

Bilateral Total Knee Arthroplasty in a Patient with Bilateral Knee Lipoma Arborescens

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ABSTRACT

Lipoma arborescens (LA) is an uncommon intra-articular tumor of the synovium that can affect any joint in the body. A few cases of bilateral knee LA with osteoarthritis (OA) have been studied in the literature. We report the first patient with bilateral knee LA associated with advanced OA changes, who was operated upon with staged bilateral total knee replacement (TKR). Our case was complicated by immediate postoperative hematoma and wound complications on both sides. We describe the possible postoperative challenges that we encountered after TKR for knee OA combined with LA.

Keywords: Blisters, lipoma arborescens, osteoarthritis, replacement, total knee arthroplasty

INTRODUCTION

Lipoma arborescens (LA) is an intra-articular, slowly growing benign primary tumor of the synovium of an unknown etiology.^[1] It is a rare tumor with a reported incidence of 0.14%–0.25%.^[2,3] It commonly affects the suprapatellar region of the knee joint, and it is frequently seen between the fourth and sixth decades, with slight male predominance.^[1,4] The knee joint is the most common joint affected although other joints in the body such as shoulder, elbow, wrist, hip, or ankle may also be affected.^[5] LA of the knee joint is usually unilateral and occurs in the absence of any other associated articular disorders.^[5-9] The combination of bilateral knee LA and osteoarthritis (OA) is extremely rare, with few cases reported in the literature.^[10-12]

In this report, we present a rare case of bilateral knee LA associated with advanced OA, which was operated upon with staged total knee replacement (TKR). This case was complicated by immediate postoperative hematoma and wound complications on both sides. We describe the possible postoperative challenges that we encountered after TKR for knee OA combined with LA.

CASE REPORT

A 71-year-old male patient was admitted to our hospital with advanced bilateral knee OA and had failed conservative

management. He was also known to have hypertension, but he was not on any anticoagulants.

On clinical examination, the patient had mild medial joint tenderness, antalgic gait, and varus deformity. There was no crepitus or grating with patellar movement; however, the patellar movement was painful. The knee range of motion was 0°–110°. The anterior and posterior cruciate and collateral ligaments were found to be clinically stable. The neurovascular examination was normal. The rest of the clinical examination was unremarkable. His preoperative hemoglobin was 14.2 g/dL and the platelet count was 207. The coagulation profile was within normal limits.

Anteroposterior and lateral radiographs of both knees showed features of advanced OA with osteophytes and narrowed medial and lateral compartments [Figure 1]. The patient underwent staged bilateral TKR in 2017 for the left side, followed by right TKR 11 months later.

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Both surgeries were done under spinal anesthesia with tourniquet control, and they were uneventful [Figure 2]. The operative time was around 90 min. Intraoperatively, around 100 ccs of a yellowish intra-articular fluid was drained. The synovium was found to be red, inflamed, and thickened, especially in the suprapatellar area, with globules and nodular projection-like appearance. Excision of the lesion and total synovectomy were done, and a Press Fit Condylar Sigma System was used for TKR. The histopathology of the synovial tissue showed typical features of LA [Figures 3 and 4]. The patient was started on low molecular weight (LMW) heparin (tinzaparin 4500 IU) on the day of surgery as deep vein thrombosis prophylaxis and continued until the day of discharge.

However, immediate postoperatively, the patient developed large blisters around the surgical wound of the left knee with massive intra-articular swelling [Figure 5]. The wound was erythematous and discharging blood. The blisters became hemorrhagic after 24 h. This complication was probably due to imperfect hemostasis after the synovectomy.

The left knee wound complication was managed conservatively with leg elevation, ice application, delaying knee flexion, and prophylactic antibiotic. The wound drainage and blisters took 3 weeks to settle.

However, the situation was different on the right knee although the surgery was the same, with the same findings. The right knee became tense and swollen, and the number and the size of the hemorrhagic blisters were worse than the left knee. Therefore, we decided to take the patient for wound exploration.

Intraoperatively, there were a plenty of blood clots deep to the fascia. The extensor mechanism was intact, and we found clotted hematoma in the suprapatellar region at the site of the synovectomy. There were no signs suggestive of infection. The wound was thoroughly washed with saline using a pulsatile lavage system. The insert was removed, and the back of the knee was also washed, and therefore, a new insert was used. Hemostasis at the synovectomy site was secured meticulously. All biopsy cultures were negative.



Figure 1: (a) Anteroposterior and (b) lateral views of right knee. It showed advanced osteoarthritis changes



Figure 2: Immediate postoperative radiograph; (a) anteroposterior view, (b) lateral view

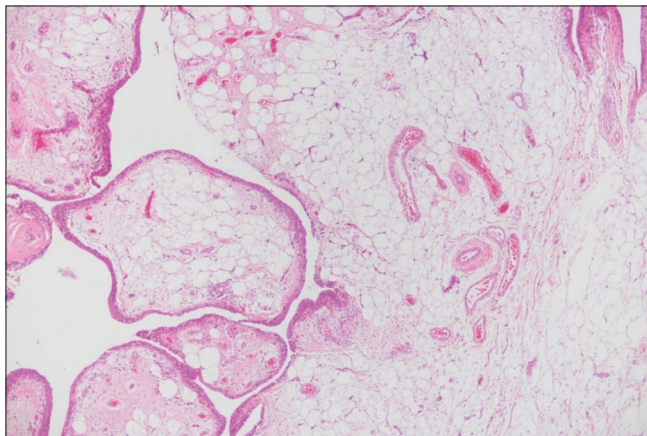


Figure 3: Microscopy: Synovial tissue with a villous architecture and mature adipocytes expanding the subsynovial layer. (H and E, ×4)

