The surgical technique of 4th+5th extensor compartment artery & oblique dorsal artery vascularized bone graft for Kienbock’s disease

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Introduction

It has been known that treating not severely progressed Kienbock’s disease with vascularized bone graft inhibits progression and prevent collapse of lunate. Because Grafting a vessel has a high likelihood of failure in the case of vascular damage, grafting multiple vessels is generally preferred. Therefore, we report three cases of the surgical technique of 4th+5th extensor compartment artery & oblique dorsal artery vascularized bone graft.

Surgical procedure

At first, we identified the 4th+5th extensor compartment artery (ECA) and oblique dorsal artery (ODA) with preserving periosteum. Usually we found 5th ECA in the dorsal aspect of distal radius. Then 4th ECA & ODA was found. After identify feeding vessel, vascularized bone from radius were harvested by the saw. Sufficiently dissected around the dorsal branch of ulnar artery to avoid compression of the ulnar artery dorsal branch during the insertion of vascularized grafting bone in the bone defect of lunate.

After obtaining grafting bone from dorsal distal radius, removal of necrotized bone was removed from lunate with burr. Whether sufficient tissue was removed was confirmed by image intensifier. The harvested vascularized bone was inserted so that with cortical bone could enter the longitudinal axis.

After bone grafting, the tourniquet was released to check viability of graft. At last, scaphoid and capitate were temporary fixed by K-wire to avoid weight bearing on lunate during the period of revascularization.

CASE

F/48
Right wrist
Lichtman Stage IIIA

Pre-op X-ray

Pre-op MRI T2

Post-op X-ray

Conclusion

For treating Kienbock’s disease patients, because the 4th+5th ECA & ODA vascularized bone grafting technique decrease the failure of bone graft via grating multiple vessels, has lesser variants, and has enough length of attach vessel, the surgical technique is useful without a surgical difficulty.