

Author(s): Gerald Abrams, M.D., 2009

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Heart Failure

M1 – Cardiovascular/Respiratory
Sequence

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Jennifer Matthews, MD

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Fall 2008



HEART FAILURE

Inability of the heart to eject sufficient blood to meet metabolic demands of the body

- increased demand
- systolic failure
- diastolic failure

CAUSES OF HEART FAILURE

- Resistance to flow
- Regurgitant flow
- Myocardial disease
- Conduction abnormality

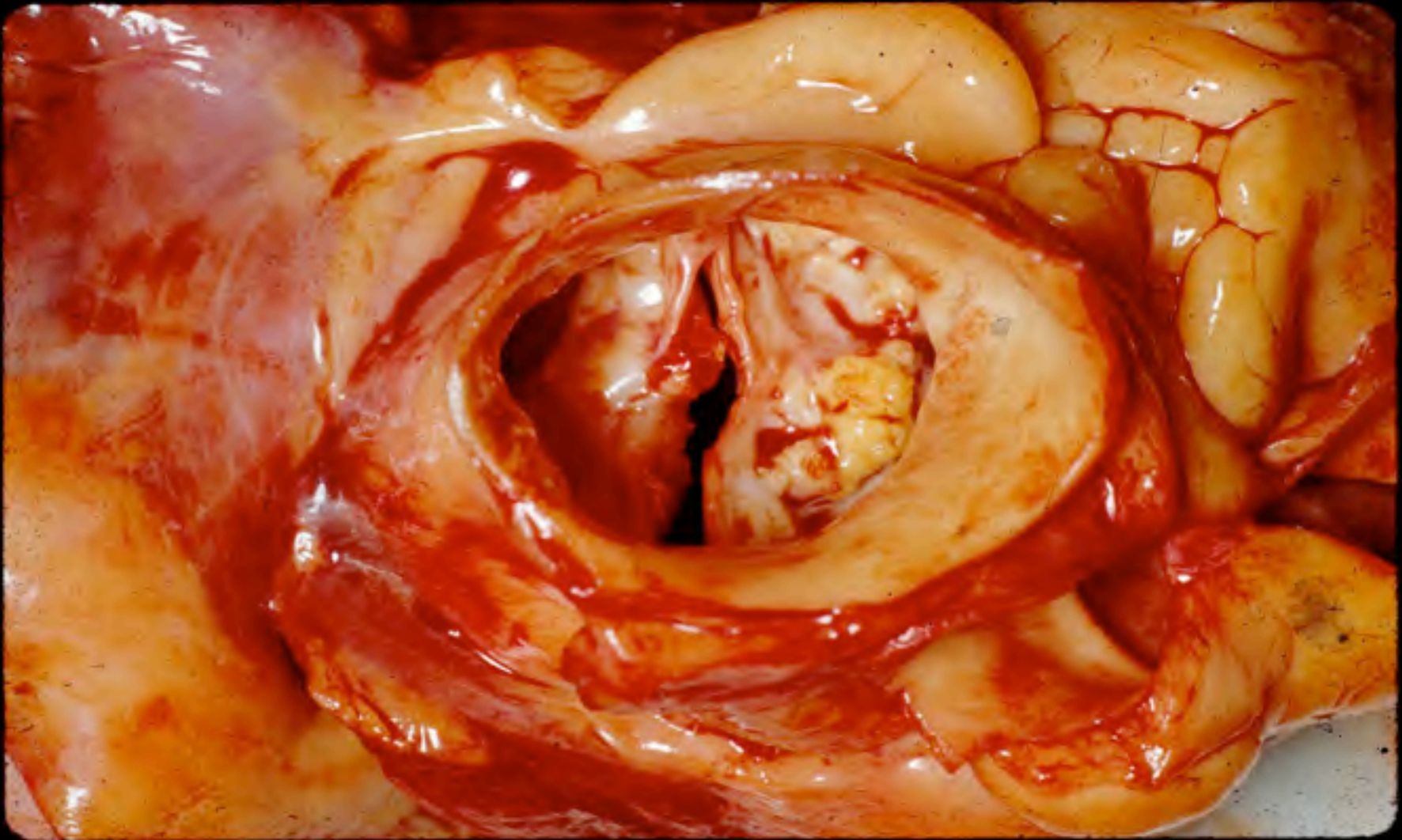
Hypertensive heart



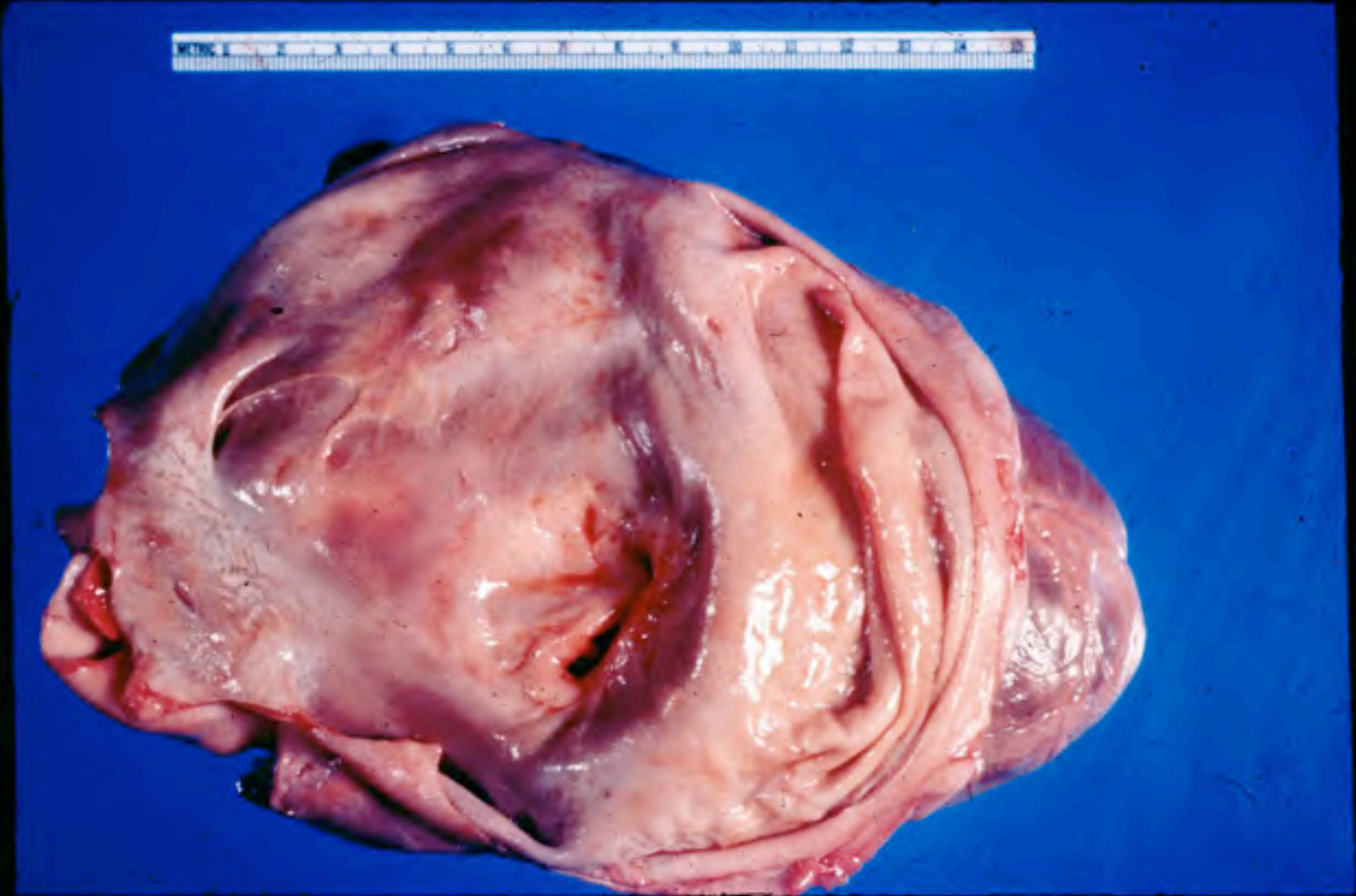
Aortic Stenosis



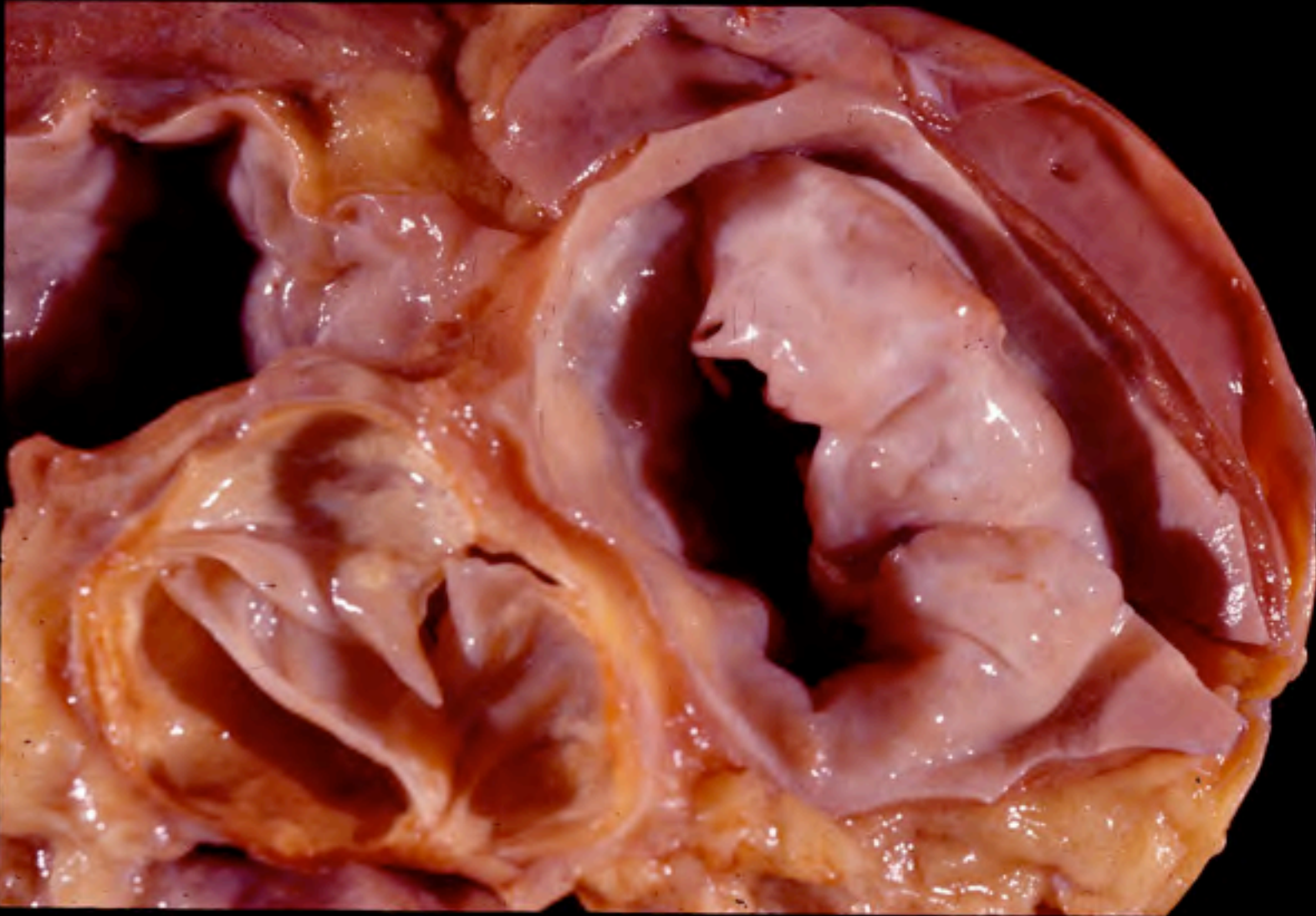
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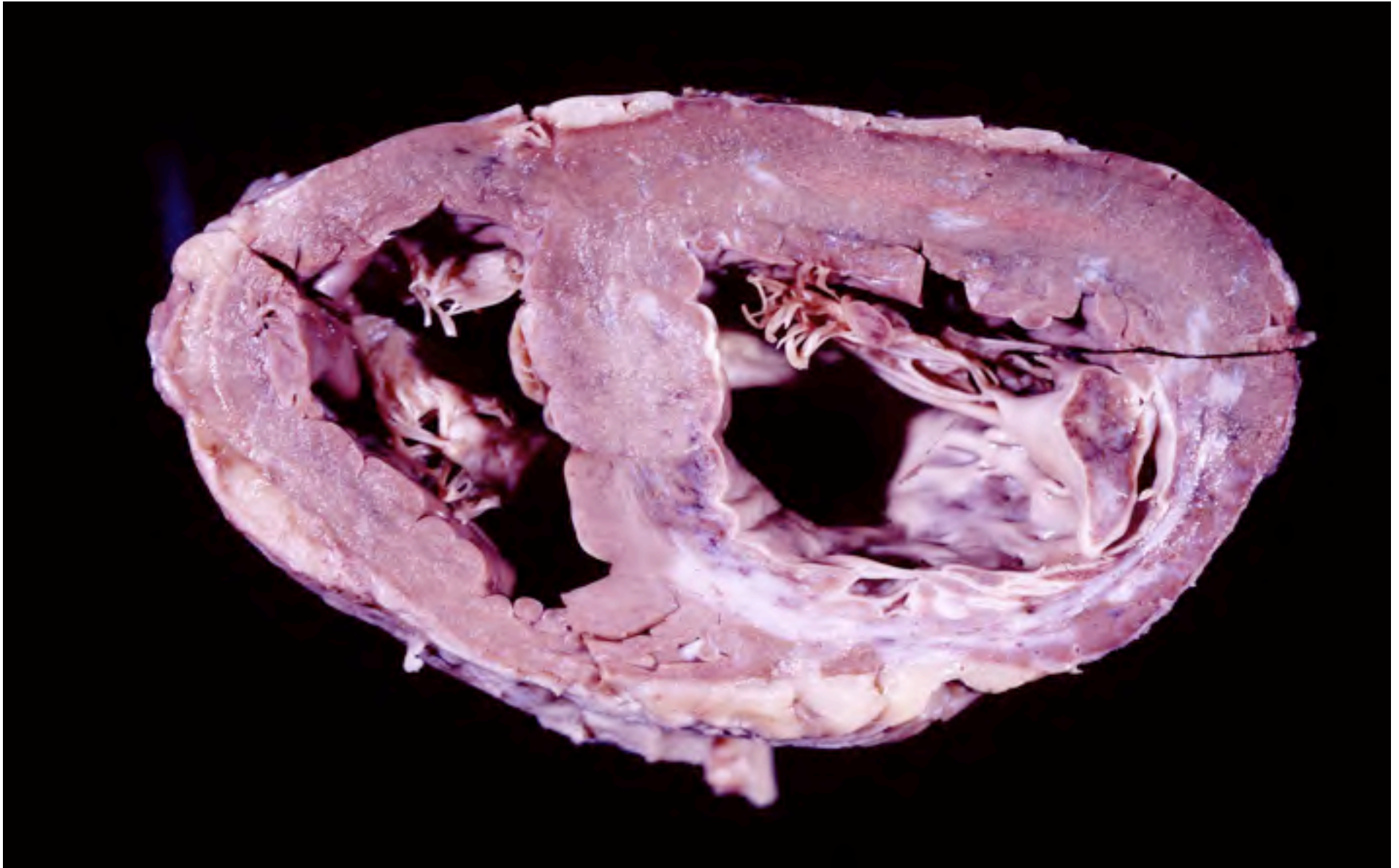
Mitral Stenosis



