CASE REPORT

WHEN ROUTINE TURNS RISKY: DVT IN HEALTHY PATIENT AFTER KNEE ARTHROSCOPIC PARTIAL MENISCECTOMY- CASE REPORT

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Abstract

Arthroscopic meniscectomy is considered a low-risk procedure with minimal incidence of venous thromboembolism (VTE). However, rare complications such as deep vein thrombosis (DVT) may still occur, even in patients without classical risk factors. We report the case of a 55-year-old male who developed acute DVT in the right lower extremity six days after undergoing an uneventful arthroscopic partial meniscectomy. The patient had no prior thrombotic events or comorbidities. Diagnosis was confirmed via duplex ultrasound, and therapeutic anticoagulation with low molecular weight heparin was initiated. Follow-up imaging after six weeks demonstrated partial recanalization. No complications from anticoagulant therapy were observed. This case highlights the importance of clinical vigilance for thromboembolic complications, even after routine orthopedic procedures in low-risk individuals.

ПРИКАЗ НА СЛУЧАЈ

КОГА РУТИНАТА СТАНУВА РИЗИК : ДВТ КАЈ ЗДРАВ ПАЦИЕНТ ПО АРТРОСКОПСКА ПАРЦИЈАЛНА МЕНИСЦЕКТОМИЈА- ПРИКАЗ НА СЛУЧАЈ

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Клучни зборови: ДВТ, артроскопија, менисцектомија, нискомолекуларен хепарин, ортопедски компликации.

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Печатарски права: ©2025 Зорица Вангеловска, Зоран Несторовски, Ана Марија-Манева, Дарко Талевски, Никола Граматниковски, Божидар Блажевски, Берат Сејдини. Оваа статија е со отворен пристап дистрибуирана под условите на нелокализирана лиценца, која овозможува неограничена употреба, дистрибуција и репродукција на било кој медиум, доколку се цитираа торигиналниот(ите) автор(и) и изворот.

Конкурентски интереси: Авторот изјавува дека нема конкурентски интереси.

Извадок

Артроскопската менисцектомија се смета за процедура со низок ризик и минимална инциденција за венски тромбоемболизам (ВТЕ). Сепак, ретки компликации како што е длабока венска тромбоза (ДВТ) сè уште може да се појават и кај пациенти без класични ризик-фактори. Прикажуваме случај на 50-годишен пациент кој разви ДВТ шестиот постоперативен ден по артроскопска парцијална менисцектомија. Пациентот беше без коморбидитети и васкуларни нарушувања. Дијагнозата се потврди со доплер на долните екстремитети по што се започна со терапевтско антикоагулантно лекување со ниско молекуларен хепарин. Контролното снимање по 6 недели покажа делумна реканализација. Не се забележаа компликации од ординираната антикоагулантна терапија. Овој случај ја нагласува важноста од клиничката будност за тромбоемболиски компликации и по рутински ортопедски процедури кај лица со низок ризик.

Introduction

Arthroscopic knee surgery, particularly isolated partial meniscectomy is generally considered a low-risk procedure with minimal risk of venous thromboembolism (VTE). The implementation of early mobilization protocols and the short duration of the intervention further reduce the likelihood of deep vein thrombosis (DVT). However, recent reports suggest that (VTE) can still occur in patients without traditional risk factors. In this case report, we present a patient who developed DVT on postoperative day 6 following routine arthroscopic meniscectomy.

Case report

A 55-year-old male presented with localized pain in the medial compartment of the right knee, persisting over several months. The patient reported a history of a distortion injury to the same knee approximately five months earlier. On clinical examination, palpable tenderness was noted along the medial joint line. Active and passive range of motion were preserved and within normal limits. Both the McMurray test and the Apley compression test were positive, indicating possible meniscal involvement. Radiological evaluation included a plain radiograph (X-ray) of the right knee, which revealed early degenerative changes in the medial compartment, consistent with incipient medial compartment osteoarthritis (gonarthrosis) (Figure-1).

