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# MRI for Pediatric Appendicitis Reduces Pediatric Radiation Exposure

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## Current standard of care

- ACR appropriateness criteria supports initial ultrasound followed by CT if needed.
- Role of MRI as yet undefined, with the value to be determined as MRI becomes more clinically available.

## Pros and Cons of evaluating for appendicitis with MRI

### Pros:

- No ionizing radiation
- Better contrast resolution

### Cons:

- MRI less available
- Slower than CT
- Technically more difficult to interpret
- Unclear results may prompt CT

## Objectives

- Determine if MRI can sufficiently assess for appendicitis and preclude the radiation exposure of CT.

## Methods

- Retrospective review of the first 100 MRIs for appendicitis ordered by the UNMH Pediatric ED (January-September 2013).
- Interpretations categorized as:
  - Positive
  - Equivocal, favor positive
  - Equivocal
  - Equivocal, favor negative
  - Negative

## Results

### Final Interpretations:

- Positive: 22
- Equivocal, but favor positive: 5
- Equivocal: 20
- Equivocal, but favor negative: 11
- Negative: 42

### The 22 positive interpretations

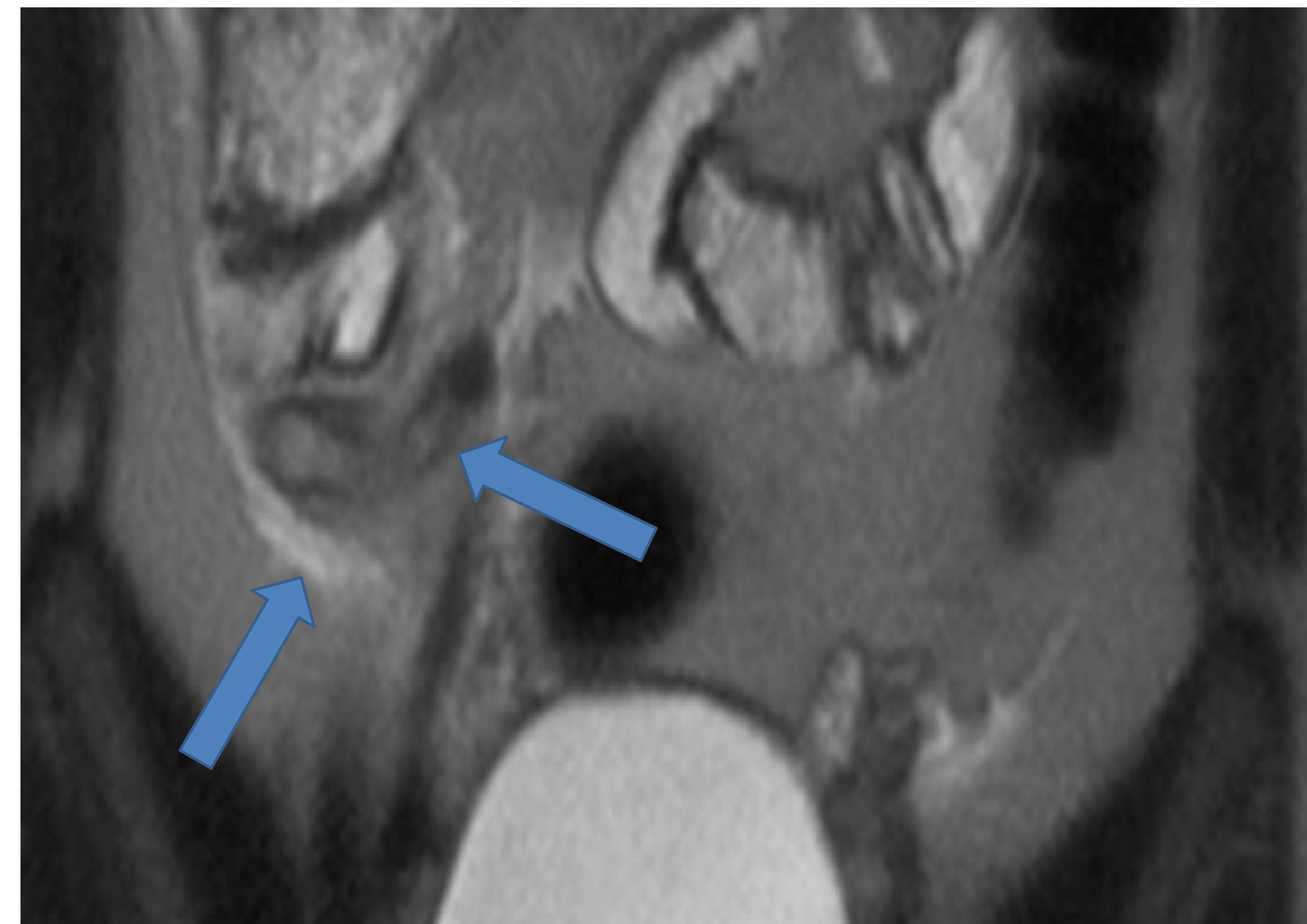
- 21 patients taken to surgery within 48 hours

