

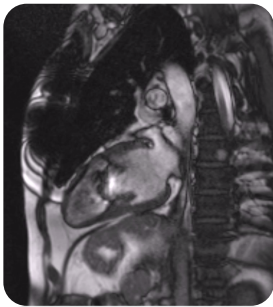


Cardiac MRI Essentials

Artifacts

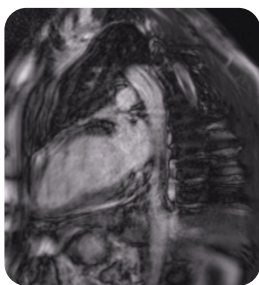
We can see many types of artefact during CMR studies:

- Susceptibility artifact
- Motion artifact
- Gating artifact
- Signal-to-noise-ratio artifact
- Field-of-view artifact



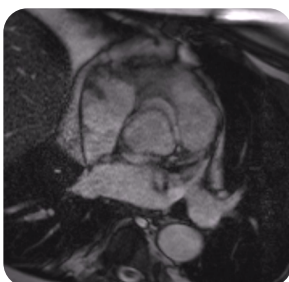
Susceptibility artifact

- Caused by metallic objects
- Interferes with the magnetic field
- Affects the signal in the region of the object



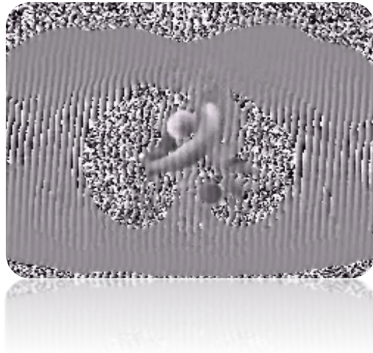
Motion artifact

- Usually occurs if the patient breathes during image acquisition
- Causes poor quality images



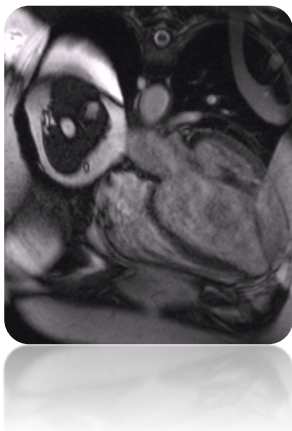
Gating artifact

- Occurs if the ECG is of poor quality, preventing correct gating of the images
- Can also be seen if rhythm is irregular



Signal-to-noise ratio artifact

- Caused by external electromagnetic interference
- Can happen if scanner room door is opened during image acquisition



Field-of-view artifact

- Caused by external electromagnetic interference
- Can happen if scanner room door is opened during image acquisition

How can we reduce artifact during CMR?

- Metallic susceptibility artifact
 - Tends to be less prominent on spin echo sequences versus gradient echo sequences
- Motion artifact
 - Careful attention to breath-holding, and use respiratory gating or navigator echoes
- Gating artifact
 - Optimise ECG as far as practicable, and consider real-time (non-gated) imaging
- Signal-to-noise-ratio artifact
 - Eliminate external sources of interference
- Field-of-view artifact
 - Increase the field of view
 - Swap phase and frequency direction

Further reading

EACVI CMR Pocket Guide (2013) [[click here to access online](#)]