

Is Sub-10-min MRI-only Comprehensive MSK Exam Clinically Feasible?

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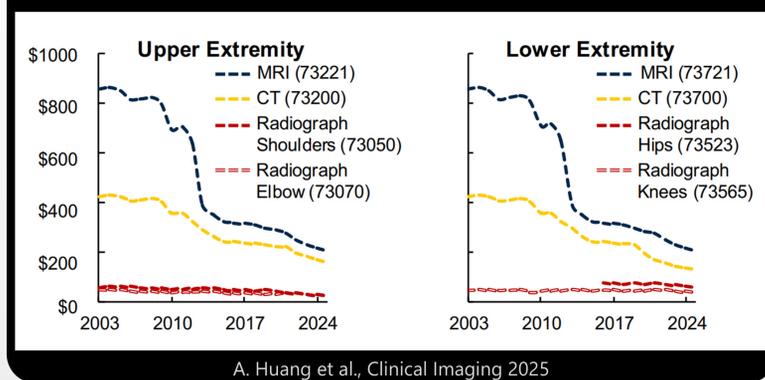
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1. Accessibilities & Economic Trends

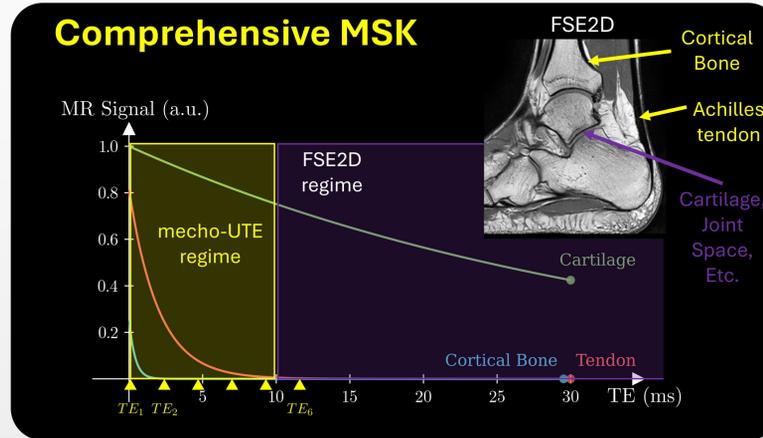
MRI access is scarce & reimbursement is shrinking. An abbreviated high-valued MRI exam is **desired**.

~77% Reimbursement Reduction



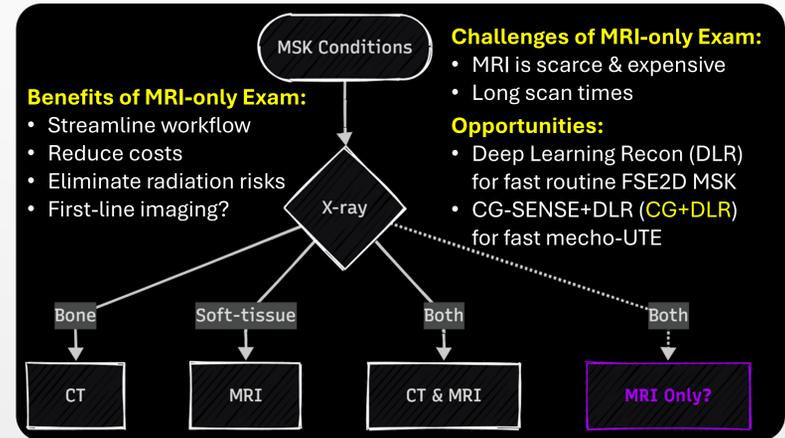
2. Gaps in Standard-of-Care MSK Imaging

Short-T2 tissues are **invisible** in CT and routine MRI until late disease/damage stages. Mecho-UTE helps?



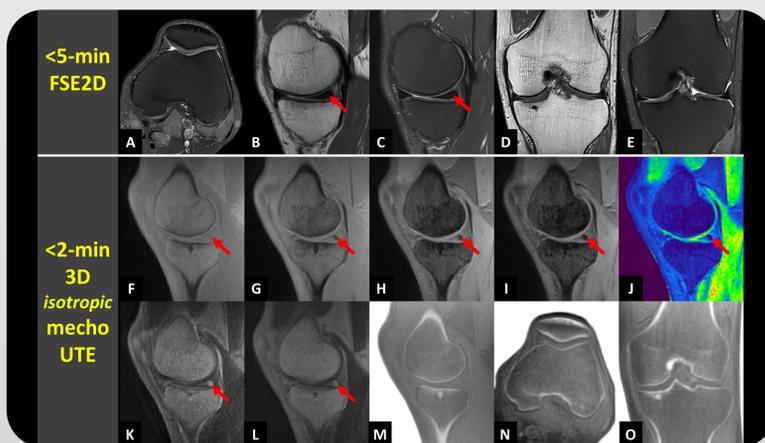
3. Open Questions & Opportunities

Can an **MRI-only comprehensive MSK** examination be developed and deployed clinically?



