



Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

A forgotten retained drain inside a knee for 10 years: A case report

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ARTICLE INFO

Article history:

Received 1 March 2018

Accepted 15 May 2018

Available online 29 May 2018

Keywords:

Retained drain

Forgotten

Longtime

Complications

Arthroscopy

Arthroplasty

ABSTRACT

INTRODUCTION: Surgical drains are inserted into the wound after an arthroscopic knee procedure mainly to decrease fluid collection after the operation. The use of postoperative surgical drains remains controversial.

CASE PRESENTATION: This report presents a rare case of a forgotten retained drain that was accidentally found inside a knee 10 years after an arthroscopic procedure. The drain was removed without any complications.

DISCUSSION: A retained and broken drain during removal is a very rare and preventable complication that can be stressful for both the patient and surgeon. Most of the literature supports that retained drains in the soft tissues do not affect long-term outcomes, but if the drain fragment is in the intra-articular area, it might cause complications. Furthermore, there are several preventive measures to avoid retained surgical drains.

CONCLUSION: By reporting this case of a forgotten drain retained inside a knee for approximately 10 years, we aim to illustrate the potential risk of leaving a drain inside the joint following an arthroscopic procedure. Furthermore, we advise that surgeons maintain a high index of suspicion for iatrogenic complications when a patient continues to complain about unexplained pain at the surgical site.

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1. Introduction

Inserting a surgical drain into the wound after an arthroscopic procedure in the knee is mainly to decrease postsurgical fluid collection with evidence of reducing ecchymosis and hematoma or seroma formation, which are culture media for bacteria. The use of postoperative surgical drains remains controversial and has advantages and complications [1,2]. Although there are no specific and scientific recommendations on when to remove a drain, it is generally extracted in the first few postoperative days. Removal is usually a simple procedure that is done at bedside via a simple pulling mechanism [3].

A retained and broken drain during removal is very rare, easily overlooked, and avoidable but can lead to serious complications and non-preferable sequences [3,4]. Moreover, lifting it inside the joint will increase the risk of neurovascular injury, irritating pain, and infection; another surgery with all of its complications may be necessary to remove it [1,2,5].

After an extensive review of the literature about retained drains, we found some case reports on different surgical specialties and only few cases in orthopedics specifically. Herein we present a rare case of a forgotten retained broken drain that was inside a knee joint for a very long time. It was discovered incidentally during another operation and no complications were found. The current case report was written according to the recently published SCARE criteria [6].

2. Case report

A healthy 56-year-old female presented to our outpatient clinic complaining of bilateral knee pain and was diagnosed with bilateral knee osteoarthritis. She had undergone right knee arthroscopy nine years prior for debris removal to alleviate the pain of osteoarthritis but her knee never felt better after the procedure. A left total knee arthroplasty was performed. The patient had an uneventful surgery, hospital stay, and postoperative rehabilitation (Fig. 1).

One year later, she underwent a total right knee arthroplasty to address right knee osteoarthritis. A preoperative radiograph (Fig. 2) showed severe osteoarthritis with an abnormal foreign body but the surgical team apparently did not notice it. During the arthroplasty procedure, after the femur and tibia were cut and just before irrigation and insertion of the new implant prosthesis, we noticed an abnormal elongated structure inside the knee just posterior to

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Fig. 1. Anteroposterior radiographs of both knees showing a left total knee arthroplasty and severe right knee osteoarthritis.

the femur and extending down to the tibia as shown in Fig. 3. It was a remnant drain from the previous surgery 10 years prior; it was stuck between tissues with no neurovascular compromise and no sign of surrounding infection. The drain was removed and sent for a culture and sensitivity analysis (Fig. 4). We continued our planned surgery, applying the new instrument and closing the wound without using another drain.

The patient's postoperative course was unremarkable. The complete removal of the drain was confirmed radiographically, and the patient recovered a pain-free range of motion in the right knee with no swelling or locking symptoms. She was discharged on the fourth day postoperatively and began rehabilitation therapy, which

continued on an outpatient basis. At a two-year postoperative follow-up, the patient reported no pain and her knee extension-flexion range of motion was 0–110°.

