International Surgery Journal
Neilande N. Int Surg J. 2024 Feb;11(2):258-260
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902
DOI: https://dx.doi.org/10.18203/2349-2902.isj20240178

Case Report

Os lunatum reconstruction with autogenous bone graft from the medial condyle of the femur for Kienböck's disease: a case report

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Received: 12 October 2023
Accepted: 17 January 2024

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ABSTRACT

This case report outlines the management of a 43-year-old man suffering from chronic wrist pain due to Kienböck's disease. In 2019, the patient underwent os lunatum reconstruction surgery at Hospital of Traumatology and Orthopedics (TOS), utilizing a femur medial condyle autologous bone graft-a rarely reported techinque. Four years postoperatively patient underwent a follow-up visit, the patient exhibited substantial improvements in pain relief and functionality, evidenced by a QuickDASH score of 2 points, indicating minimal disability. Despite these positive outcomes, nuanced limitations in specific wrist movements and a subtle decrease in grip strength were noted. Notably, the patient reported discomfort in the left knee, the donor site for the autologous graft. This case contributes valuable insights into the feasibility and challenges associated with the femur medial condyle autologous bone graft technique for Kienböck's disease. The findings underscore the need for ongoing refinements and long-term monitoring, considering the patient's subjective experiences and the impact on both the wrist and the donor site. The study adds to the limited body of literature on unconventional surgical approaches for Kienböck's disease, guiding future research endeavors and refining the application of femur medial condyle autologous bone grafts in orthopedic practice.

Keywords: Kienböck's disease, Avascular necrosis, Lunate, Wrist pain

INTRODUCTION

Kienböck's disease characterized by avascular necrosis of the lunate bone, poses intricate challenges in treatment (Camus et al, Ansari et al and Fontaine).[1-3] Conservative treatment does not provide good results in adults, thus surgery is often needed.Traditional surgical treatment approaches, such as joint-levelling procedures and vascularized bone grafts (Rohit et al), aim to alleviate symptoms and restore wrist functionality (Bhardwaj et al, Jonathan et al and Rioux-Forker et al).[4-7] This case report focuses on the surgical intervention undertaken in 2019 at TOS, highlighting os lunatum reconstruction with an autogenous bone graft from left femoral medial condyle.

CASE REPORT

In this report, the case of a 43-year-old male suffering from chronic wrist pain attributed to Kienböck's disease is presented. The patient's history revealed persistent wrist discomfort, escalating over the past year, with recollections of occasional pain during his teenage years. A comprehensive evaluation, including medical records and radiological examinations, led to diagnosis of left os lunatum.

In 2019, patient underwent OS lunatum reconstruction surgery at the TOS. The unique aspect of this intervention was the utilization of a femur medial condyle autologous bone graft, a rarely reported technique in the literature. The procedure aimed at addressing the aseptic necrosis and stabilizing the fractured lunate bone.

Four years postoperatively, the patient exhibited substantial improvements in pain relief and functionality. Objective assessments, including a QuickDASH score of 2 points, indicated minimal disability. However, nuanced limitations in specific wrist movements and a subtle decrease in grip strength were noted during the follow-up evaluations. The patient reported discomfort in the left knee, the site from which autologous graft was harvested.

Figure 1: Picture on 7 July 2017.

Figure 2: XR after 26 July 2019.

Figure 3: Long-term radiographic evaluation: a 4-year follow-up after surgical intervention.

The postoperative follow-up included regular assessments, radiological examinations, and functional tests. Functional tests and the QuickDASH questionnaire provided valuable insights into the patient's subjective experiences and limitations in wrist mobility.

Figure 4: Final outcome.

DISCUSSION

The discussion section delves into nuanced outcomes of the os lunatum reconstruction utilizing a femur medial condyle autologous bone graft for Kienböck's disease. The notable improvement in pain relief, functionality, and minimal disability, as evidenced by a quick disability of the arm, shoulder, and hand (QuickDASH) score of 2 points, is noteworthy. These positive outcomes contribute valuable insights that may be of interest to other researchers in the field, especially when comparing findings with previous studies by Henry et al.[8]

However, the nuanced limitations in specific wrist movements, including a subtle decrease in grip strength, warrant careful consideration. While the observed functional improvements are encouraging, they should be interpreted alongside the patient's report of persistent difficulty in performing wrist-based activities like push-ups. Notably, the uniqueness of this case is underscored by the utilization of a femur medial condyle autologous bone graft-a technique conspicuously absent in the existing literature by Erika et al.[9]

The subtle decrease in grip strength may be attributed to the intricacies of the surgical procedure or inherent challenges associated with the femur medial condyle graft. Furthermore, the patient's report of discomfort in the left knee, the donor site, underscores the importance of assessing potential morbidity associated with autologous grafts. While acknowledging these residual challenges, the overall positive outcomes emphasize the potential efficacy of this unconventional technique. This discussion contributes to the broader understanding of os lunatum reconstruction for Kienböck's disease, guiding future refinements in surgical approaches and highlighting the

need for comprehensive postoperative monitoring (Martin et al).[10] Comparing the outcomes of this unique surgical approach with those of more conventional techniques is imperative. While the autogenous femur medial condyle graft shows promise, a critical examination of its advantages and limitations in comparison to traditional graft sources, such as the iliac crest (Kakar et al and Bassem et al) or distal radius, is warranted.[10-12] This comparative analysis contributes to the broader understanding of the efficacy of different surgical modalities for Kienböck's disease.

CONCLUSION

In conclusion, this case report illuminates the successful application of a femur medial condyle autologous bone graft for os lunatum reconstruction in Kienböck's disease. The observed positive trajectory in pain relief, functionality, and minimal disability, as reflected by a QuickDASH score of 2 points, signifies a noteworthy advancement in orthopaedic interventions. Despite nuanced limitations in specific wrist movements, the rarity of utilizing a femur medial condyle autologous bone graft adds a distinctive dimension to the study. Notably, this technique, rarely reported in the literature, contributes novel insights to the field. This case underscores the potential efficacy of an unconventional surgical approach and emphasizes the need for ongoing refinements and long-term monitoring. By presenting a unique and successful application of this technique, our study advances knowledge and understanding in the management of Kienböck's disease, paving the way for future research endeavours and refining the clinical application of innovative surgical strategies.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Neilande N. OS lunatum reconstruction with autogenous bone graft from the medial condyle of the femur for kienböck's disease: a case report from traumatology and orthopedic hospital. Int Surg J 2024;11:258-60.