

## Aortic Regurgitation

Aortic regurgitation is a valvular heart disease in which the aortic valve does not properly close during diastole. The aortic valve is a three leafed valve that lies between the left ventricle and the aorta. This valve is normally open during systole allowing blood to flow from the left ventricle to the aorta and closes after systole to prevent back flow of blood to the left ventricle. In aortic regurgitation, when the pressure of the left ventricle falls below the pressure in the aorta, the aortic valve cannot completely close causing regurgitant blood to flow back from the aorta into the left ventricle. Common causes include aortic root dilatation, syphilitic aortitis, and left ventricular dilatation due to systemic hypertension. The regurgitant blood flow causes a characteristic high-pitched diastolic murmur with a blowing quality. The regurgitant flow results in a decrease in the diastolic blood pressure in the aorta and typically also causes an increase in the systolic blood pressure, leading to an increase in the pulse pressure (defined as systolic pressure minus diastolic pressure). On physical exam bounding pulses referred to as a water hammer pulse, head bobbing, and pulsating nail beds can be appreciated. Prolonged aortic regurgitation can also lead to an Austin Flint murmur, which is a soft mid-diastolic rumble caused by regurgitant flow hitting the anterior mitral leaflet causing partial closure.



PLAY PICMONIC

### Auscultation

#### Diastolic Murmur

[Dice filling heart with Merman](#)

In aortic regurgitation, when the pressure of the left ventricle falls below the pressure in the aorta in diastole, the aortic valve cannot completely close causing regurgitant blood to flow back from the aorta into the left ventricle. Therefore, aortic regurgitation is characterized by a diastolic murmur.

#### Immediate High-pitched

[High-pitched music notes](#)

The regurgitant blood flow from the aorta to the left ventricle causes a characteristic early high pitched diastolic murmur that can be appreciated on auscultation of the heart. The murmur is typically described as a decrescendo murmur, best heard in the third left intercostal space.

#### Blowing Murmur

[Blow-horn Merman](#)

The murmur caused by aortic regurgitation is classically described as having a blowing quality.

### Clinical Findings

#### Wide Pulse Pressure

[Widened Pulses](#)

The regurgitant flow results in a decrease in the diastolic blood pressure in the aorta and typically also causes an increase in the systolic blood pressure, leading to an increase in the pulse pressure (defined as systolic pressure minus diastolic pressure).

#### Water Hammer Pulse

[Water Hammer](#)

A water hammer pulse is a medical sign that describes a bounding and forceful pulse commonly associated with increased pulse pressures caused by aortic regurgitation.

#### Head Bobbing

[Bobble-head](#)

Head bobbing, also called De Musset's sign, is a condition characterized by a rhythmic bobbing of the head that correlates to the beating of the heart. This condition is frequently associated with aortic regurgitation.

#### Pulsating Nail Bed

[Pulsating Bed of Nails](#)

Widened pulse pressure can cause visible pulsations of the nail capillary beds, commonly called Quincke's sign, associated with aortic regurgitation.

### Considerations

### **Can Cause Austin Flint Murmur**

#### **Austin**

Prolonged aortic regurgitation can lead to an Austin Flint murmur, which is a soft mid-diastolic rumble caused by regurgitant flow hitting the anterior mitral leaflet causing partial closure.