3. Discussion

Discovering a retained drain is a rare and preventable complication that can be stressful for both the patient and surgeon [5]. Only a few cases have been reported thus far, possibly due to an increase in the awareness of legal implications/medical litigation. Most surgeons support surgical exploration and removal of the drain; however, another procedure places the patient at risk of anesthesia and surgery. Moreover, there has been no orthopedic research supporting the removal of a retained drain until the present. Furthermore, to our knowledge, no reviews in the orthopedic literature have reported any adverse events related to these drains. As a result, it is important to ensure that the foreign body is a retained drain prior to surgical removal.

Until recently, there have been no clear explanations for drain breakage inside the body, but several possible causes have been identified, such as stretching of the drain by uncoiling, the distribution of the perforations, the perforation manufacturing method, maintaining the drain at a high negative pressure causing its adherence to the tissues, or if a suture passed through the perforation. Sometimes no clear reason or cause can be found to explain the breakage [7].

Previously published research supported that retained drains in soft tissues do not affect long-term outcomes [8]. However, drain fragments in the intra-articular space pose a different set of concerns since previous studies have reported that the presence of a foreign body in the joint space could mechanically damage the articular surfaces, impairing the range of motion and causing pain [9–11] or biochemically affecting the joint, leading to granulomatous reactions or synovitis [12,13].

There are several preventive measures to prevent retained surgical drains. Intra-operatively, surgeons should ensure that the

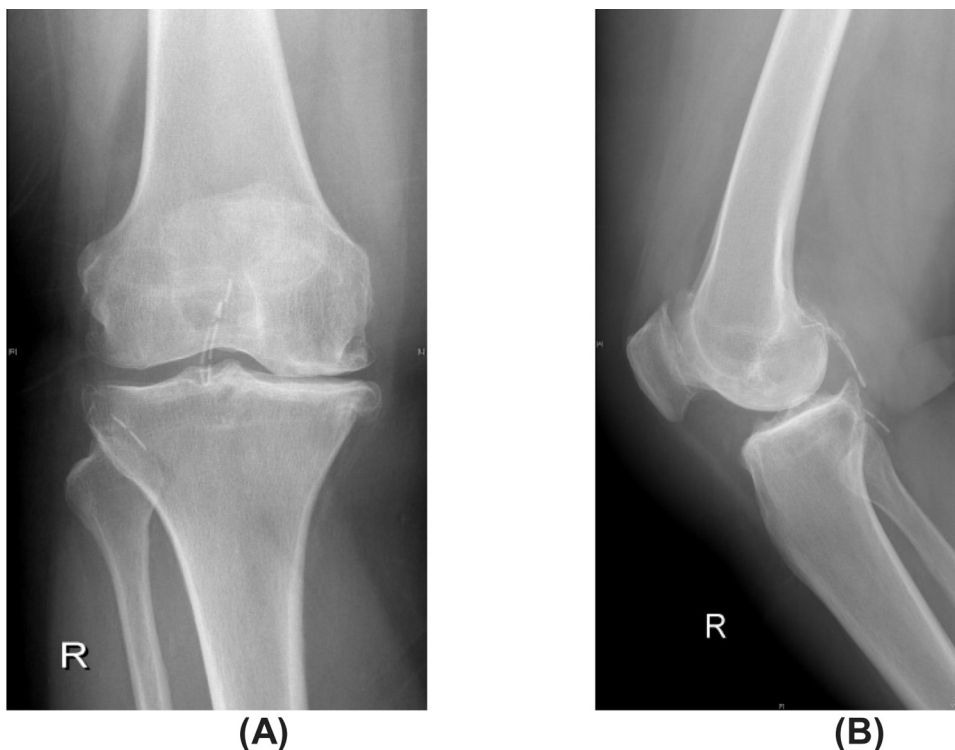


Fig. 2. Preoperative anteroposterior (A) and lateral (B) radiographs of the right knee showing severe osteoarthritis and the drain retained inside the joint.