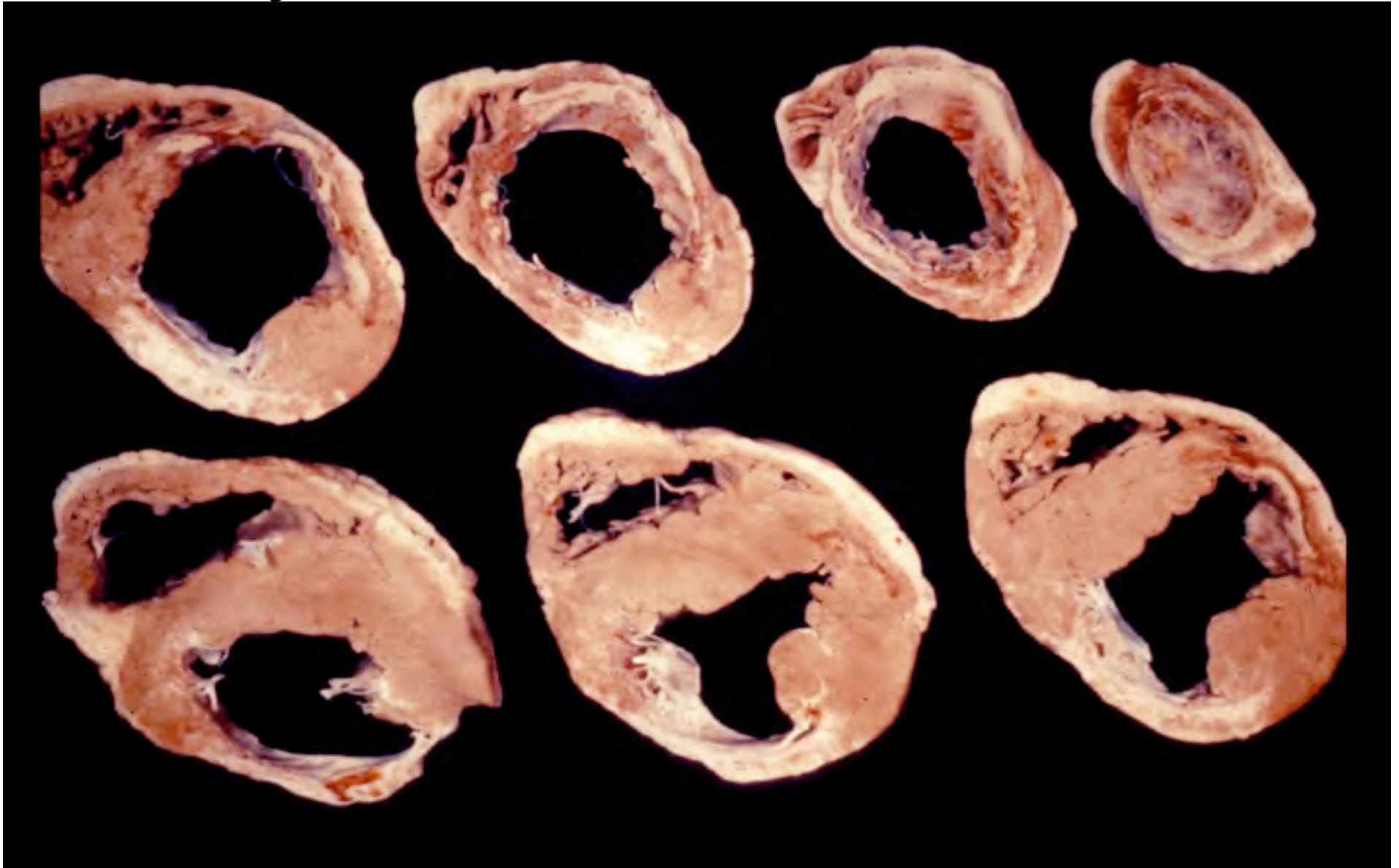
Mitral Regurgitation



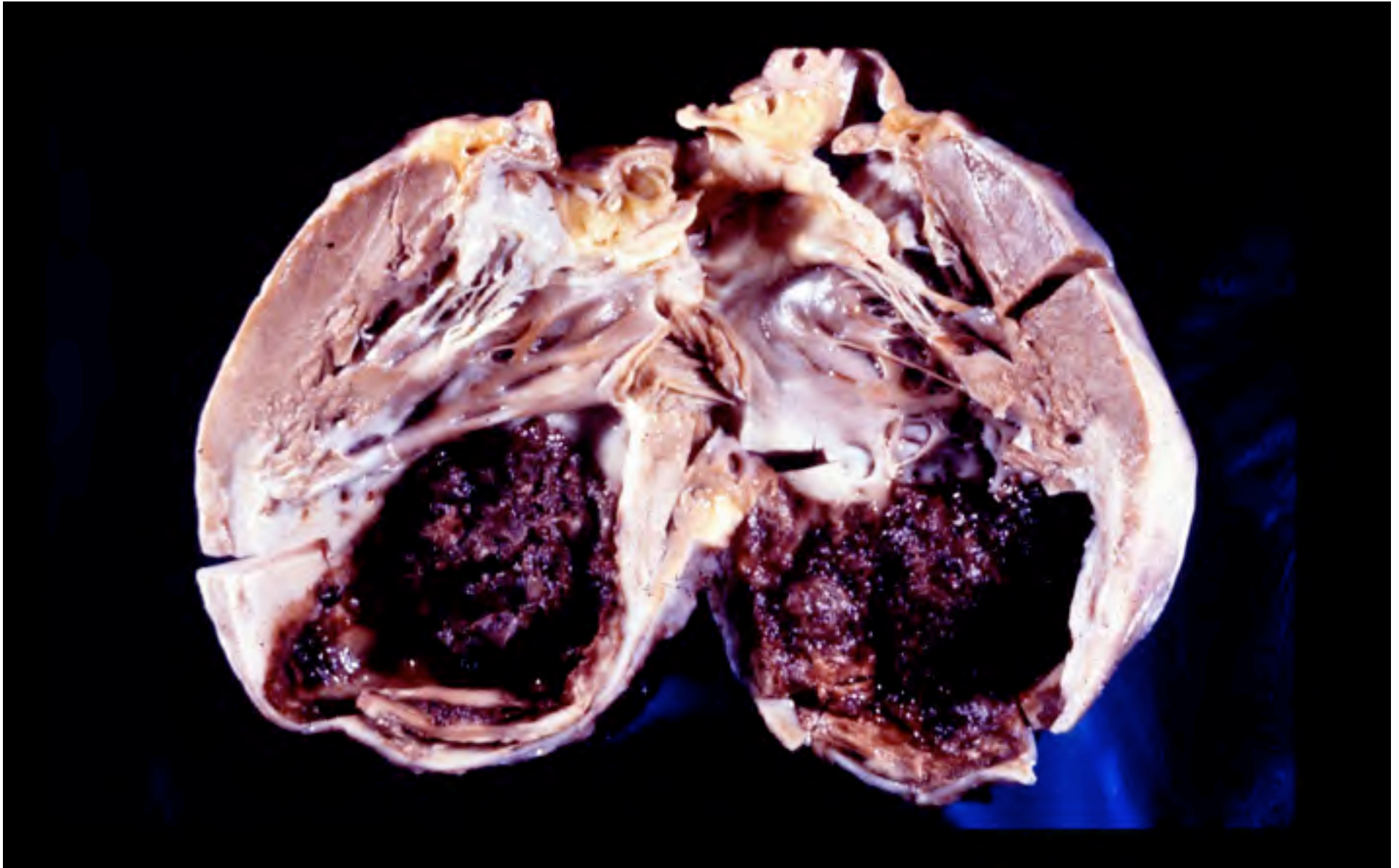
Myocardial Ischemic Disease



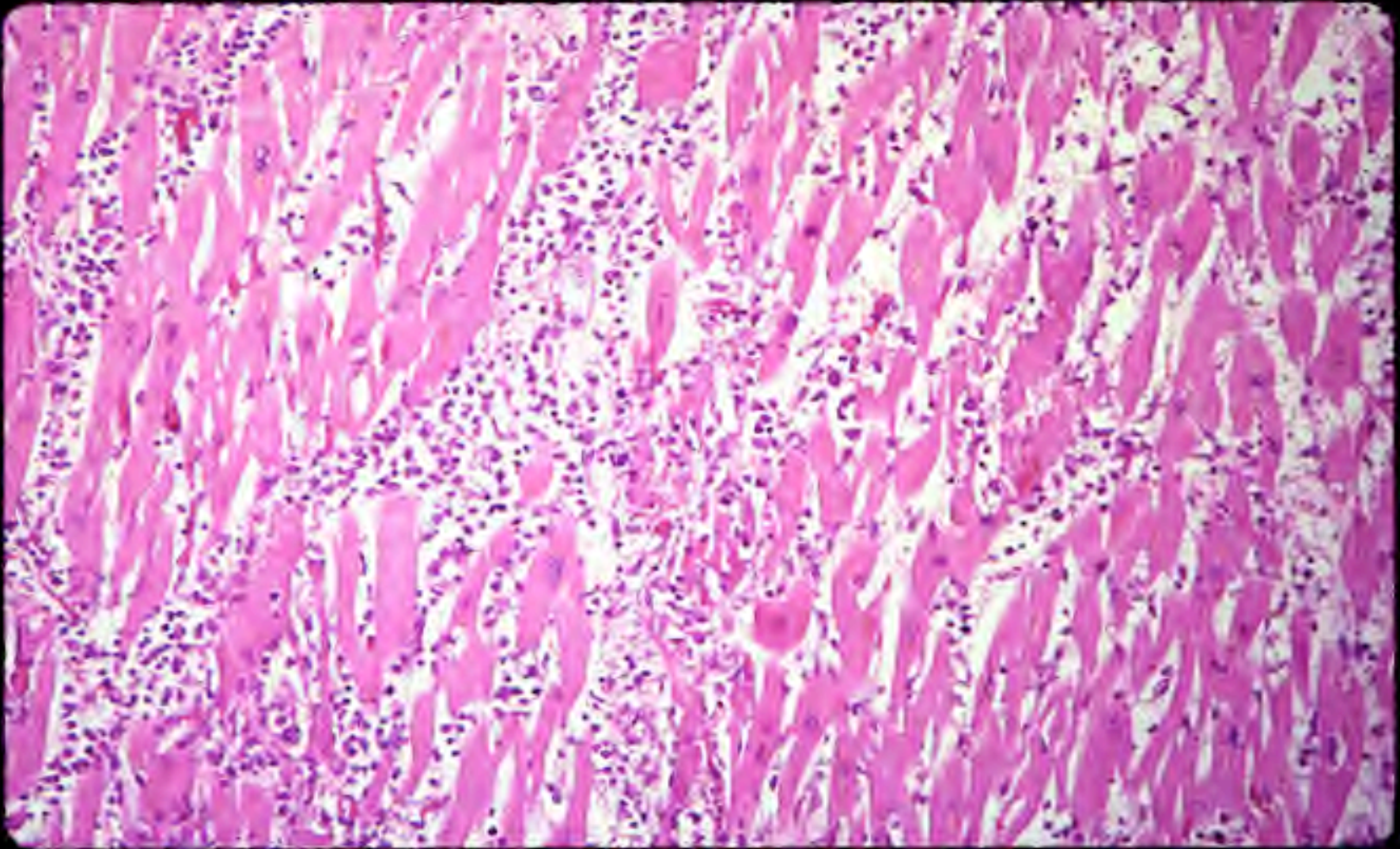
