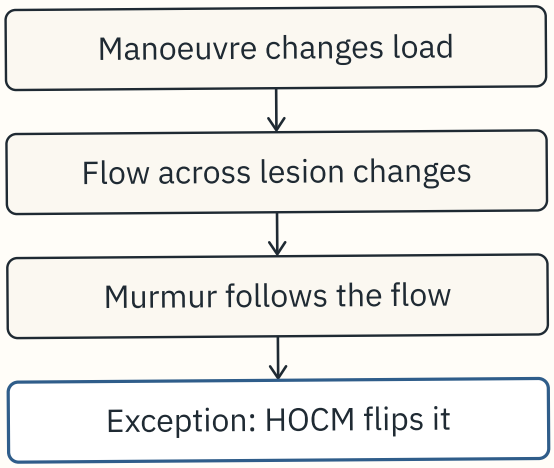
Murmurs and manoeuvres

Predict the change from preload and afterload



Step by step

1. Preload down: Valsalva strain, standing up
2. Preload up: squatting, passive leg raise
3. Afterload up: sustained handgrip
4. Inspiration: more blood to the right heart

Lesion	Valsalva / stand	Squat	Handgrip	Insp.
Aortic stenosis	softer	louder	~ same	~ same
Mitral regurgitation	softer		louder	~ same
Ventricular septal defect	softer		louder	
Tricuspid regurgitation				louder
Hypertrophic obstructive cardiomyopathy	louder	softer	softer	

Response to each manoeuvre

Follow the flow

More blood across the lesion: louder.

Less blood: softer.

HOCM flips it: smaller ventricle, louder.

Exam traps

- Handgrip separates aortic stenosis (little change) from mitral regurgitation (louder).
- Hypertrophic obstructive cardiomyopathy gets louder, and prolapse gets longer, when preload falls.
- Right-sided murmurs get louder with inspiration; left-sided murmurs change little.

Heart murmurs and dynamic manoeuvres, from preload and afterload

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/heart-sounds-murmurs-ecg/heart-murmurs-dynamic-manoeuvres

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