

# Left Ventricular Aneurysm, Pseudoaneurysm, Diverticulum, and Crypt

Presented by



Society for  
Cardiovascular  
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Resonance

## 1 Background

Ventricular aneurysm, pseudoaneurysm, diverticulum, and crypt are all outpouching of the left ventricle. However, they associate with different sequelae. Identifying etiology of the outpouching is important for proper treatment.

### Clinical Manifestation: the LV aneurysm and pseudoaneurysm

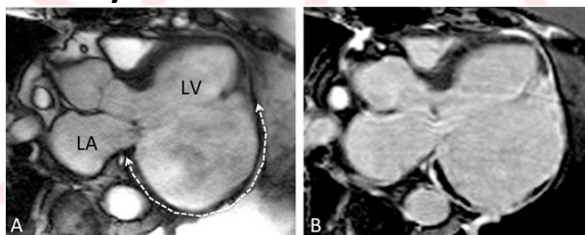
Angina  
Heart failure  
Ventricular arrhythmia  
Systemic embolization  
Sudden death

## 2 Why CMR

- High diagnostic accuracy due to excellent image resolution.
- Good image quality independent of body habitus.
- One-stop shop: morphology, function, and tissue characterization.
- No ionizing radiation.

## 3 Images

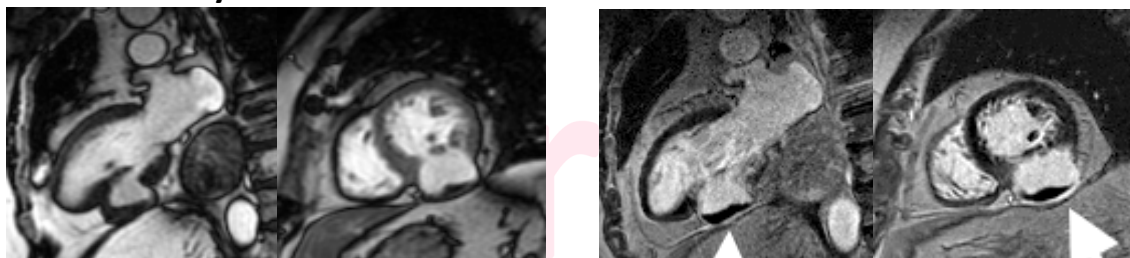
### Aneurysm



- (A) Cine imaging showed large aneurysm in the lateral wall from base to apex.  
(B) Transmural LGE on the wall of aneurysm. There was no LGE on the other walls.

*Cases of SCMR #14-07* Sharmin Basier, Mark Lawson, Rashid Ahmad, Rebecca Hung, William Bradham  
Vanderbilt University Medical Center, TN, USA

### Pseudoaneurysm with thrombus



There was a large dyskinetic bulge of the mid inferior wall.

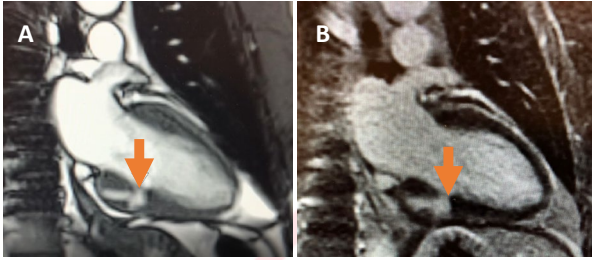
LGE showed that the bulge is attached the pericardium (white arrow), and there is a large thrombus inside.

*Cases of SCMR #18-06* FH Janse  
Franciscus Vlietland Hospital, Schiedam, The Netherlands

# Aneurysm, Pseudoaneurysm, Diverticulum, and Crypt

## 3 Images cont.

### Diverticulum, not pseudoaneurysm

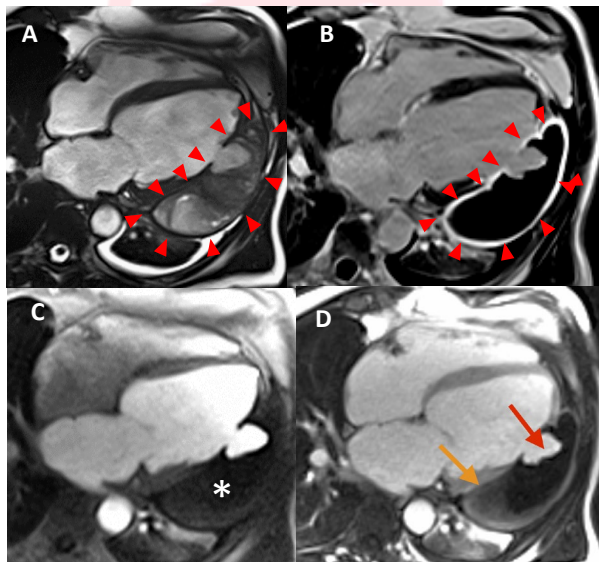


- (A) Cine imaging showing a pouch with narrow neck involving the basal to mid inferior LV segments.  
 (B) There is no LGE in the LV wall.

