
- Do not radiate: MS, TS, TR

Dynamic auscultation

- Refers to the changes in haemodynamics by physiological pharmacological manouvres & the effect of these manouvres o heart sounds & murmurs.
- Respiration,
- Valsalva manouvre,
- Standing to squatting,
- Isometric exercise.

Respiration

- During inspiration – R sided murmurs become louder &
 - L sided murmurs become softer or unchange
- Expiration has the opposite effect.

Valsalva manoeuvre

- Close the nose with fingers & breath out forcibly with closed mouth against closed glottis.

Phase 1	Phase 2	Phase 3	Phase 4
<ul style="list-style-type: none">• Beginning – ↑sed Intrathoracic pressure ↓ Transient ↑ in LV output.	<ul style="list-style-type: none">•Straining phase – VR ↓ses → ↓ R & L filling → ↓SV. Reflex ↑ HR. •Most of the murmurs – softer but; •HOCM murmur ↑.	<ul style="list-style-type: none">•Release phase – 1st R-sided then L-sided murmurs become louder.	<ul style="list-style-type: none">• Overshoot of systemic arterial pressures & reflex bradycardia.

Standing to squatting

- VR & systemic arterial resistance ↑ses
 - ↓
 - ↑ SV & arterial pressures.
- Most of the murmurs become louder. But
- Murmur of HOCM becomes softer as LV size increases
- Squatting to standing :- Opposite changes occur.

Isometric exercise

- Hand grip for 20-30 sec.s
 - ↓
- ↑sed systemic resist, VR, BP, & heart size.
- Most murmurs become louder.
- AS murmur – softer d/to decreased pressure gradient across th
- MVPS murmur – delayed d/to increased ventricular volume.

Manoeuvre	HOCM	MVPS	AS	MR
Valsalva ph 2	↑	↑or↓	↓	↓or↔
Hand grip	↓	↓	↑	↑
Squattin g	↓	↓	↑	↑
Standing	↑	↑	↓	↓or↔

Thank you