Case Report

Contralateral Deep Venous Thrombosis After Hip Arthroscopy

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abstract

Since the 1980s, hip arthroscopy has become an accepted treatment modality for a variety of hip conditions. It is generally considered a low-risk procedure with a low rate of complications. The risk of developing a deep venous thrombosis (DVT) or venous thromboembolism following these procedures is also thought to be low, and most patients undergoing these procedures receive no pharmacologic prophylaxis postoperatively.

This article presents a case of a 33-year-old woman with a history of oral contraceptive use who presented 13 days after a routine hip arthroscopy with pain and swelling in the contralateral thigh. Ultrasonography revealed acute DVTs in the left common femoral, superficial femoral, and popliteal veins. She was admitted to the hospital and treated accordingly. A workup for thrombophilic disorders was negative. We believe that her history of oral contraceptive use, the use of axial traction, and asymmetric forces about the pelvis during the procedure contributed to this postoperative complication.

Although this complication is rare and the use of pharmacologic prophylaxis is not common, physicians must be aware of this potential complication following hip arthroscopy.

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Figure: The patient was placed in the supine position on a HANA hip distraction table. Traction forces are generated distally and applied through the feet. Note the large traction post placed securely in the groin.
A lthough hip arthroscopy is generally considered a safe surgical procedure with an overall complication rate of <2%,1 several complications have become associated with its use. Traction placed across the joint with forces transmitted distally may lead to neuropraxic injury, especially in the distribution of the pudendal,2 femoral,3 or sciatic4 nerves. Additional reported complications include bleeding at the portal sites,1,3 instrument failure,1,3 failure of adequate observation or access,1 vaginolabial injuries in women,1,5 and abdominal compartment syndrome secondary to fluid extravasation into the retroperitoneal space.6 Lower-extremity arthroscopic procedures, particularly those involving the knee, have been shown to be associated with the development of deep vein thrombosis (DVT). This may be secondary to a variety of factors, including venous endothelial cell damage, a hypercoaguable state, and the impedance of blood flow or venous stasis. The rates of DVT following routine knee arthroscopy are cited to be <10%.7 Recently, the rate of symptomatic DVT following hip arthroscopy was reported to be 3.7%.8

As indications expand and more surgeons perform these procedures, additional associated complications will be identified. This article presents a newly described complication associated with hip arthroscopy in which a proximal DVT developed in the contralateral extremity.

CASE REPORT

A 33-year-old woman initially presented with right groin pain secondary to a nondisplaced acetabular labral tear. The patient had no prior history of DVT or malignancy, was a nonsmoker, and routinely used either oral contraceptives or a NuvaRing (Merck, Whitehouse Station, New Jersey). Her body mass index was 26.8.

Intraoperatively, the patient was placed in the supine position on a HANA hip distraction table (Mizuho OSI, Union City, California). A well-padded hip arthroscopy perineal post, measuring approximately 9 inches in diameter, was positioned centrally (Figure 1). Under general anesthesia, gentle axial traction was placed across bilateral lower extremities to stabilize the pelvis about the perineal post. Additional fine traction was placed across the operative hip to allow for distraction of the hip joint, which was confirmed fluoroscopically. The patient underwent hip arthroscopy (including peripheral compartment examination) and lapar debridement. The total traction time was 55 minutes, and the patient was transferred to the recovery room in stable condition. The patient was discharged from the hospital on the same day, bearing weight as tolerated with crutches. Discharge medications were narcotic pain medicine only.

On postoperative day 13, the patient reported increased swelling and tenderness of the contralateral thigh, with specific tenderness localized to the left groin. Ultrasonography revealed acute DVTs in the left common femoral, superficial femoral, and popliteal veins. The patient was hospitalized and therapeutic anticoagulation was initiated. A thrombophilic workup revealed normal prothrombin, antithrombin III, and activated protein C levels. The patient never developed signs or symptoms consistent with a pulmonary embolus, and pulmonary workup was therefore never initiated.