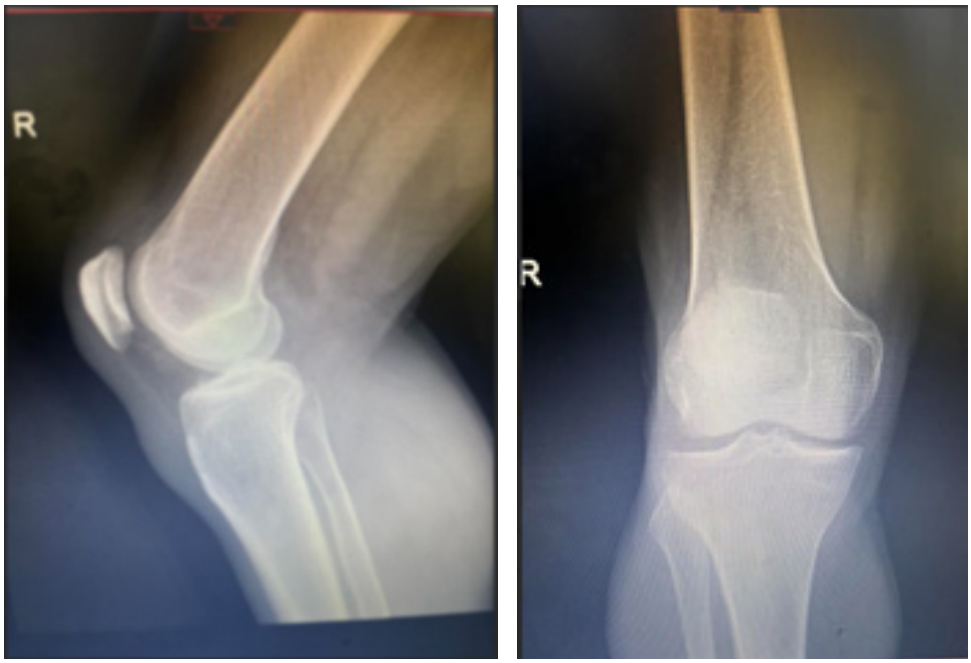


Figure 1: Radiographs of the right knee (anteroposterior and lateral views) showing early degenerative changes in the medial compartment

Further evaluation with magnetic resonance imaging (MRI) in the sagittal plane demonstrated a horizontal tear of the posterior horn of the medial meniscus in the right knee (Figure 2).



Figure 2: MRI of the right knee demonstrating a horizontal tear of the posterior horn of the medial meniscus

The patient underwent arthroscopic partial meniscectomy under spinal anesthesia. A tourniquet was applied to the proximal right thigh and inflated to 300 mmHg. The procedure was carried out through two standard arthroscopic portals (anteromedial and anterolateral). The torn segment of the posterior horn of the medial meniscus was resected. The total operative time was 30 minutes. The intraoperative and immediate postoperative course was uneventful and the patient was discharged with standard postoperative instructions and analgesia. The patient was discharged on the first postoperative day in stable condition with prescribed pharmacological thromboprophylaxis consisting of oral anticoagulant therapy Rivaroxaban (Rufixalo 10 mg once daily) in addition to standard postoperative analgesics. On postoperative day 6, the patient presented to the Emergency Department with complaints of intense pain in the right popliteal fossa and posterior lower leg, exacerbated by standing and ambulation. On physical examination, swelling and increased local temperature were noted in the right lower extremity, raising clinical suspicion for deep vein thrombosis (DVT). Physical examination revealed the following findings: pain on palpation along the posterior aspect of the right calf, localized swelling, redness, increased temperature, firmness of the affected area and positive Homan's sign (Figure 3).



Figure 3: Swelling and redness of the right lower extremity

Laboratory Findings - Coagulation profile: prothrombin time (PT): 10.3 seconds. Activated Partial Thromboplastin Time (aPTT): 9.1 seconds. International Normalized Ratio (INR): 0.8, D-dimer: 0.45 mg/L. Complete

blood count (CBC) and biochemical parameters: within normal limits. **Duplex Utrasound Report** - lower extremity venous system findings: The popliteal vein was completely filled with thrombotic material and appeared non-compressible. Evidence of a recanalization process was noted both centrally and peripherally. The anterior tibial veins were thrombosed. The small saphenous vein *(v. saphena parva)* demonstrated normal dimensions, and was partially compressible and filled with thrombotic material. Findings were consistent with deep vein thrombosis (DVT) involving the popliteal and anterior tibial veins, with early signs of recanalization in the popliteal segment. Partial involvement of the small saphenous vein was also noted. The patient was initiated on therapeutic anticoagulation with low molecular weight heparin (LMWH) – *Fraxiparine 0.6 mL (5700 IU)* administered subcutaneously twice daily (2×1 s.c.). In addition, antibiotic therapy was prescribed and local compresses with boric acid were applied to the affected area. Supportive measures included limb elevation and instructions for continued outpatient monitoring. Over the following six weeks, the patient reported gradual improvement in pain and local clinical findings. Follow-up duplex ultrasonography demonstrated partial recanalization of the affected veins. No adverse effects related to anticoagulant therapy were observed during this period. The patient remains under ambulatory follow-up with clinical vigilance for the potential development of post-thrombotic syndrome.

