International Journal of Surgery 71 (2019) 156

Contents lists available at ScienceDirect

International Journal of Surgery

journal homepage: www.elsevier.com/locate/ijsu

Invited Commentary

Commentary on: "Diagnosis of anterior cruciate ligament injury"

The paper by Gunaydin B et al. [1] in this edition of the International Journal of Surgery is yet another attempt to improve the sensitivity of MRI particularly for diagnosing partial anterior cruciate ligament tears. For proper perspective, as the authors mention, conservative treatment for partial ACL tears provides good to excellent functional outcomes. Nevertheless there are several variables that have a bearing on increasing the sensitivity of MRI for partial ACL tears which include but are not limited to patient position, knee position, time elapsed after injury, strength of the magnet, knee coils, surface coils and their placement, MRI sequences used, and experience of the interpreting radiologist to name a few. Another aspect to consider is the effect of these variables in diagnosing concomitant knee injuries including meniscal and chondral lesions, which may need surgical intervention. The sensitivity of diagnosing lateral meniscal injuries and some chondral injuries particularly may be decreased in certain positions.

In this digitized age, we seem to be at the crossroads, where artificial intelligence (AI) seems to be just round the corner to overtake our assessment and subsequent management of complex clinical problems. Bien N et al. [2] recently showed deep learning network software can be used to improve the diagnostic accuracy of MRI for internal knee derangements. As we continue to evolve in our use of AI, these algorithms should be able to help in increasing the diagnostic accuracy of MRI, simultaneously preventing putting patients into extreme positions, particularly after acute injuries.

The study by Gunadyin B et al. is interesting and examines an active clinical focus of sports medicine practices. However, there are a number of limitations that need to be considered when interpreting and extrapolating the findings. First, the number of patients in this study is relatively small. This is compounded by the fact that the timing of MRI scans from injury was quite variable, which is clinically understandable, but definitely has a bearing on the outcomes, and may be manifested in terms of patient positioning, amount of knee flexion, and radiological changes due to healing of the lesions over time. Use of surface coils in different positions may have modified the authors findings as well. Although it may seem logical to extrapolate these results to increase sensitivity of diagnosing partial ACL tears using MRI in the current scenario; a proper testing with random allocation of patients to either a control or test group with defined parameters as mentioned above would need to be conducted. However, this kind of a randomized study may not be clinically feasible, and hence the current study does provide useful information to guide further study and inform clinical practice.

Despite these limitations, this study provides added information to help sports surgeons make rationalized decisions about ways to diagnose complex clinical dilemmas, with the potential of enhancing outcomes. As is often the case, there are multiple variables that interface with the end result, and therefore each needs objective evaluation to ensure we deliver the best to our patients. AI may be the answer to these dilemmas, but until we get there, studies such as this will help clinicians in deciding the best for their patients.

References

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https://doi.org/10.1016/j.ijsu.2019.08.005

Available online 08 August 2019