The Use of a Two C-arm Technique in the Treatment of Slipped Capital Femoral Epiphysis

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A two C-arm technique in the treatment of slipped capital femoral epiphysis allows the surgeon to accurately and quickly pin the hip in situ without the added time, radiographic exposure, and risk of contamination associated with repositioning a single C-arm from the anteroposterior to lateral position.

The technique of fluoroscopically guided percutaneous pinning is the treatment of choice for a slipped capital femoral epiphysis.1,2 Traditionally, hip pinnings have been performed with the use of a fracture table and a single C-arm.3 Although this technique works well, it can add operative time associated with repositioning a single C-arm from the anteroposterior (AP) to lateral position and increased radiographic exposure as the radiographic technician centers to image on the hip. An increased risk of contamination also exists with moving the C-arm back and forth from the AP to the lateral position.

Lee and Chapman4 recently described a new technique using a radiolucent operating table and rotating the hip to obtain the appropriate views. This technique also works well but may be difficult if the slip is unstable, and in larger patients, often results in bending the guide pin from the soft-tissue forces. The use of two C-arm machines simultaneously can help with the ease and speed with which this surgery can be performed, decreases the time of radiographic exposure and risk of contamination, and does not require moving the hip into a frog-leg position.
The patient is positioned supine on a fracture table with the affected leg gently positioned in a neutral position, whereas the unaffected leg is placed in a well leg holder with the knee flexed and hip abducted. The lateral C-arm machine is positioned first. It is positioned such that the radiograph tube is between the patient’s legs against the abducted well leg, and the image intensifier under the patient and the radiograph tube is proximal and lateral to the affected hip. The AP C-arm machine is brought in from the nonoperative side and positioned to take an AP image, in the standard fashion, with the image intensifier under the patient and the radiograph tube above (Figures 1 and 2). After the C-arms are positioned, scout images can be obtained to accurately position both C-arms over the affected hip.

After setting up the radiographic equipment, the surgical field can be steriley prepped and draped. The surgeon can proceed with percutaneous pinning. During the procedure, spot AP and lateral radiographs can be taken as needed with no repositioning of the C-arms. After pin placement, the hip can easily be visualized to confirm the position of the hardware.

**DISCUSSION**

This article describes the use of a two C-arm technique for percutaneously pinning a slipped capital femoral epiphysis. Using the two C-arm technique reduces the maneuvering needed to reposition the C-arm from an AP to lateral view and can be applied to other hip procedures. When we reviewed our last six cases, all performed by the same surgeon (J.J.M.), this technique reduced our fluoroscopic time by 34%. The C-arm equipment is set up before the patient is prepped and draped and allows the surgeon to check the position of the C-arm and help position it properly. This technique therefore decreases the risk of contamination and is helpful if the patient is obese when good lateral images are difficult to obtain or if the radiographic technician has a difficult time maneuvering the equipment. The same radiographic technician can operate both C-arms without difficulty and once the C-arms are positioned no technician is needed. The obvious disadvantage of this technique is that two C-arms are needed, but many surgeons now have access to two C-arms.

This technique can easily be extrapolated to other common hip procedures, such as the treatment of hip fractures. This technique is quick, easy to set up, and provides good image quality.

**REFERENCES**