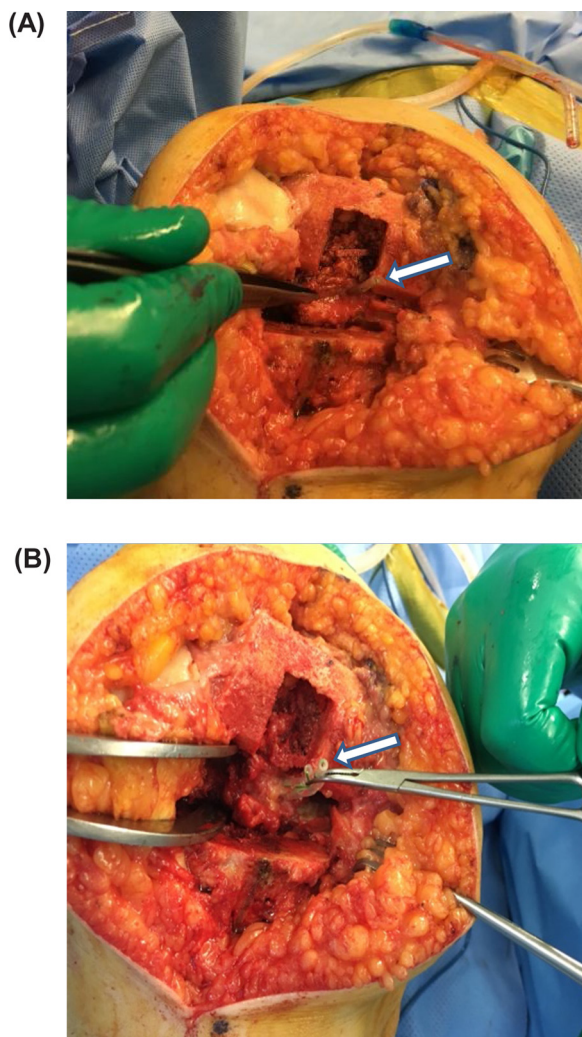


Fig. 3. Intraoperative photographs (A) and (B) of the knee joint showing the drain remnant stuck inside the joint and deep between the tissues, which become prominent after the femur and tibia were cut for a total joint replacement.



Fig. 4. Intraoperative photograph of the remnant drain after it was extracted from the joint.

angle of the drain is not excessively acute. Moreover, during wound closure, the surgeon should be cautious not to stitch the drain within the soft tissue as this will enable drain removal without extra resistance. At the end of procedures, drains should be measured and inspected upon removal.

Confirmation techniques include performing a plain radiograph as silicone drains are radiopaque and will be seen by the radiologist [5]. Furthermore, radiographs provide information on the exact location, which could be aided by magnetic resonance imaging to contribute extensive information about the presence of complications such as hematoma or articular cartilage damage [3,14].

In our case, none of this occurred. The retained drain segment was discovered accidentally 10 years later during an arthroplasty procedure and was removed with no complications after a two-year follow-up.

4. Conclusion

This unusual case illustrates the potential risks of leaving a drain inside a joint following an arthroscopic procedure. It also emphasizes having a high index of suspicion and anticipating any iatrogenic complications when a patient continues to complain of unexplained pain at the site of surgery. Careful removal of drains using preventive measures helps reduce such events. Moreover, the removal should be confirmed by radiograph especially if the extraction is difficult.

Conflicts of interest

None.

Funding

No specific grant from funding agencies in the public, commercial, or not-for-profit sectors was received for this work.

Ethical approval

We have reported a single case with no requirement for ethical approval. This manuscript does not describe a clinical study.

Consent

Written informed consent was obtained from the patient for publication of this case report and the accompanying images. A copy of the written consent is available for review upon request to the

Author contribution

Saeed Koaban, surgeon, wrote the manuscript and reviewed the final version of the manuscript.

Raheef Alatassi, surgeon, performed the literature review and data collection, designed the manuscript, and contributed to writing the manuscript.

Nawaf Alogayyel, contributed to writing the manuscript.

** This version had been read by all of the authors who also bear responsibility for it. The material presented is original and all of the authors agreed upon their inclusion. This manuscript has not been published by or submitted to another journal.

Registration of research studies

We have reported a single case with no requirement for registry. This manuscript does not describe a clinical study.

Guarantor

Raheef Alatassi.

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