Myocardial Ischemic Disease



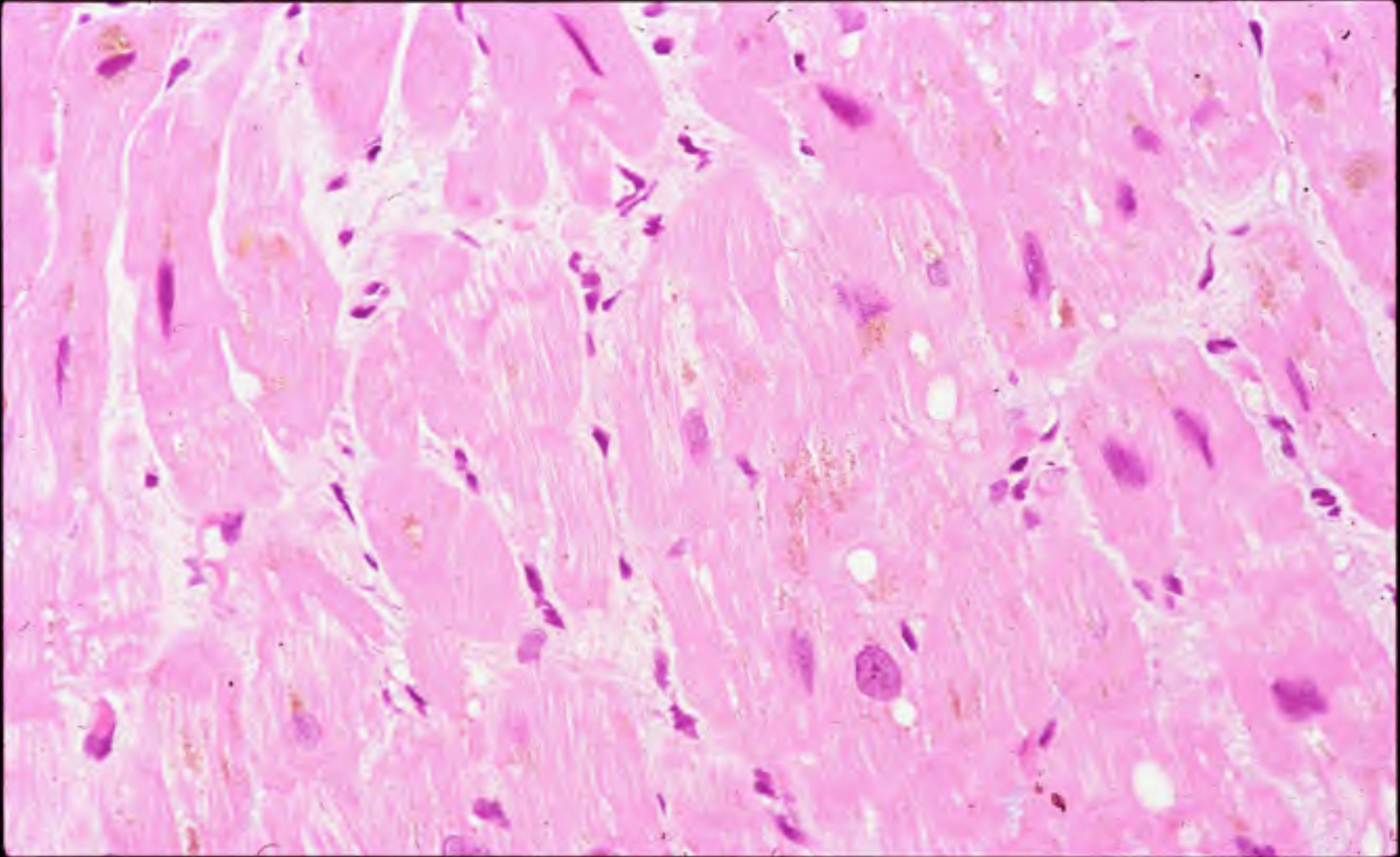
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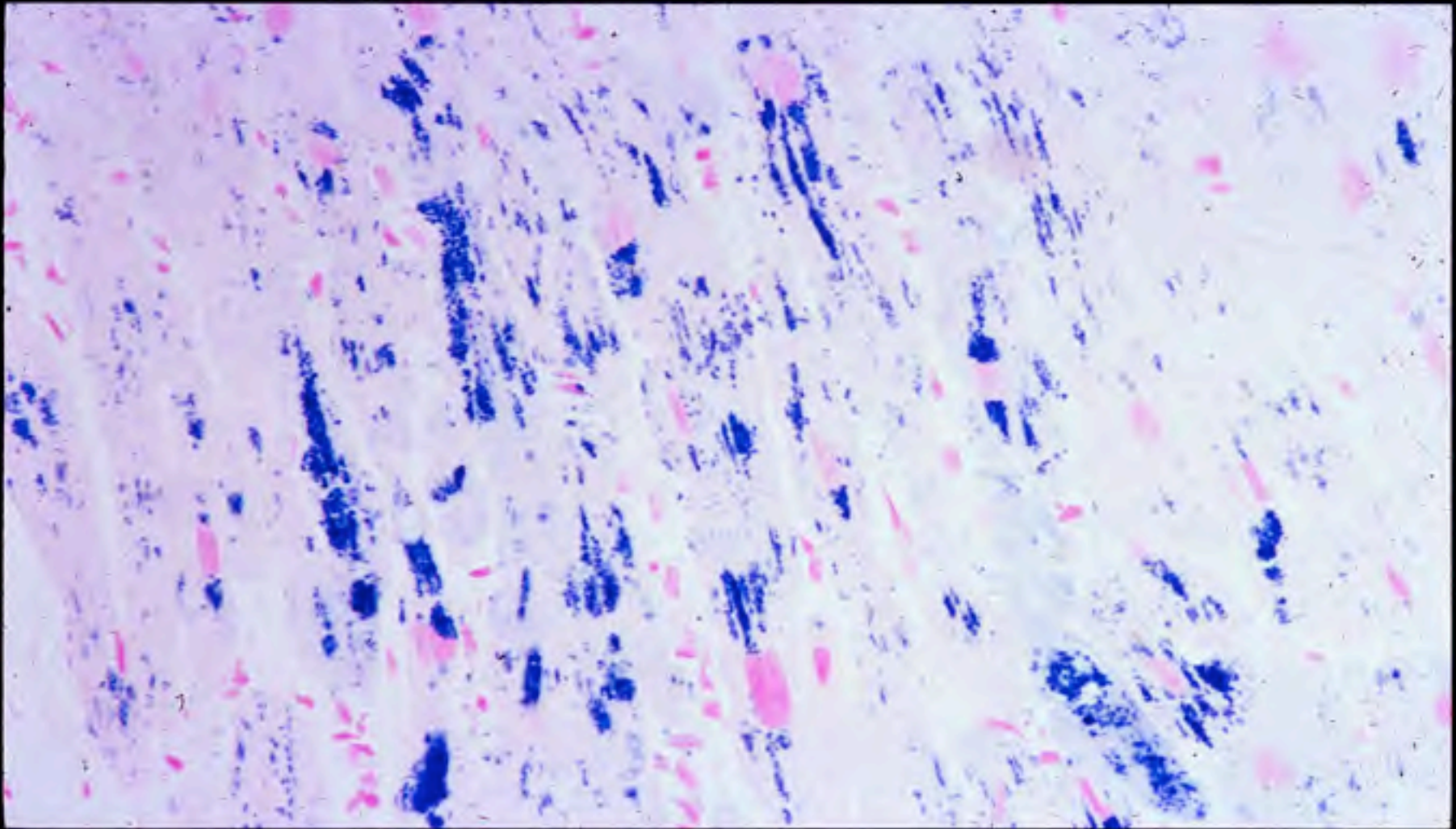
Myocarditis