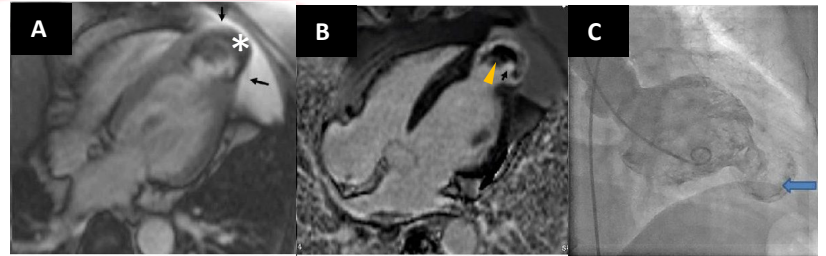
#### Cases of SCMR #22-04

Nasir Hussain<sup>1</sup>, Raghu R. Tadikamalla<sup>2</sup>, Victor Farah<sup>1</sup>  
<sup>1</sup>Allegheny General Hospital, PA, USA; <sup>2</sup>West Penn Hospital, PA, USA

### Contained rupture of pseudoaneurysm



### Hypertrophic cardiomyopathy with apical aneurysm and mural thrombus



- (A) The septum was more hypertrophied towards the apex, and the apical bulging (black arrow) shared a common myocardium with the LV. The wall of the aneurysm was calcified (\*).  
 (B) LGE showed transmural fibrosis of the wall of aneurysm. There is mural thrombus (orange arrowhead).  
 (C) Coronary angiography was normal. Ventriculography showed spherical calcified cavity that partially fills with contrast, consistent with LV aneurysm and mural thrombus.

Cases of SCMR #13-01 Bharat Bhooshan Kukreti, Gurpreet Singh Gulati, Sivasubramanian Ramakrishnan, Balram Bhargava, Sandeep Seth  
 All India Institute of Medical Sciences (AIIMS), New Delhi, India

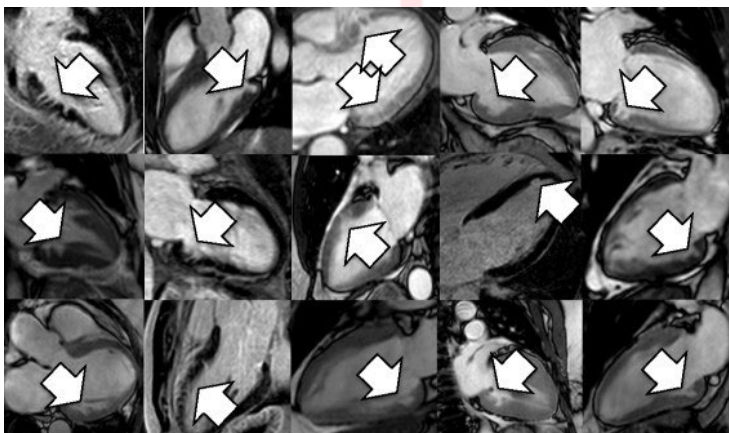
- (A) Large pseudoaneurysm in the lateral wall.  
 (B) LGE showed transmural myocardial infarction in the RCA and LCx territories.  
 (C) First-pass perfusion showed perfusion defect (\*) in the pseudoaneurysm, consistent with thrombus. There is difference of signal intensity in the thrombus.  
 (D) Long-TI LGE confirmed thrombus inside the pseudoaneurysm. The signal gradient within the thrombus represented age of the thrombus: orange arrow shows the "oldest" and red arrow shows the "freshest" thrombus.

Cases of SCMR #16-10 Felipe Kazmirczak, Chetan Shenoy  
 University of Minnesota Medical Center, MN, USA

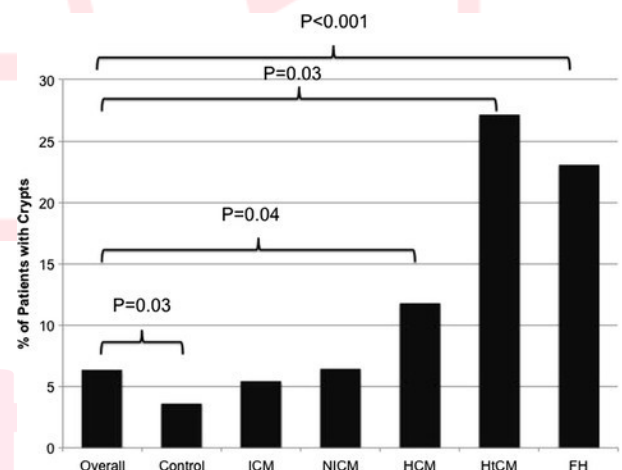
## 4 Reference

### Prevalence of myocardial crypts

Child N, et al. J Cardiovasc Magn Reson 2014;16:66.



Examples of Myocardial crypts (>50% penetration).



### Prevalence of myocardial crypts.

ICM - ischemic cardiomyopathy, NICM - non-ischemic cardiomyopathy, HCM - hypertrophic cardiomyopathy, HtCM - hypertensive cardiomyopathy, FH - family history of cardiomyopathy.