SUMMARY

Standard MR imaging criteria for the diagnosis of primary meniscal tears include regions of increased intrameniscal signal intensity (on short echo time images) that reach an articular surface & abnormal meniscal morphology.

The MR imaging findings of contour abnormalities & signal-intensity abnormalities reaching an articular surface (as seen on short echo time images) are less accurate for the diagnosis of retorn menisci, with an accuracy of 66%–80%, which is substantially below that for primary meniscal tears.

The decreased accuracy of conventional MR imaging after meniscal surgery occurs because postoperative changes in the meniscus may mimic or obscure tears. Postoperative changes may not only mimic meniscal tears but can also obscure meniscal tears at conventional MR imaging. The diagnosis of retorn menisci following meniscal repair has also proved problematic because abnormal signal intensity reaching the articular surface at the site of meniscal repair can be seen in healed menisci on short echo time images.

Specific signs of a retorn meniscus following meniscal repair are similar to those of a retorn meniscus after partial meniscectomy: increased signal intensity extending through the site of repair on T2-

weighted images, displaced meniscal fragments, & abnormal signal intensity at a site distant from the site of repair.

Previous studies indicate high overall accuracy for conventional MR imaging in the diagnosis of recurrent or residual meniscal tears.

As it is mentioned in previous studies of potential MR imaging signs of recurrent meniscal tears, increased intrameniscal signal intensity extending to the meniscal surface on T2-weighted images to be the most specific sign for recurrent or residual meniscal tear.

In the diagnosis of recurrent meniscal tears, conventional MR imaging had a sensitivity of 86%, specificity of 67%.

Postoperative re-injury to the knee, with imaging performed to assess ACL graft integrity & meniscal & chondral status.

Intact grafts appear with either low signal intensity or intermediate signal intensity on short echo time images. Most studies have indicated that the increased signal intensity on the short echo time images decreases over time.

The cause of the intermediate signal intensity is uncertain, but it may be caused by vascularized periligamentous tissue, graft revascularization, or graft impingement.

Because both intact & torn ACL grafts can have intermediate signal intensity on short echo time images, T2-weighted imaging findings are crucial for detection of graft disruption.

T2-weighted MR imaging findings of graft disruption include an absence of intact graft fibers & increased signal intensity similar to that of fluid within the expected region of the graft[4] .partial tears of the ACL graft are demonstrated as areas of increased signal intensity affecting a portion of the graft with some intact fibers still present. Postoperative fibrous tissue forms anterior to the ACL graft above the tibial plateau & usually appears on MR images as a low- to intermediate-signal-intensity structure anterior to the ACL graft on images obtained with all sequences.

Short echo time images demonstrate increased signal intensity within the distal two-thirds of the graft, the site of graft impingement. Notchplasty is performed to treat graft impingement and the signal-intensity changes seen on MR images of impinged grafts usually resolve within 12 weeks.

Articular cartilage is composed of hyaline cartilage. Articular cartilage also contains sparsely interspersed chondrocytes.

Most surgical techniques produce predominantly fibrocartilage repair tissue. Repair tissue with a thickness greater than that the native cartilage is considered hypertrophy. The signal intensity of repair tissue is judged on the basis of GRE images. In a 3D spoiled

GRE imaging, it was found a low signal intensity of healthy repair tissue immediately after autologous chondrocyte implantation.

The initial signal intensity of repair tissue increased with time and, 6–9 months later, resembled that of native cartilage. At approximately 9–12 months after autologous chondrocyte implantation, the signal intensity of normal repair tissue reached a plateau. Hyperintense signal in a cartilage graft may be attributed to softening, a common finding at arthroscopy.

Integration between the repair tissue & the native cartilage is considered complete if the margin between the two is continuous, without a discernible interface.Incomplete integration between repair tissue & subchondral bone may lead to partial or complete delamination of a graft. Delamination from the underlying subchondral bone occurs in 5% of all autologous cartilage implants. Partial delamination appears as a fissure between the repair tissue & underlying subchondral bone. A graft surface is considered intact when it is congruent with the native cartilage surface.

In conclusion recommended postoperative MRI

Sequences are:

1- ACL reconstructed graft: Sagittal T2 WIs

2- Post meniscal repair procedures: Sagittal T2 wis

3- Post aritcular cartilage grafting: Coronal & Sagittal Intermediate-weighted fast SE