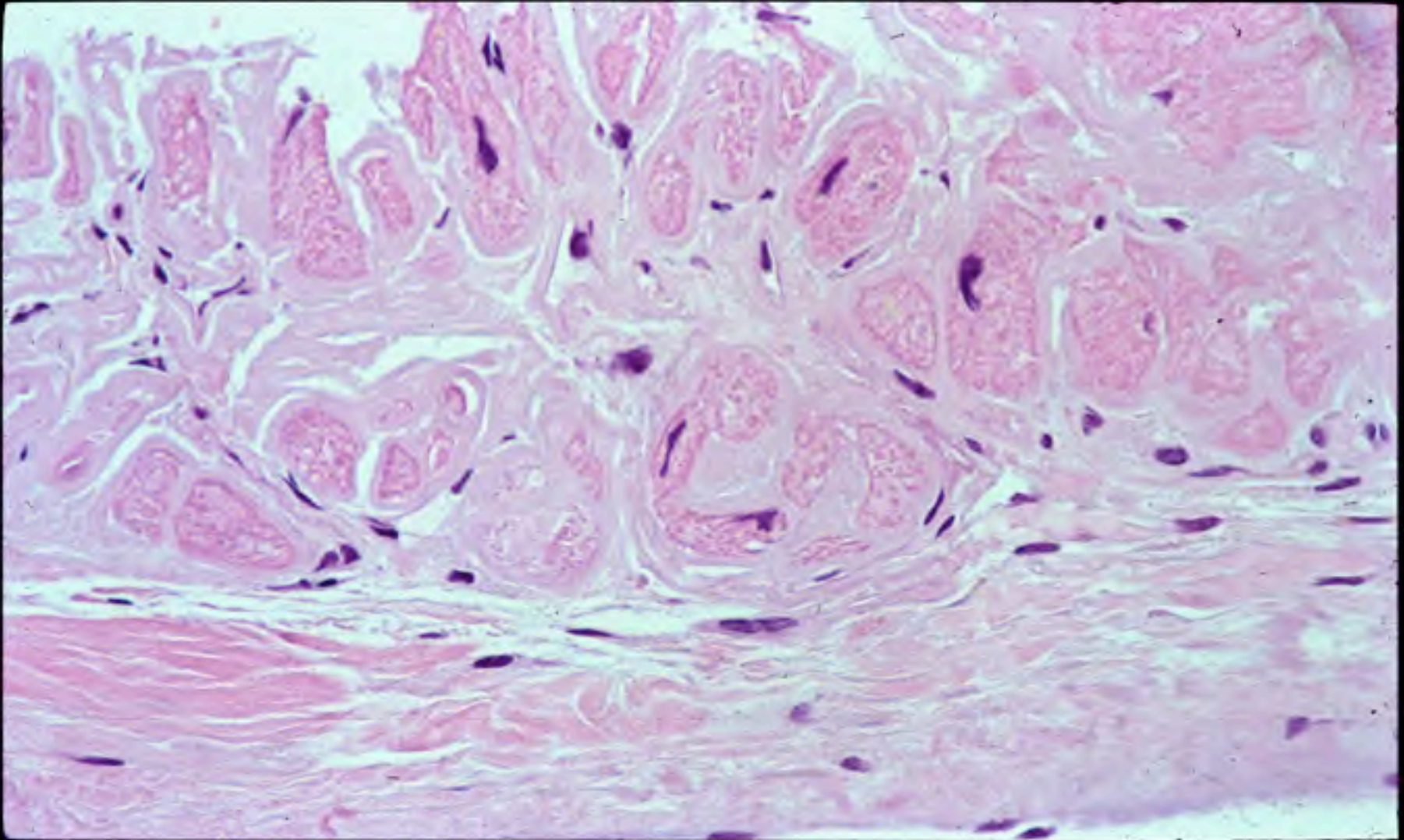
Hemochromatosis



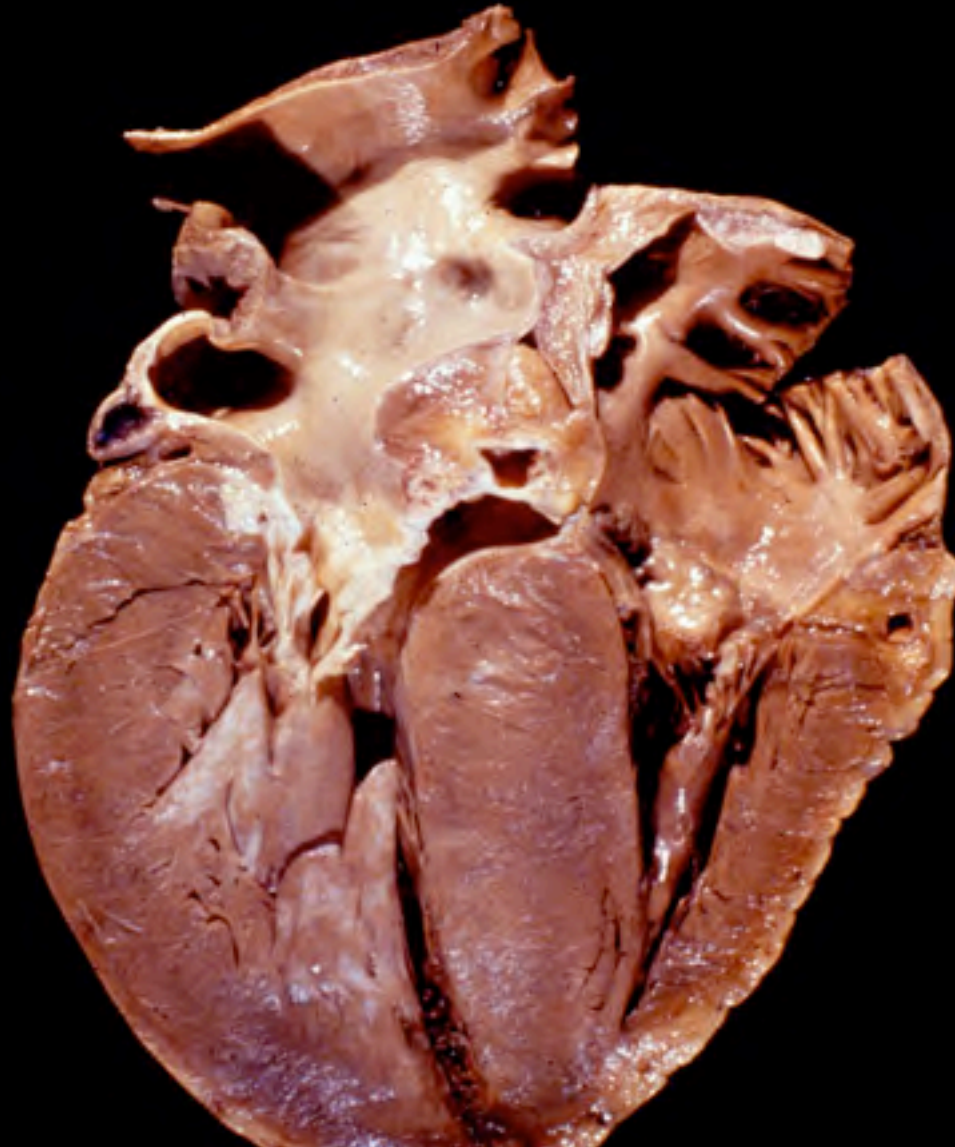
Hemochromatosis Iron Stain



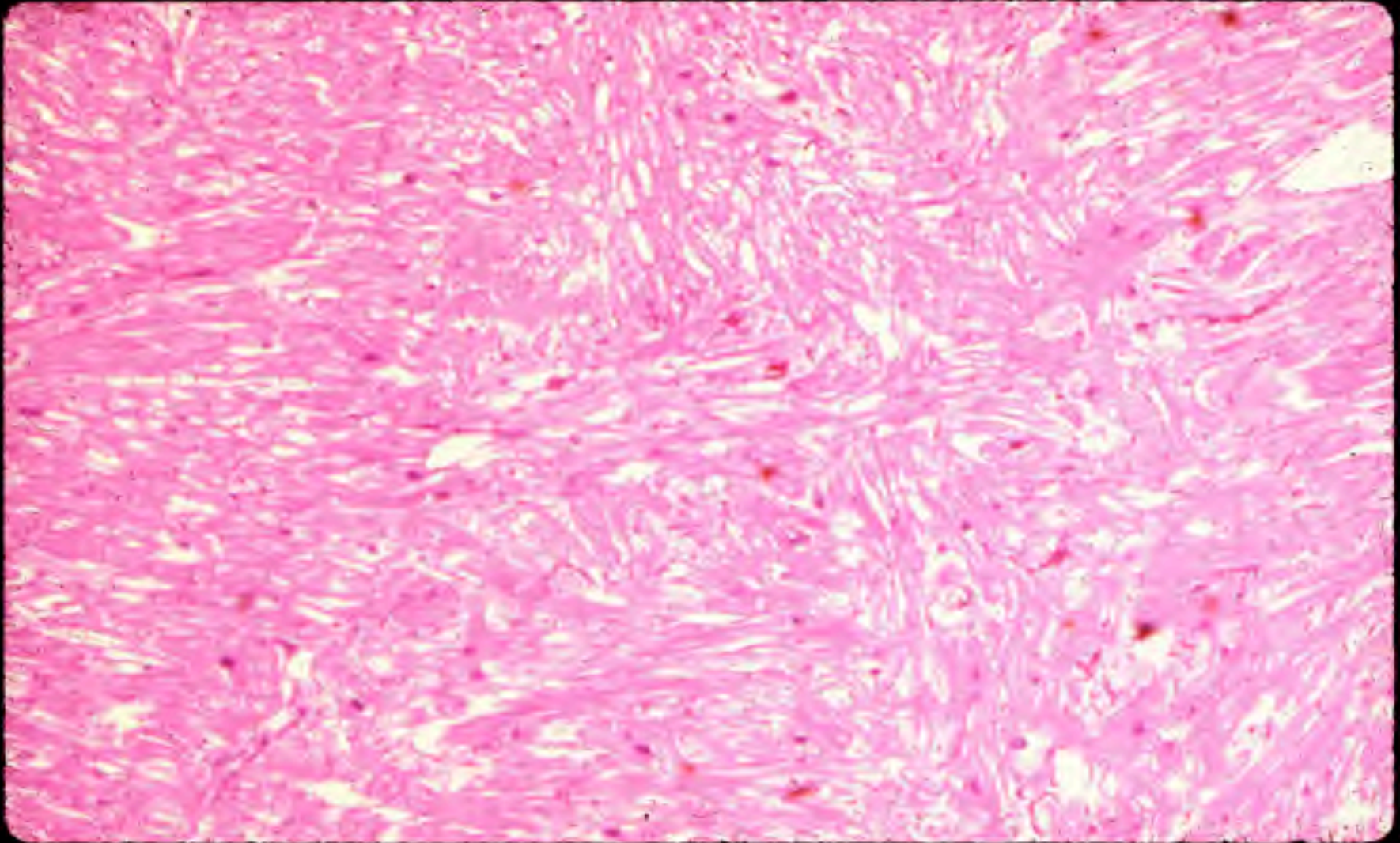
