SB graft is localized between those of the AMBs and PLBs of the DB (or TB) reconstruction.

Differences in signal intensity in the intra-femoral tunnel region of the grafts appeared to represent differences in graft remodeling. Grafts typically show increased signal intensity between three and 8 months postoperatively that should resolve by 18–24 months after surgery [38]. Since the diameter of the SB graft in the femoral tunnel is larger than those of the DB and TB grafts, graft remodeling may proceed more slowly in SB grafts compared to DB and TB grafts.

The high signal-intensity lesions were not seen on the tibial side in most of the images regardless of the surgical procedure, indicating good graft-to-tunnel healing around the tibial tunnel aperture. Although it is our policy that remnants of the torn ACL should be almost completely debrided to make bone tunnels accurately under arthroscopy and to leave space for reconstructed ACL grafts, the debridement has not yet led to inferior healing on MRI in most cases. In addition, 13 % of the grafts were accompanied by tibial bony cysts that made no significant differences in the clinical results.

Limitations of our study include a short follow-up period and absence of randomization among the three surgical procedures, and further follow-up study is required. Although differences in patient age and activity seemed to have some effect on the current results, no significant correlation was observed.

The results revealed availability of coronal oblique images for assessment of the ACL graft as well as sagittal-oblique images. The coronal oblique PLB images of the DB and TB reconstruction showed the poor graft-to-tunnel healing around the femoral tunnel aperture, and this attenuated area should be paid attention to evolve the surgical treatment.

Conclusion

Coronal oblique MR images were useful for evaluation of the intra-tunnel region of the grafts as well as the intra-articular region. The gross morphology of TB grafts resembled that of the natural ACL. However, the graft-to-tunnel healing seemed to be insufficient in the PL bundle of DB and TB grafts compared to SB grafts.

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