### The 36 Equivocal cases

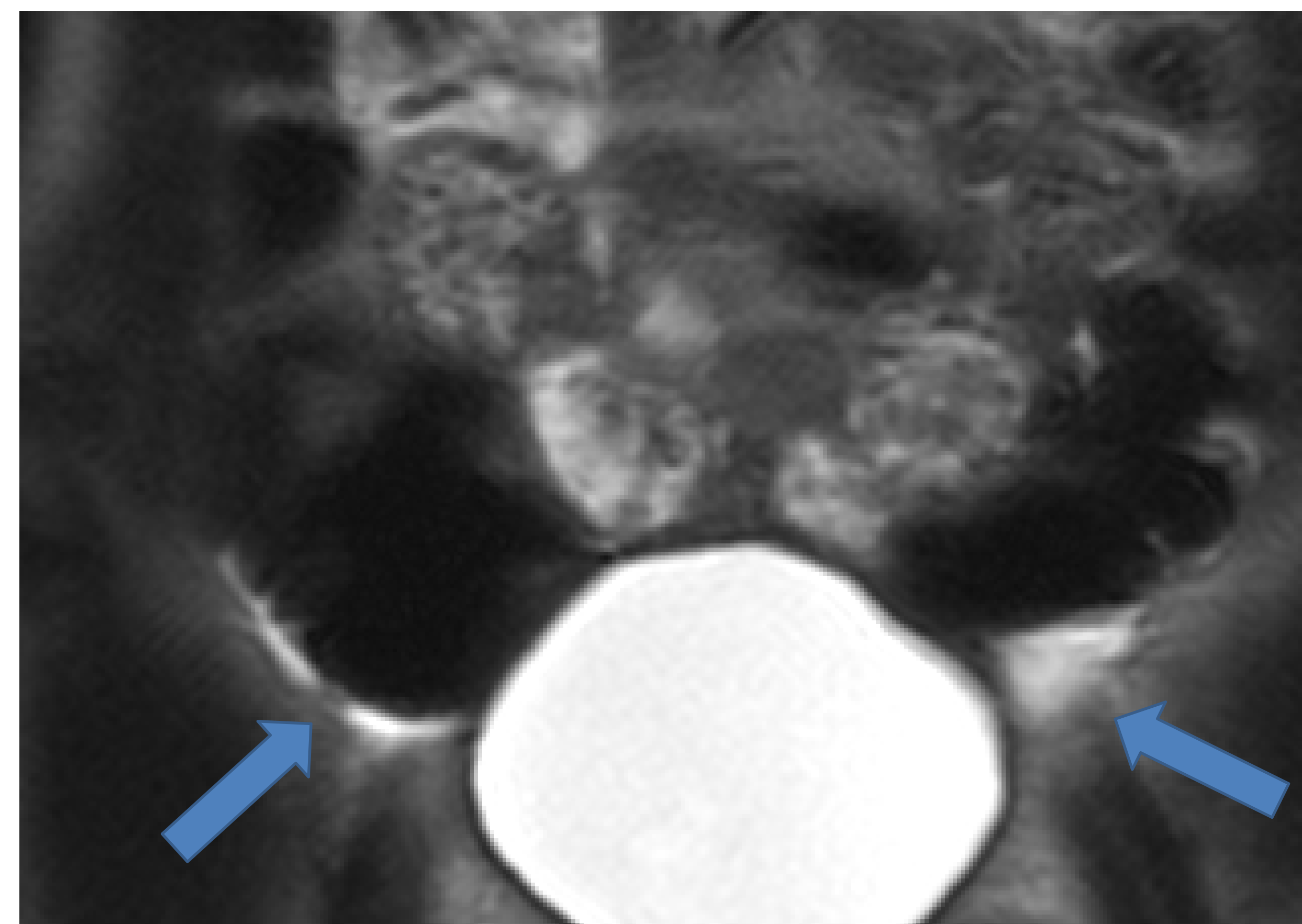
- Equivocal, favor positive : Of the 5 studies, 3 were taken to the OR and found to have appendicitis.
- Equivocal: Of the 20 patients, 15 were discharged without further imaging. 5 admitted for observation before discharge.
- Equivocal, favor negative: All 11 patients were discharged from the ED.