Amyloidosis



Hypertrophic Cardiomyopathy



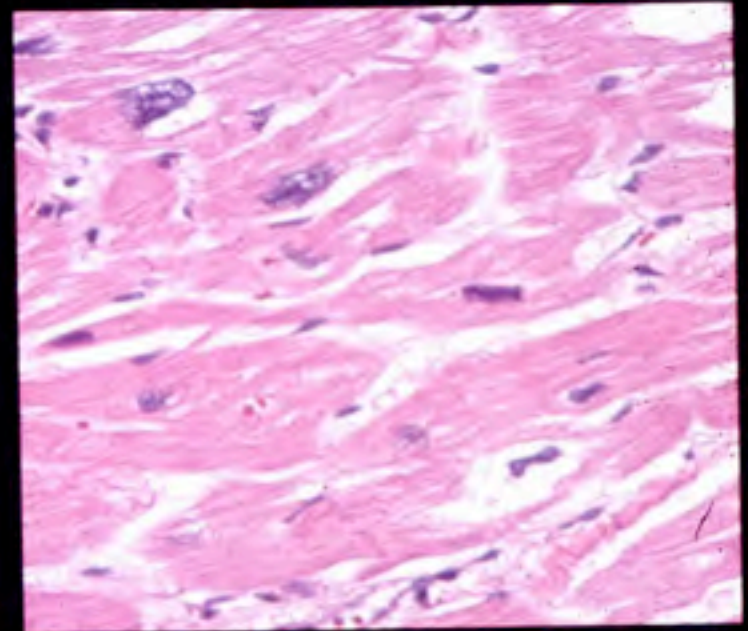
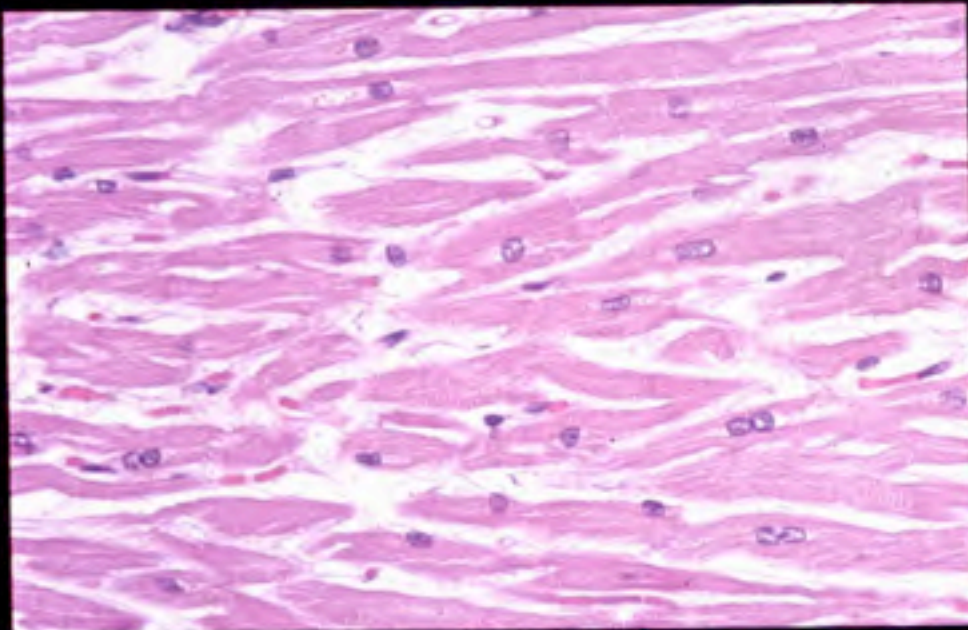
Hypertrophic Cardiomyopathy



