

# While Reaming the Acetabulum, I Inadvertently Reamed Through the Medial Wall. What Should I Do?

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Protrusion through the medial wall of the acetabulum during total hip arthroplasty can have several etiologies. It can be inadvertent, as in the case of overzealous medialization while reaming. It can be expected or even intentional during the reconstruction of a deficient acetabulum in developmental dysplasia of the hip (DDH). It can be unavoidable in cases of bone loss due to either osteolysis or component removal during revision surgery. Finally, it can be the result of pre-existing acetabular protrusion that is either a primary idiopathic condition or a secondary condition associated with the inflammatory arthropathies, metabolic bone disorders, and several other causes.

The overall goal of any acetabular reconstruction is to achieve both initial inherent stability and long-term rigid fixation of the cup with recreation of the appropriate hip center of rotation of the hip. Excluding cases, such as postradiation necrosis, of host bone that is biologically compromised, my preferred method of reconstruction is with a cementless hemispherical cup. As with any acetabular deficiency, I use the Paprosky classification system to characterize the severity of bone loss and help determine the potential to obtain fixation. The key to achieving both immediate and long-term fixation is the ability of remaining host bone to provide initial stability until ingrowth occurs. The amount of intact rim and therefore peripheral rim fit achieved by the implant along with the amount of coverage by host bone determines the overall stability and ingrowth potential. Using this system, violation of the medial wall would be classified as a Type IIC defect. Type IIC defects have less than 2 cm of superior migration of the hip center with a fully intact rim, >60% hostbone stock, intact columns, and full inherent stability of a trial implant.

Our preferred treatment for this type of defect is a hemispherical cementless cup with or without medial cancellous bone graft. Graft may be placed medially in order to reconstitute bone stock and fill contained defects. In the case of a primary total hip, autograft from the resected femoral head may be used and then impacted and shaped with an acetabular reamer in reverse. In revision settings, allograft is typically used. In either case, the graft is not structural and therefore not used to support the cup. Rim fit is used to support the cup and an intraoperative assessment of rim fit is obtained with trials. We routinely augment initial fixation of our cups in both primary and revision cases with screws.

Creation of a small inadvertent penetration of the medial wall during primary arthroplasty in a patient with normal bone does not routinely require bone graft. We would choose to use graft in cases where reconstitution of bone stock was deemed necessary. This could include revision surgery where defects encountered may be some combination of contained and uncontained. A large violation of the medial wall in a relatively young patient may result in lack of bone stock for future potential revision surgery. This may also be a situation in which bone grafting is warranted. Finally, cases of pre-existing protrusion, whether idiopathic or secondary to a known etiology, warrant special consideration.

Acetabular protrusion is a condition wherein the femoral head migrates medially and superiorly, violating Kohler's line. This migration of the head creates an oblong shape to the acetabulum with a medial wall that may be either thin and nonsupportive or violated primarily. Many different techniques for the reconstruction of this condition have been described. Our preference is to ignore the depth of the socket and ream the viable bone at the periphery of the acetabulum in order to achieve a rim fit. As in other cases, if adequate initial stability with at least 60% coverage of the cup by host bone can be achieved, an excellent change of ingrowth and long-term stability may be expected. We would then fill the medial depth of the oblong acetabulum with particulate graft in order to recreate a hemispherical shape and reconstitute bone stock. Regardless of the cause of medial wall violation, if adequate rim fit and implant coverage may not be obtained with a hemispherical porous cup along, then another method of reconstruction should be chosen.

## Bibliography

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