### The 42 Negative Cases

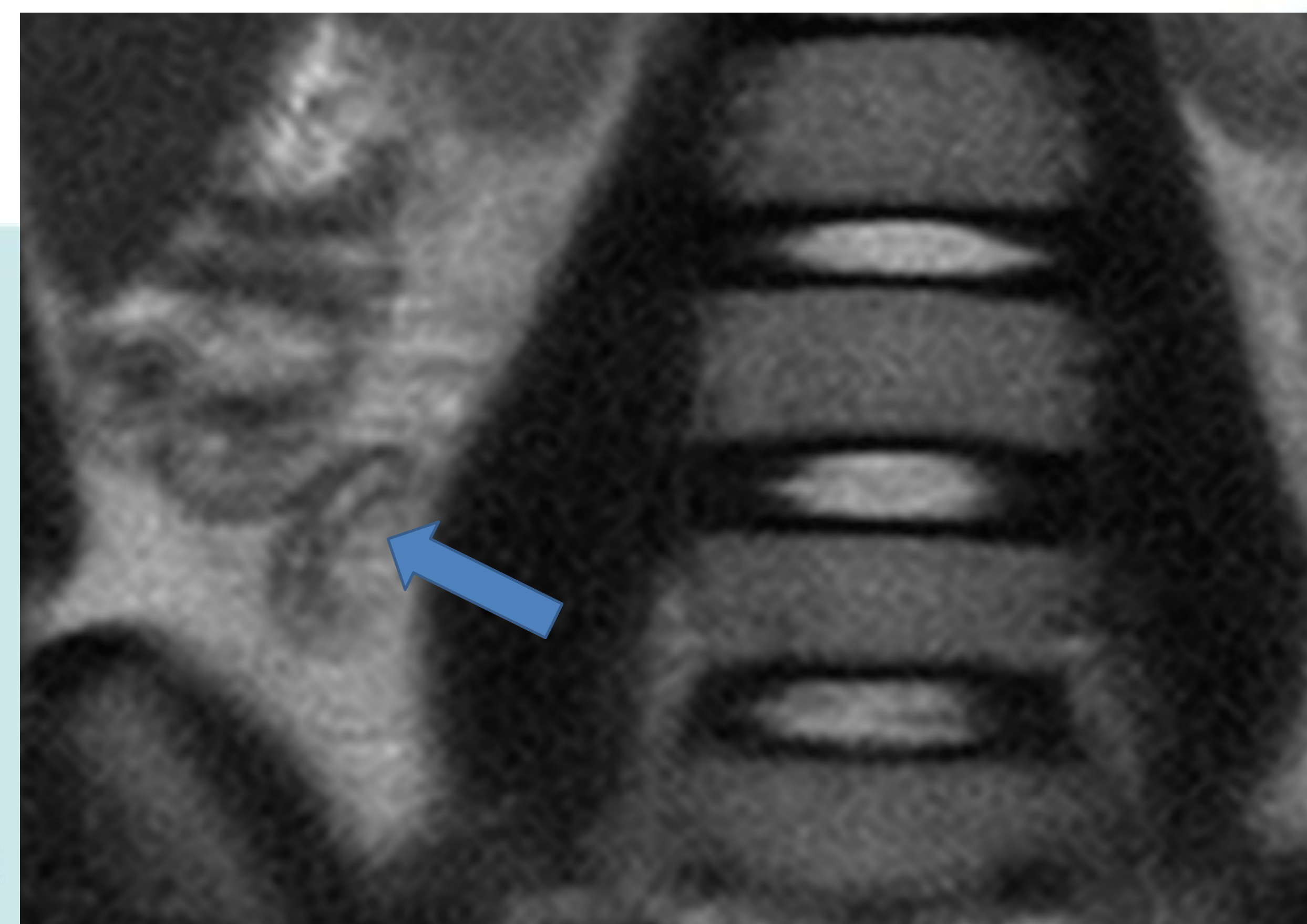
- All patients were either discharged or admitted for non-appendiceal pathology.