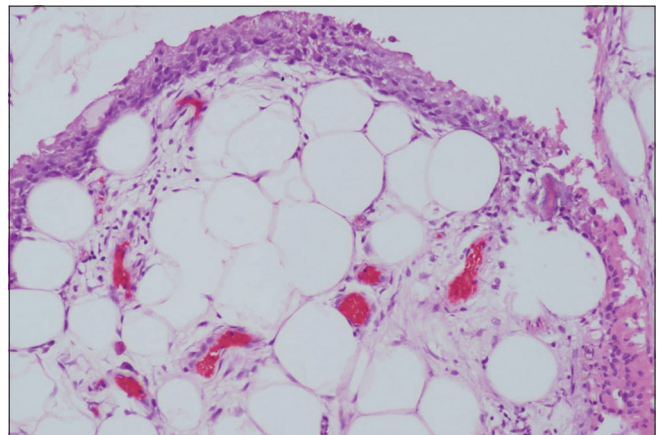


Figure 4: Microscopy: A high-power view displaying hyperplasia of the synovial lining, mature adipocytes expanding the subsynovial layer and scattered mild lymphocytic infiltrate. (H and E, ×40)



Figure 5: Clinical photograph of the profound blistering and drainage at surgical wound at day 1 postoperative

After the second surgery, the patient received prophylactic intravenous antibiotics for 2 weeks, and the wound blisters started to improve gradually. He was also monitored with serial C-reactive protein (the value was 238 on the 1st day after the surgery and dropped to 43 after 2 weeks). There were no clinical signs suggestive of intra-articular infection. The LMW heparin was continued during the management of his wound complications.

Later, the patient was discharged home to continue wound care and dressings at the local hospital and close observation in our outpatient department. The wound blistering has totally healed at 6 weeks [Figure 6]. The patient was seen last time 1 year after the surgery with a satisfactory outcome. The surgical scars were healed well, and there were no local signs, suggestive of recurrence of the disease. The patient had mild bilateral knee pain, and knee flexion was up to 110°. The radiographs showed a good prosthesis position.

DISCUSSION

The present case study reported an unusual case of bilateral knee LA associated with advanced OA in a male patient. The diagnosis of LA was not suspected preoperatively, and it was only considered intraoperatively when the gross appearance of frond-like projections of the underlying synovial tissue was noticed in the suprapatellar pouch during his TKR surgery. Although the diagnosis of LA was suspected intraoperatively, it was confirmed by postoperative histopathological examination of the synovial samples.

The diagnosis of LA in our patient was missed preoperatively in both knees as the symptoms and signs were not specific, and they are somewhat similar to the OA's presentation. Furthermore, the pathology was not suspected in the right knee due to the rarity of bilateral involvement. In addition, the radiographic changes were attributed to his primary OA of the knee, which is common in his age group. In addition, routine preoperative plain radiographs are not sensitive in



Figure 6: Clinical photograph showed healing of the blisters and surgical wound at 3 weeks after surgery. Staplers removed at this visit

recognizing synovial and soft tissue lesions. In the current case, the diagnosis of LA in both knees was confirmed by histopathological examination of the synovial samples.

TKR is the treatment for LA of the knee combined with severe OA. Xiao *et al.* reported three cases of severe knee OA combined with LA that were treated surgically with TKR.^[10]

Our patient developed immediate postoperative bilateral wound complications, including hematoma formation. Wound issues following TKR are serious complications that might significantly affect patient outcomes.^[13] There has been no case of wound complications after TKR in patients with LA reported in the literature, thus far.

Many factors could contribute to the formation of blistering and poor skin healing in patients following arthroplasty. These can be grouped into operative causes and patient-related causes. The operative causes are prolonged tourniquet application, poor wound dressings, inadequate skin sterility, and imperfect hemostasis. The patient's factors could include a high body mass index, increasing age, smoking, alcohol, vascular insufficiency, diabetes, hypertension, bleeding tendency, and medications.^[13-15] However, the current patient had no known risk factors for wound complications following TKR. Therefore, we assumed that massive synovectomy and imperfect hemostasis could be the possible reason, which could explain his postoperative wound complications. However, there is no available evidence that postoperative wound hematoma is secondary to LA.

The outcome and complication of TKR for OA in a patient with LA have not been reported in the literature due to the rarity of this pathology.^[16]

In the current case, wound complications started very acutely on the 1st postoperative day making infection less likely as a cause. In addition, swab culture results were negative.

This report's limitations include short follow-up and the fact that magnetic resonance imaging was not done to look for

the disease's recurrence, although clinically there was no indication of recurrence.

CONCLUSION

LA with severe OA is an extremely rare combination that can be managed with TKR. However, patients with LA are susceptible to the development of wound complications following TKR as a sequela of synovectomy.

Recommendations

We recommend that deflating tourniquet before wound closure and achieving meticulous hemostasis at the synovectomy site for patients with LA undergoing TKR may prevent wound complications. In addition, a careful postoperative care, such as close wound monitoring, compression dressing, and ice application, helps in reducing wound complications.

Ethical consideration

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

Author contributions

SAH designed the report and wrote the initial and final draft. JSL suggested the idea of the study, reviewed the final manuscript, and was the primary surgeon. SHG organized and prepared the figures. ISH reviewed the literature. MIG performed the histopathological examination of the specimens. All authors have critically reviewed and approved the final

draft and are responsible for the manuscript's content and similarity index.

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