

Does MRI add any value to ultrasound assessment of implant integrity in single lumen implants?

Nikhil Birdi, Preet Hamilton, Alice Leaver,
Simon Lowes, Alan Redman

Queen Elizabeth Hospital, Gateshead

Gateshead Health **NHS**
NHS Foundation Trust



Background

The RCR Guidance on screening and symptomatic breast imaging (June 2013) states, "MRI is the modality of choice to assess the integrity of breast implants".

Aim

The aim of this study is to see whether, in our unit, breast MRI adds value to ultrasound assessment of implant integrity.

Results

- 93 implants identified in 62 females.
- 37 implants US intact; MRI agreed in 100%.
- 25 implants report met the 'Can't exclude ICR' category on US report; 23/25 (92%) intact on MRI, 2/25 (8%) reported as uncertain / can't exclude ICR on MRI.
- 16 implants US reported suspicious of ICR; 14/16 (88%) MRI reported definite ICR, 1 (6%) reported as suspicious of ICR, and 1 (6%) reported as uncertain for ICR on MRI.
- 10 implants US reported definite ICR; all (100%) confirmed on MRI.
- 2 implants reported suspicious for ECR on US: 1 reported as definite ICR, but not ECR, on MRI; 1 reported as suspicious of ECR on MRI.
- 3 implants reported as definite ECR on US, confirmed in all 3 on MRI.

Methods

- All patients who had undergone ultrasound followed by MRI to assess integrity of single lumen breast implants between January 2012 and May 2018 identified retrospectively from breast clinic records
- Imaging reports reviewed on hospital electronic patient information systems.
- US reports fell into 6 categories:
 - 'Intact'
 - 'Can't exclude intracapsular rupture (ICR)' - where the reporter found no definite signs of rupture but was sufficiently uncertain to recommend MRI to check
 - 'Suspicious of ICR'
 - 'Definite ICR'
 - 'Suspicious of extracapsular rupture (ECR)'
 - 'Definite ECR'
- Subsequent MRI reports divided into similar categories.

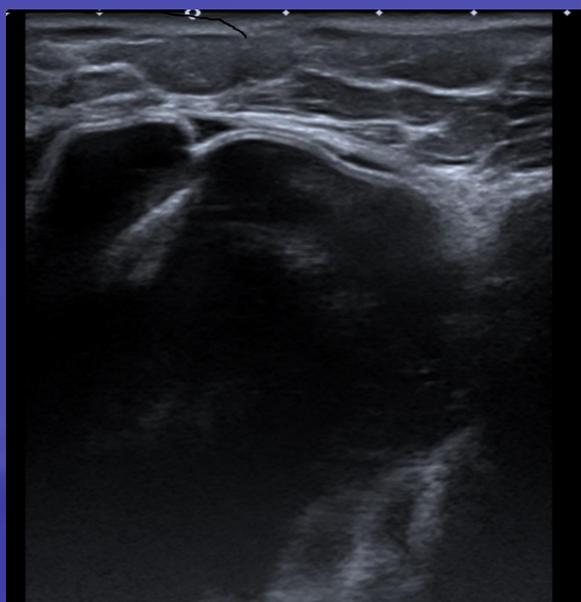
Discussion

- All implants reported intact on US, and 23/25 US cases reported as no convincing signs of ICR but reporter not confident to completely rule out ICR, were intact on MRI. Remaining 2/25 cases where US reported as ICR uncertain/not excluded were also MRI reported as ICR not ruled out, therefore MRI added nothing to these cases.
- All US cases reported as definite ICR, and 16 of 18 US cases reported as suspicious/probable ICR, were MRI reported as definite ICR. Of the other 2 US cases reported as suspicious of ICR, MRI was uncertain of ICR in 1 and suspicious of ICR in 1, hence MRI added nothing to these cases.
- Of 2 US cases suspicious of ECR, MRI corrected 1 case to ICR, other case simply confirmed ECR.
- In all 3 US definite ECR, MRI confirmed the US diagnosis adding no significant additional info.

Conclusion

- If US reported as definitely intact, or definitely ICR or ECR, MRI not required for confirmation.
- If no convincing signs of rupture on US, in our unit, reporter should trust the US and MRI is not required to confirm absence of rupture.
- If US suspicious of ICR /probable ICR, MRI may increase diagnostic confidence but does not alter the diagnosis.
- In summary, in our unit, MRI adds little to US in the assessment of single-lumen implant integrity.

Case 6 – US uncertain/can't exclude ICR: Large radial fold + a little anechoic peri-implant fluid + a few low level echoes inside implant, but no other findings



Case 6- MRI also uncertain/can't exclude ICR: Large salad oil droplet + prominent radial fold, with questionable signal in intra-fold fluid, but no other findings