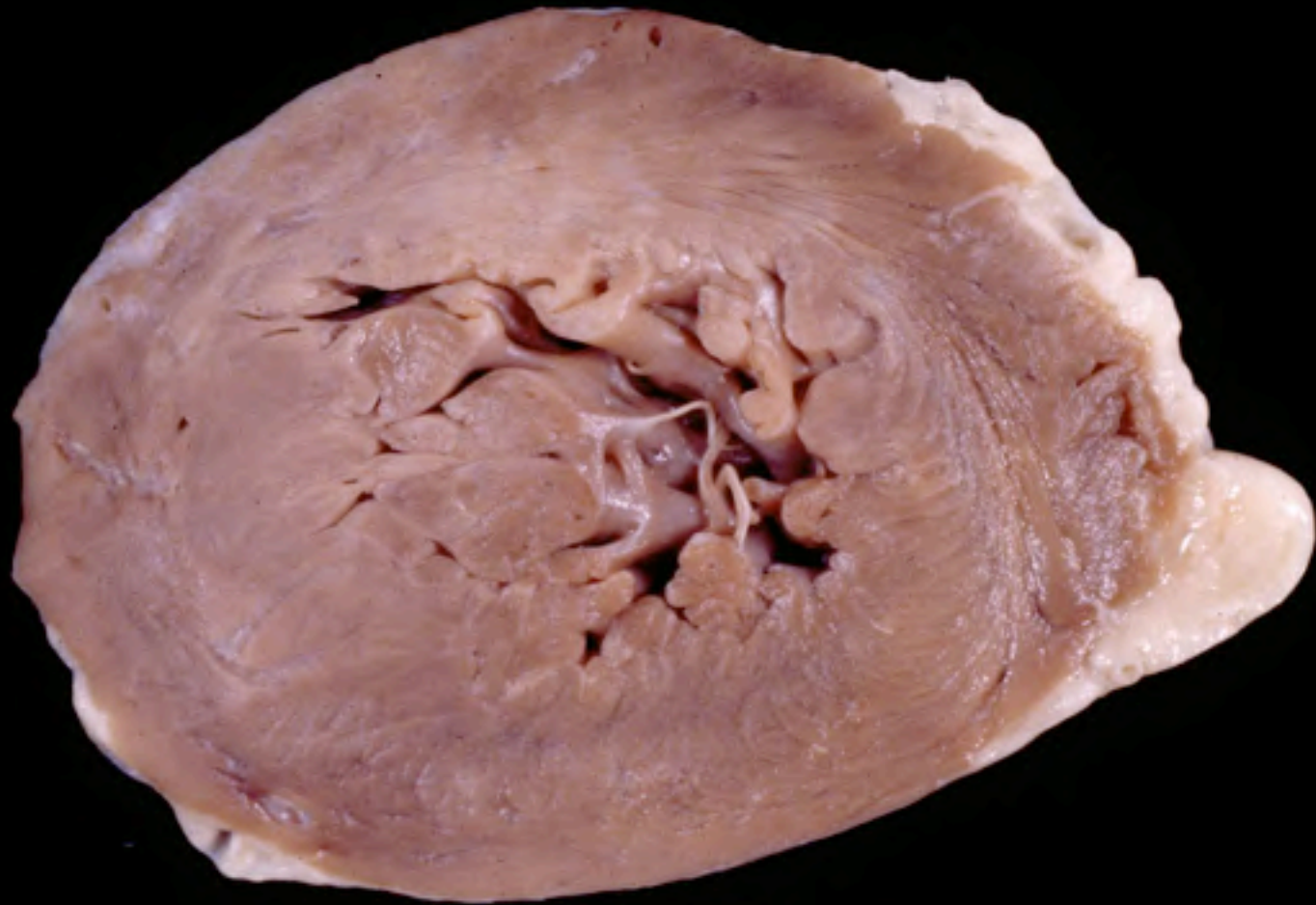
Compensatory Mechanisms

- Frank-Starling mechanism
- Myocardial Hypertrophy
- Activation of neurohumoral systems

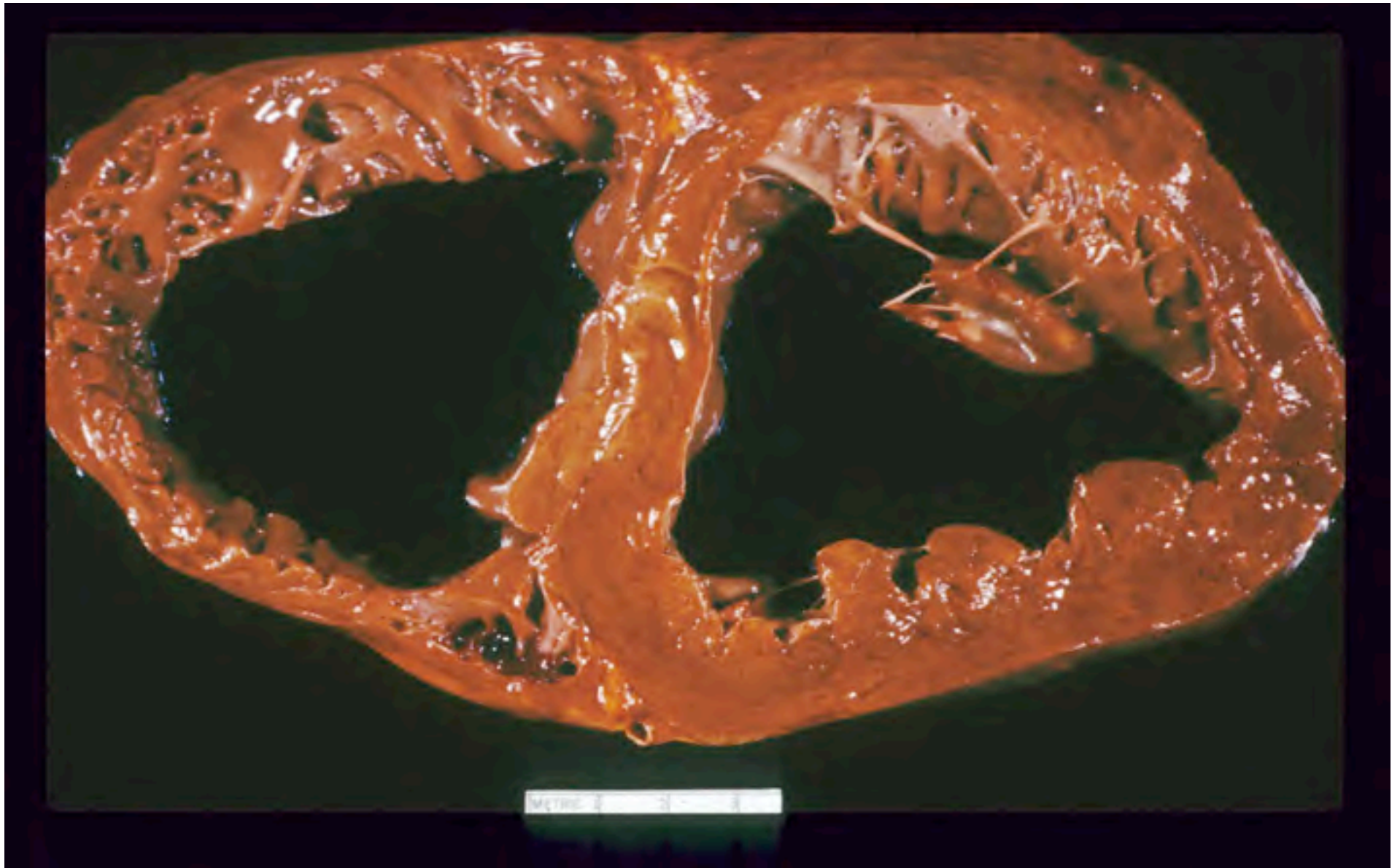
Myocardial Hypertrophy



Concentric Hypertrophy



Eccentric Hypertrophy



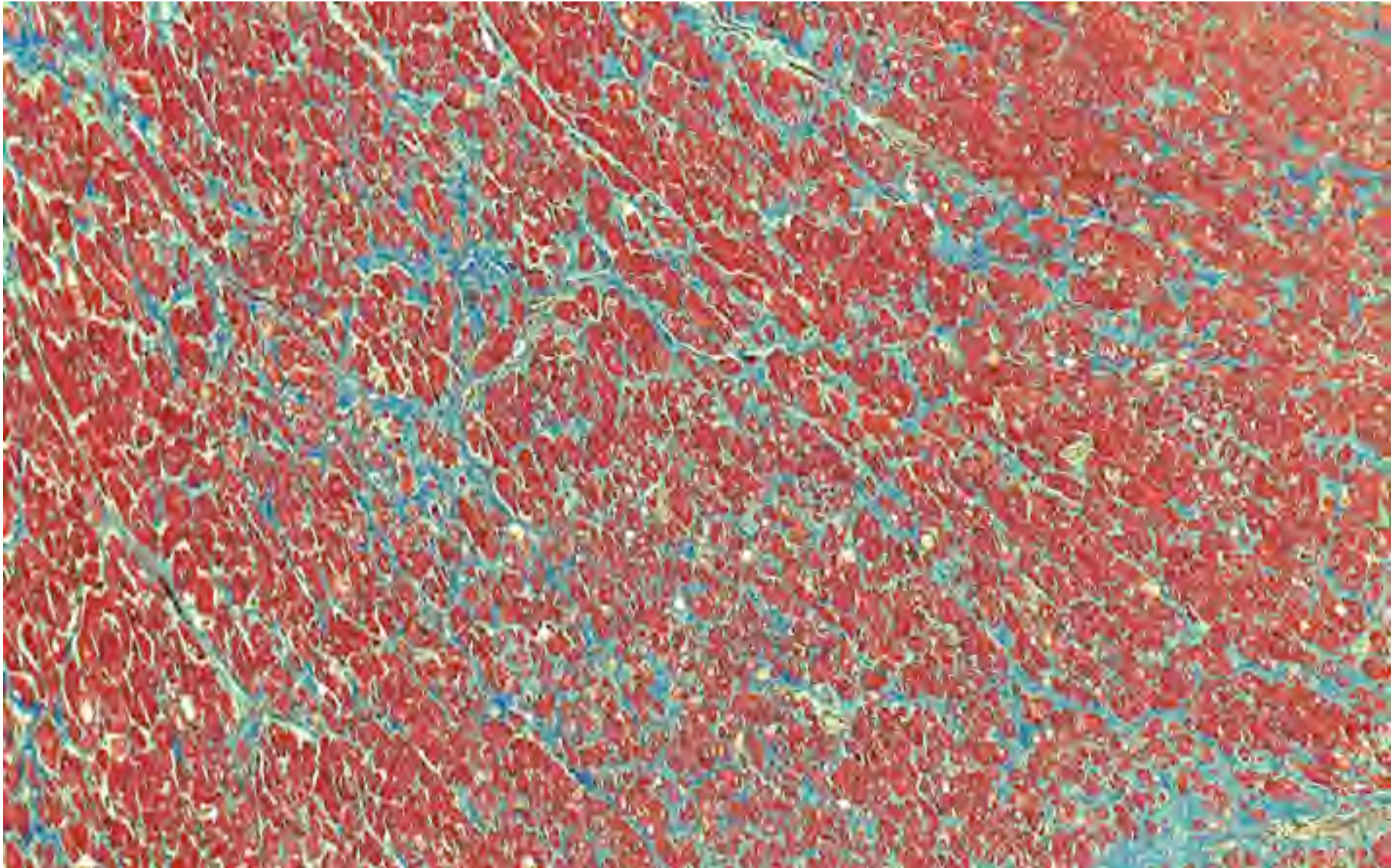
Neurohumoral Mechanisms

- Norepinephrine
- Vasopressin
- Renin-Angiotensin-Aldosterone system
- Natriuretic peptides
- Cytokines