DISCUSSION

Deep vein thrombosis is a rare but known complication of lower-extremity arthroscopic surgery. In our case, a proximal, contralateral DVT developed in an otherwise healthy 33-year-old woman 13 days following a routine hip arthroscopy. The patient had no known history of a clotting disorder, and the only known risk factor for developing a thrombus was her use of oral contraceptives. According to criteria set forth by Deitelzweig et al.9 hip arthroscopy places a patient at moderate risk for a venous thromboembolism. Based on these factors, we opted not to place this patient on postoperative pharmacologic prophylaxis. Moreover, as the patient was ambulating immediately after the procedure, venous stasis was immediately reduced. According to Virchow’s Triad of venous stasis, hypercoaguableity, and endothelial injury, immediate ambulation should have eliminated 1 of the main factors in the development of a thrombus.

Venous thromboembolism may present in various ways. Patients may be asymptomatic and may be diagnosed as an incidental finding. Symptomatic disease, however, may present locally or at a location far from the initial insult. Deep venous thromboses may present locally with pain, soft tissue swelling, a palpable cord, or even a persistent low-grade fever. These clots may dislodge and embolize to distant sites, most notably the lung, and cause patients to present with tachycardia, dyspnea, tachypnea, hypoxia, or chest pain. As the presentation for symptomatic venous thromboembolism can be variable, it is critical that physicians are able to recognize the signs and symptoms and provide a rapid, accurate diagnosis.

Thromboembolic events following knee arthroscopy have been well documented. A recent meta-analysis assessing 6 studies yielded a total DVT incidence of 9.9% in patients without pharmacologic prophylaxis, with a proximal DVT incidence of 2.1%.7 Reports of venous thromboembolism following hip arthroscopy, however, are scarce. Clarke et al.5 in their prospective study of 1054 consecutive hip arthroscopies, reported no cases of DVT.
ported 1 case of DVT in the setting of fac-
embolism associated with hip arthroscopy
in the literature reports a fatal pulmonary
thromboembolism and hip arthroscopy.
Due to the paucity of literature regard-
ing venous thromboembolism and hip ar-
throscopy, there has been no direct assess-
ment regarding increased risk in the set-
ing of oral contraceptive use. One of the
3 patients in the study by Salvo et al10 used
oral contraceptives, as did our patient. It
is postulated that these drugs cause an in-
crease in prothrombotic factors and a de-
crease in antithrombotic factors and have
equivocal effects on fibrinolysis.15 These
changes in the coagulation pathway may
explain why women using oral contracep-
tives have an increased risk of developing
venous thromboembolism.

We hypothesize that the cause for
DVT in our patient is multifactorial. The
patient’s use of oral contraceptives placed
her at an elevated risk for a perioperative
thromboembolic event. Traction of the
lower extremities against the post could
have theoretically placed stress along the
vasculature and produced endothelial in-
jury. This type of traction has been thought
to be the cause of pudendal and, less fre-
cently, sciatic nerve injuries, with some
authors advocating performing the proce-
dure without the post.14 Moreover, we
believe that there are asymmetric forces
that are placed across the bilateral lower extremities during the procedure. Greater
traction forces are placed across the op-
erative hip, causing the pelvis to partially rotate around the post. This could theo-
retically create a greater pressure concen-
tration at the contralateral groin and cause compression in the region of the pelvic veins.

The risk of DVT secondary to hip ar-
throscopy is generally thought to be low;
however, we report a case of multiple
DVTs in the contralateral limb mani-
festing almost 2 weeks after the surgical
procedure. We believe that mechanical
compression of the contralateral femoral
vein created a prothrombotic situation
that reached a clinical threshold 13 days
postoperatively. We believe that the rate of
DVT is underestimated in this population,
and only symptomatic cases have been re-
ported in the literature.

We do not routinely provide phar-
macological prophylaxis despite our experi-
ence with this case, as the reported rates of
DVT are low and we are not aware of any
other documented cases at our institution
of thrombotic disease after hip arthro-
scopy. However, we attempt to minimize the
amount and duration of traction placed on
the lower extremities during these proce-
dures and attempt, if clinically warranted,
to encourage weight bearing bilaterally.
Further study is required to establish the
effect of traction on the development of a
thrombus, the true incidence of DVT fol-
lowing hip arthroscopy, and possible rec-
ommendations regarding pharmacologic
prophylaxis.

REFERENCES
3. Griffin DR, Villar RN. Complications of ar-
7. Iahi QA, Reddy J, Ahmad I. Deep venous thrombosis after knee arthroscopy: a meta-