Ankle Fracture Following Hip Arthroscopy

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abstract

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This article describes a case of an ankle fracture following hip arthroscopy. A 58-year-old woman underwent hip arthroscopy for a labral tear. She was placed in a lateral decubitus position with her foot in a padded boot. Traction was maintained for approximately 30 minutes. She was instructed to bear weight as tolerated with crutches postoperatively. At 2-week follow-up, she reported ipsilateral ankle pain. Radiographs revealed a minimally displaced medial malleolus fracture. She was treated with a cast followed by a cam walker boot and successfully went on to complete union and resolution of her symptoms.

The following risk factors exist for ankle fracture after hip arthroscopy: history of ankle sprains, ligamentous laxity (more common in women), and small feet with large calves (more likely to become plantarflexed during traction). Distraction performed with the ankle rotated is also likely to place added stress on the medial or lateral ligamentous structures.

It is important to counsel patients preoperatively about the risk of ankle pain after hip arthroscopy, to be aware of the possibility of ankle pathology postoperatively, and to have a low threshold for ordering radiographs. Radiographs are warranted if patients continue to have ankle pain after 72 hours postoperatively.

Figure: Lateral radiograph showing the medial malleolus fracture (arrow).

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Hip arthroscopy is becoming an increasingly common procedure. In 1988, hip arthroscopy accounted for 0.2% of all arthroscopies. Since then, the indications for hip arthroscopy and the number of arthroscopies performed have increased significantly. The American Academy of Orthopaedic Surgeons projects that the number of hip arthroscopies performed will double from its current levels by 2013.

Along with the increasing indications and numbers comes an increasing awareness of potential complications. The most frequent complication reported is transient neuropraxia (most to least common: peroneal, pudendal, sciatic, femoral, combined) that most commonly results from traction. Other reported complications include direct injury to the lateral femoral cutaneous nerve; pressure necrosis of the foot, scrotum, and perineum; labial or scrotal hematoma; heterotopic ossification; abdominal pain and fluid extravasation; scuffing, avascular necrosis; instrument failure; and infection. The overall reported complication rate ranges between 1.34% and 21%.

Few foot and ankle injuries have been reported as complications of hip arthroscopy in the literature. Dienst and Grun reported skin irritation and superficial paresthesias due to tight fixation on the foot. Said et al reported vascular obstruction at the ankle level.

To the current authors’ knowledge, this article describes a previously unreported complication of a medial malleolus fracture following a hip arthroscopy.

**Case Report**

A 58-year-old woman had developed progressive and unremitting pain involving her left hip and anterior groin that did not respond to more than 6 months of conservative treatment. Gadolinium magnetic resonance imaging revealed an anterior labral tear of her hip. Because of her continuing pain and functional limitation, she underwent left hip arthroscopy.

The patient was placed in the lateral decubitus position. A well-padded peroneal post and a carefully padded foot boot with the heel firmly seated and secured were used. A specialized distractor was used to obtain initial distraction, followed by joint distention by infiltrating normal saline into the joint with an 18-gauge needle. Axial traction was adjusted to maintain the foot in a neutral position to avoid undue stress to the ligamentous structures around the ankle. Fluoroscopy was used to determine the distraction of the femoral head from the acetabulum of the hip joint. Total traction time was approximately 30 minutes. She underwent a partial anterior labrectomy and chondroplasty of the anteromedial acetabulum. Postoperatively, she was made weight bearing as tolerated with 2 crutches.

At 2-week follow-up, she reported ipsilateral ankle pain, swelling, and bruising. Physical examination revealed significant soft tissue swelling around the ankle and tenderness to palpation over the medial malleolus. Radiographs revealed a minimally displaced oblique medial malleolus fracture (Figure 1). She was placed into a short-leg walking cast and transitioned to a cam walker boot. She went on to radiographic union, and her ankle pain resolved (Figure 2).

**Discussion**

Few reports in the literature describe the complications of hip arthroscopy. Funke and Munzinger reported a 21% complication rate in 19 patients, Glick et al reported a 13% complication rate in 60 patients, Griffin and Villar reported a 1.6% complication rate in 640 patients, Clarke et al reported a complication rate of 1.4% in 1054 patients, and Sampson
reported a 6.4% complication rate in 530 patients. Four years later, Sampson\textsuperscript{17} reported a complication rate of 3.8% in 1001 patients, with a steadily declining rate of 15% in the first 60 cases to 6.2% in the next 500 cases and 0.5% in the last 500 cases. This declining complication rate was due to a better understanding of the safe amount of traction.\textsuperscript{17}

The reported amount of force that is necessary to obtain sufficient distraction of the hip joint varies between 25 and 200 lb, with 200 lb required for nonanesthetized patients.\textsuperscript{22} Hip distraction can be aided by the release of the negative pressure at the hip joint achieved by a saline injection. A limit of 60 lb of traction for a maximum of 60 minutes was reported by Guhl et al.\textsuperscript{23} Glick et al\textsuperscript{19} recommended 25 to 50 lb of traction for adequate visualization. A tensiometer can be used to monitor the distraction forces and the length of time that traction is applied.\textsuperscript{19}

In the senior author’s (J.C.M.) experience in more than 5000 hip arthroscopies, ankle pain is common; however, the current patient was his first patient who sustained an ankle fracture.

The current patient had no preexisting ankle pathology. The total time in traction was approximately 30 minutes. The authors hypothesize that the avulsion fracture off of the medial malleolus was likely due to the foot and ankle becoming plantarflexed in the padded boot when the traction was applied.

The following risk factors exist for ankle fracture after hip arthroscopy: history of ankle sprains, ligamentous laxity (more common in women), and small feet with large calves (more likely to become plantarflexed during traction). Distraction performed with the ankle rotated is also likely to place added stress on the medial or lateral ligamentous structures.

**CONCLUSION**

It is important to counsel patients preoperatively about the risk of ankle pain after hip arthroscopy, to be aware of the possibility of ankle pathology postoperatively, and to have a low threshold for ordering radiographs. Radiographs are warranted if patients continue to have ankle pain after 72 hours postoperatively.

**REFERENCES**