Discussion

Prospective[1-7] studies have reported an incidence ranging from 1.2% to 17.9% of DVT after artroscopy1-7. Arthroscopic knee procedures, particularly isolated partial meniscectomy are typically considered low-risk in terms of thromboembolic complications. Early mobilization, short operative time and the minimally invasive nature of the technique contribute to this favorable risk profile. As a result, routine pharmacological thromboprophylaxis is not universally recommended for such procedures, especially in patients without known risk factors. However, the present case challenges this paradigm by demonstrating the occurrence of deep vein thrombosis in a previously healthy, low-risk patient following a standard arthroscopic intervention. This underscores the fact that VTE can occur even in the presence of appropriate prophylactic measures, and highlights the limitations of a one-size-fits-all approach to thromboprophylaxis. This case also demonstrates the diagnostic challenge posed by normal D-dimer levels, which were within reference range despite confirmed thrombosis. Such findings stress the importance of clinical judgment and imaging (Doppler ultrasound) over reliance on laboratory screening alone, particularly in the postoperative period where D-dimer sensitivity may be reduced. This case serves as a reminder that even minor orthopedic procedures can carry thrombotic risk, and that routine administration of thromboprophylaxis does not guarantee protection. It is extensively accepted that thromboprophylaxis is necessary and perioperative thrombosis prevention treatments are rec-

ommended in many guidelines for major orthopedic surgeries, such as joint replacement and trauma-related procedures. But, no consensus has been reached about thromboprophylaxis after arthroscopic surgery[8]. Arthroscopic knee surgery (AKS) is associated with a low risk of deep vein thrombosis. Prospective studies suggest a rate of 1.2% to 17.9% DVT after AKS. The rate of symptomatic proximal thrombosis is reported much less (0.25%-0.67%). However, VTE accounts for 7% to 30% of all complications following AKS.[9] Angharad M Eynon *et al*. presented a case of fatal pulmonary embolus after knee arthroscopy. Their case was about a 71-year-old woman who underwent knee arthroscopy with a tourniquet for meniscectomy and arthroscopic lavage for osteoarthritis. Her medical history was unremarkable and the procedure was uneventful.[10] Yue Zou et al. presented meta-analysis of 22 observational studies including 998,978 patients undergoing knee endoscopic surgery. Their subgroup analysis indicated that patients with an average age over 50 years [OR= 3.18, 95%CI (1.17, 8.66), P = 0.001] and those who underwent surgery with a tourniquet for ≥ 90 min [OR = 4.79, 95%CI (1.55, 14.81), P = 0.007] were at a significantly increased risk of venous thrombosis after knee arthroscopy.[11] Piya Chavalparit *et al*. presented a case of a 55-year-old female who at 6 weeks after knee arthroscopy developed left leg swelling without pain. She was diagnosed as DVT and was initially treated with enoxaparin for three days, then warfarin for three months[12]. Zein Said et al. made a postoperative screening in Cairo University Hospital for DVT after 2 weeks from knee arthroscopy using ultrasonography technique to detect the DVT incidence after such procedure. Their study consisted of 50 patients, 44 males and 6 females, who underwent knee arthroscopy. Only one patient of the 50 developed asymptomatic silent DVT within the first 2 postoperative weeks.[13]

Our case and others in the literature confirm that even routine, short-term, low-risk arthroscopic procedures can result in DVT, even in the absence of known thrombophilic factors. Possible contributing mechanisms include: tourniquet use, local vascular compression, absence of pharmacological thromboprophylaxis and transient limb inactivity. Although clinical guidelines do not mandate routine thromboprophylaxis in these patients, this case prompts a reassessment of risk in individual patients, especially in the presence of subtle factors (age, prolonged sitting, microvascular injury).

Conclusion

Deep vein thrombosis (DVT) may occur as a rare but potentially serious complication following knee arthroscopy. It is therefore essential to maintain a high level of clinical suspicion when patients present with pain or swelling in the lower leg, even in the absence of known risk factors. Timely diagnosis and prompt initiation of treatment can significantly improve clinical outcomes.

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