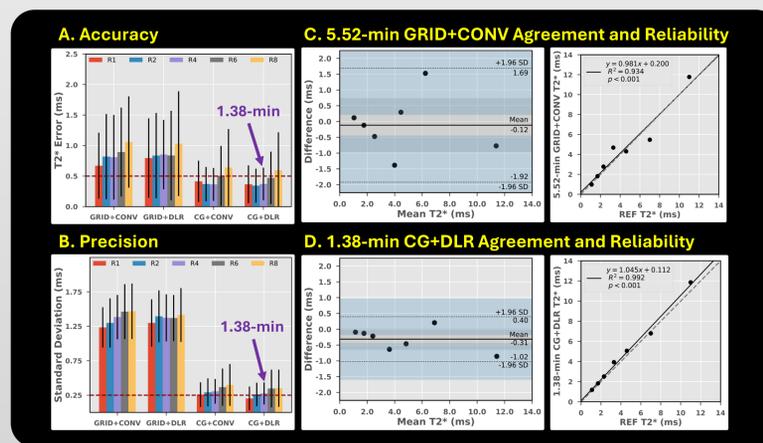
4. Proposals

DLR enables sub-8-min clinical routine MSK MRI. Sub-3-min knee MRI has been shown. We aim to achieve sub-2-min mecho-UTE with CG-SENSE+DLR.



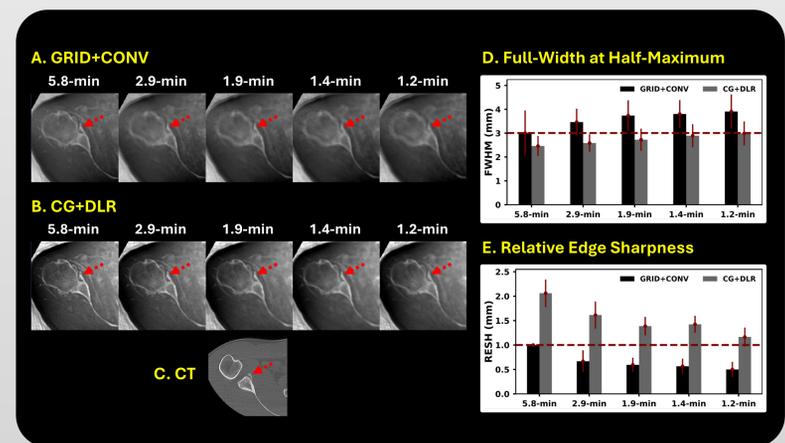
5. Phantom Evaluations

CG+DLR provides more accurate and precise T2* quantification. Sub-2-min mecho-UTE with CG+DLR has better agreement and reliability.



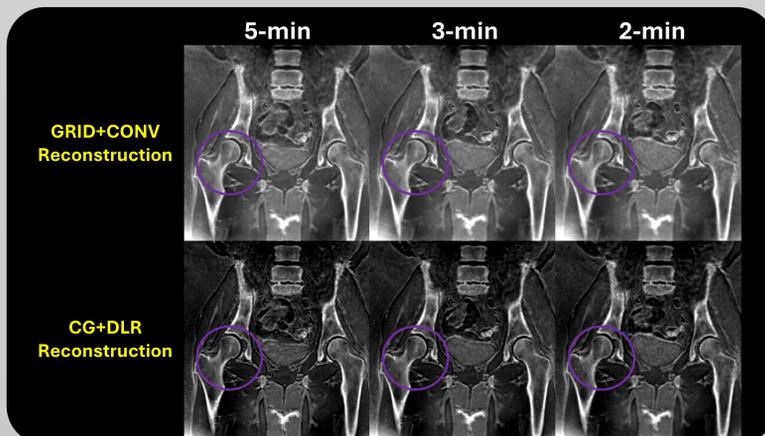
6. Retrospective in Vivo Evaluations

Sub-2-min mecho-UTE with CG+DLR provides better resolution and sharpness vs. 5-min mecho-UTE with GRID+CONV (i.e., gridding + conventional filter).



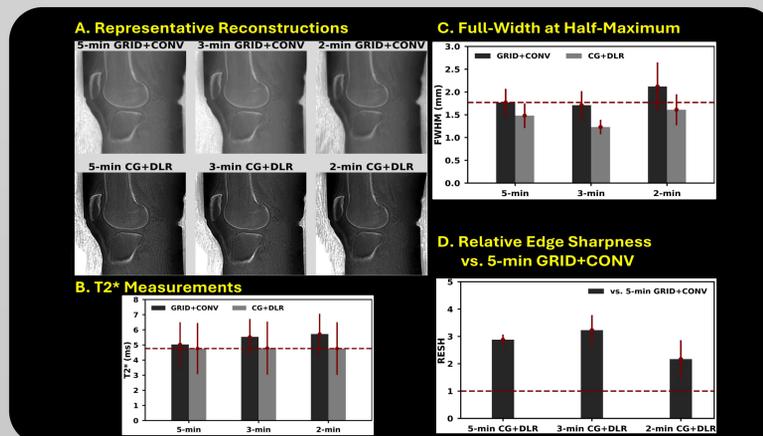
7. Prospective in Vivo Images

CG+DLR provides higher resolution and sharpness compared to the GRID+CONV counterparts.



8. Prospective in Vivo Evaluations

2-min mecho-UTE w/ CG+DLR has better resolution and sharpness vs. 5-min one with GRID+CONV.



9. Conclusions & Discussions

This preliminary study demonstrates that:

- CG-SENSE & DLR allow sub-2min mecho-UTE for simultaneous CT-like bone-weighted imaging and accurate T2* quantification of short-T2 tissues.
- Adding to an DLR-accelerated sub-8-min routine FSE2D protocol, an MRI-only comprehensive MSK exam can be performed in under 10 minutes.
- Abbreviated FSE2D MRI + 2-min mecho-UTE may be possible in under 5 minutes making it cost-effective enough for first-line imaging (*when appropriate*).
- Large clinical trials are warranted to confirm potential benefits hypothesized by this study.