Problems with Hypertrophy

- Adequate perfusion
- Mitochondrial deficiency
- Altered gene expression
- Apoptosis
- Remodeling
 - unfavorable geometry
 - fibrosis

Myocardial fibrosis



Problems with Neurohumoral Activation

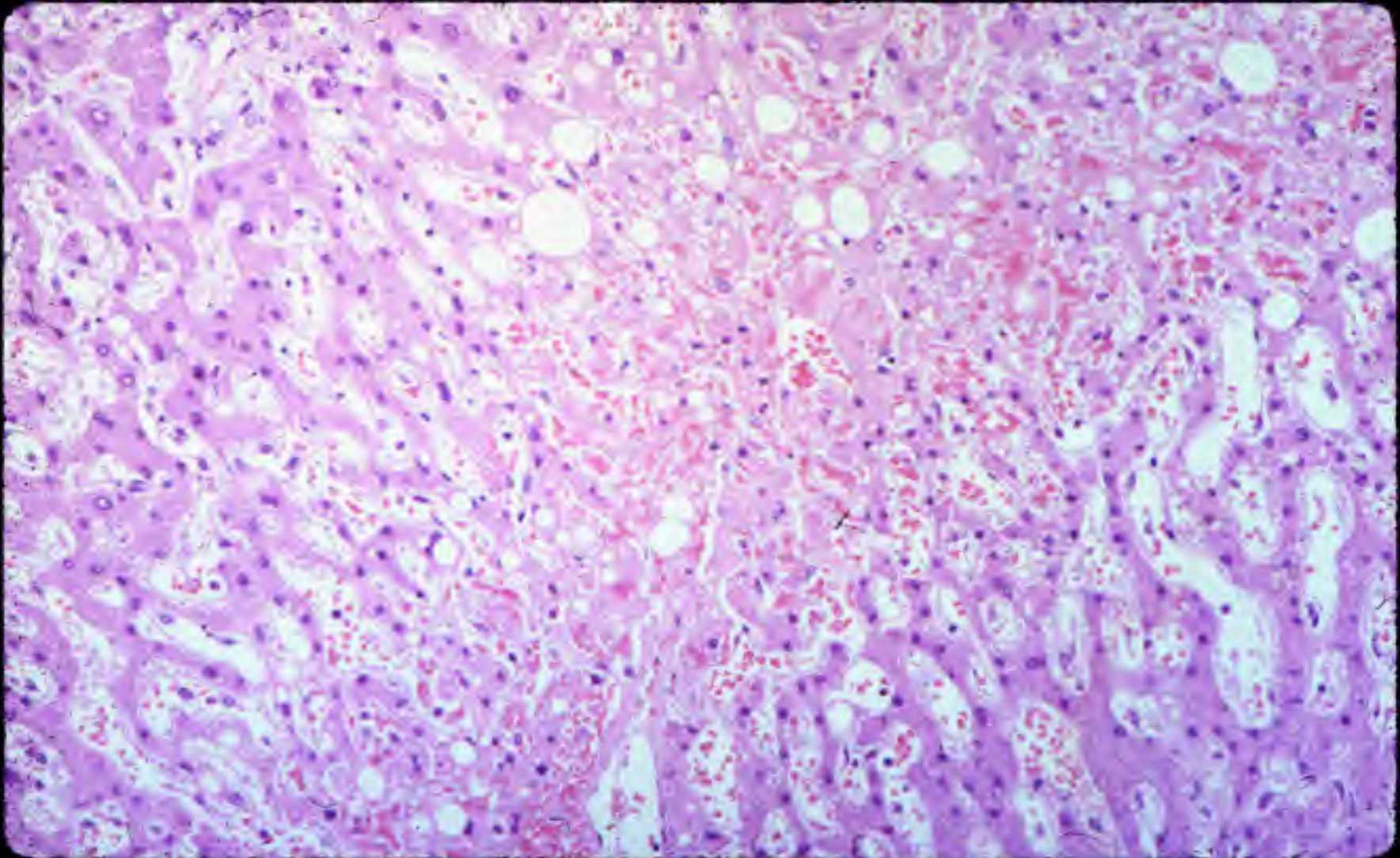
- Vasoconstriction.....altered afterload
- Chronic cardiotoxic effects
- Sodium retention – water retention

Consequences of Heart Failure

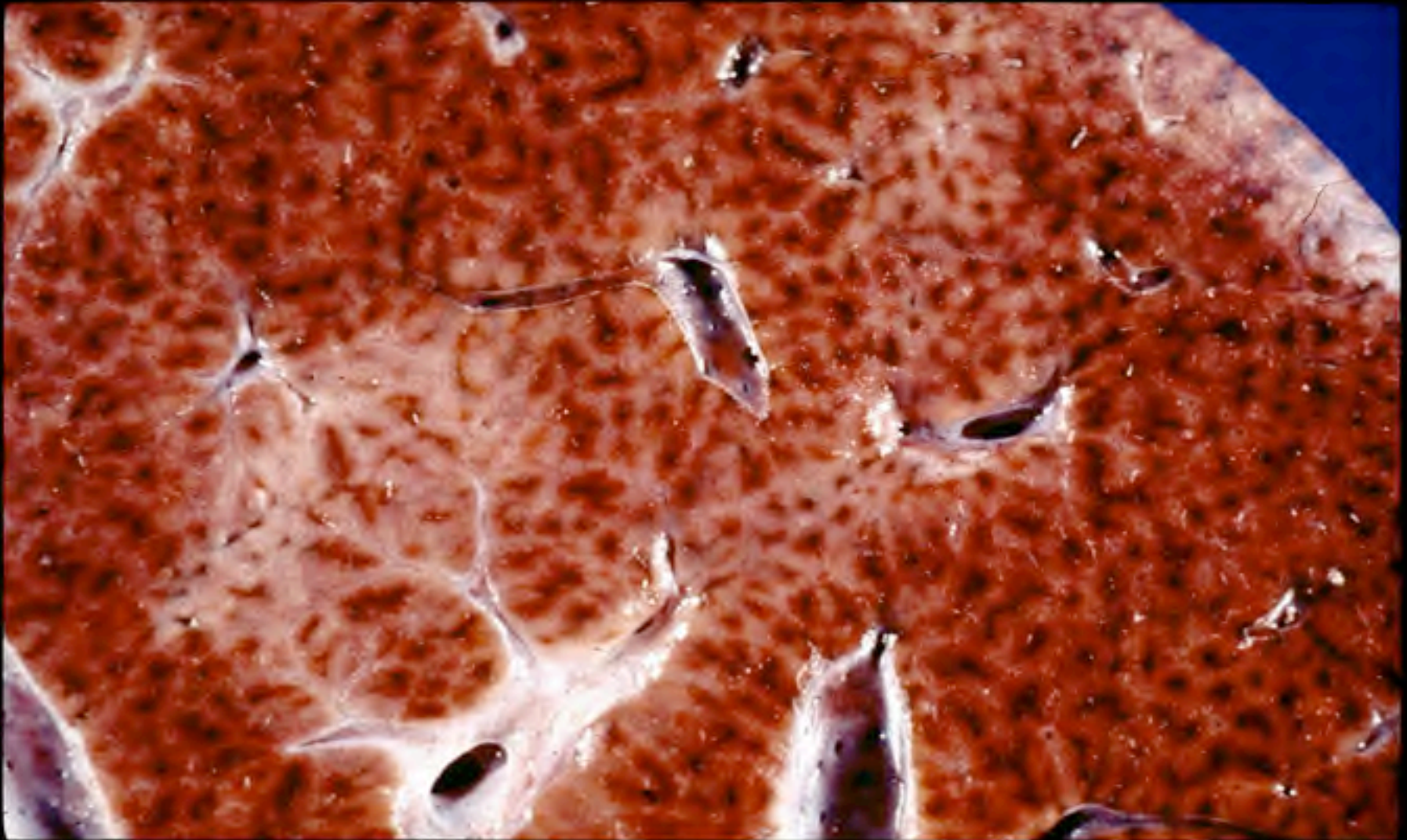
- “Forward failure”
- “Backward failure”

- Left heart failure
- Right heart failure

H.F. Effects in Liver



H.F. Effects in Liver



Ischemic Colitis



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