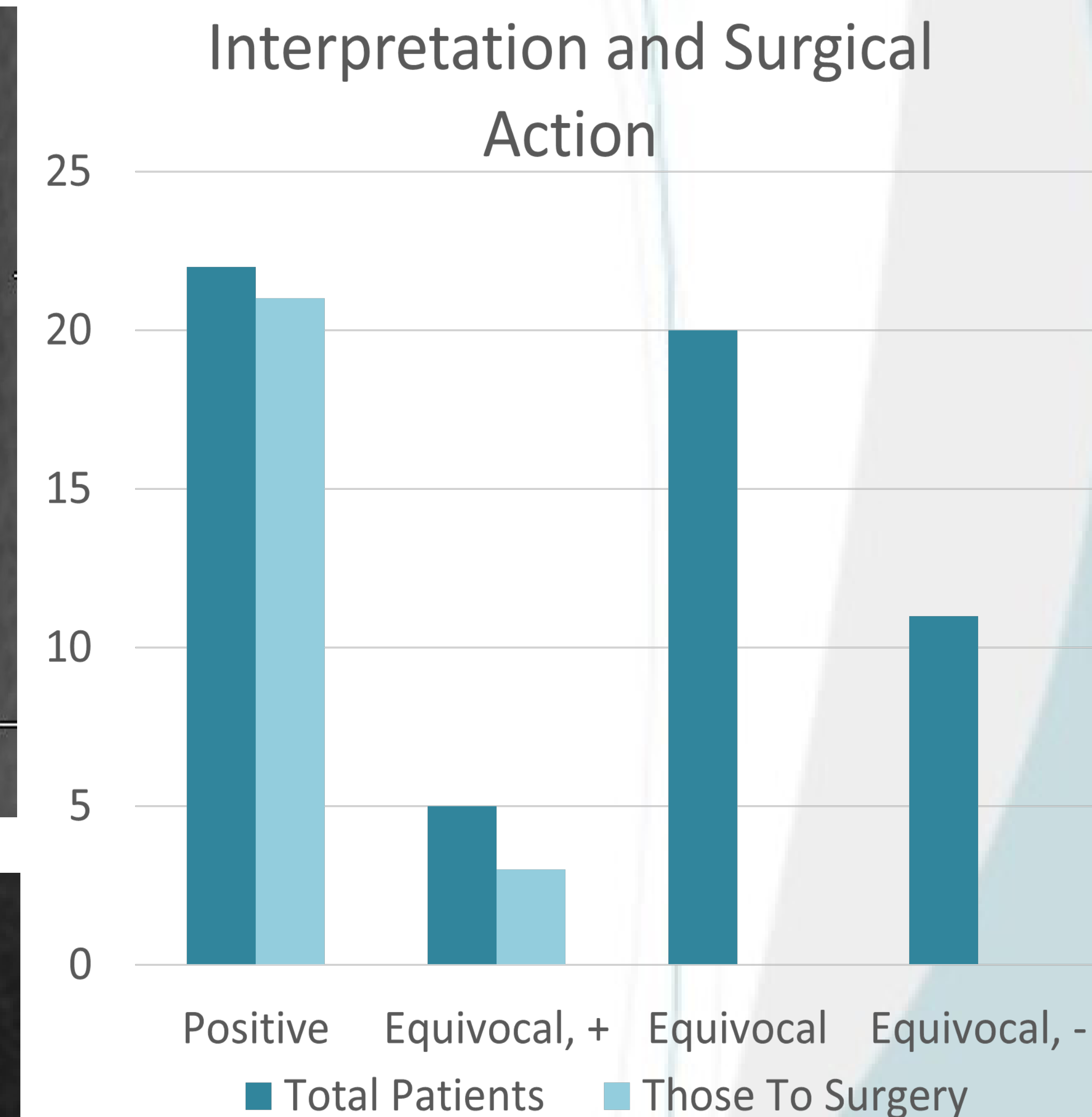
Positive exam: Enlarged, fluid filled appendix with adjacent free fluid.



Equivocal exam: Appendix not seen. Bilateral lower quadrant free fluid.



Negative exam: Normal appendix. No free fluid.



## Follow up CT

- Ordered in 10% of patients, most of which had equivocal MRI interpretations
- None of these patients went to surgery for appendicitis

## Conclusion:

- MRI is effective in the positive identification of appendicitis. No case dictated as equivocal, equivocal favor negative, or negative required surgery for appendicitis.
- The use of MRIs in the evaluation of right lower quadrant pain/suspected appendicitis provides valuable diagnostic information without ionizing radiation.

## References

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