



CORR Insights

CORR Insights®: Can Radiographs Predict the Use of Modular Stems in Developmental Dysplasia of the Hip?

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Where Are We Now?

Predicting from plain radiographs when a patient's complex proximal femoral anatomy might benefit from a femoral prosthesis that differs from those used

This CORR Insights® is a commentary on the article "Can Radiographs Predict the Use of Modular Stems in Developmental Dysplasia of the Hip?" by Peters and colleagues available at: DOI: 10.1007/s11999-015-4458-8.

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in routine primary THA can be difficult. This occurs most commonly in patients with excessive anteversion and increased valgus neck-shaft angle. We have all been there, waiting in the operating room, unable to proceed to the next step in the operation, because the correct equipment is unavailable. Most, but certainly not all, of these delays are avoidable. Steve Jobs once stated, "My favorite things in life don't cost money. It is really clear that the most precious resource we all have is time" [1]. Complex primary and revision hip arthroplasty often require extensive preoperative planning. This planning takes valuable time, and our time is short; however, time spent preparing for surgery can save much more time—and more valuable time—in the operating room later. Things would be better still if we could

have a higher degree of confidence that the preoperative planning we perform will not allow for unpleasant surprises during surgery.

The paper by Peters et al. is the first to describe threshold angles from preoperative radiographs—including coronal neck-shaft angle, sagittal neck-shaft angle, and calculated femoral neck anteversion—that can help the surgeon determine preoperatively whether nonstandard femoral stems may be needed to successfully address complex proximal femoral geometry.

Where Do We Need To Go?

Peters and colleagues use crosstable radiographs to determine femoral anteversion. The use of computed tomography scans may provide more accurate measurements for proximal femoral anteversion. The authors did not record the proximal femoral anteversion at the time of the operation, as the senior surgeon chose to use modular stems when estimated femoral anteversion exceeded 25°. True intraoperative measurements of anteversion

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will provide a more accurate correlation with preoperative imaging studies.

Another question not addressed in the current study is whether these abnormal proximal femoral anatomies are best addressed with monoblock conical or modular femoral prostheses. While corrosion, implant fracture, and cost have all been cited as possible concerns with using modular stems these issues have not yet been identified as common clinical problems. Additionally, an advantage of using modular stems for these patients is the option to independently choose offset and anteversion, a flexibility not afforded by monoblock cone implants,

where offset decreases as anteversion is increased.

How Do We Get There?

While this study is a great first-step in better preparing the surgeon for patients with proximal femoral dysplasia, prospective studies are needed to definitively answer two valuable questions: (1) Which patients will require a standard, primary-type, monoblock stem versus a monoblock conical or modular stem? (2) Are these deformities best addressed with monoblock conical or modular stems?

The first question is best approached with a prospective evaluation, similar to the current study, but with the use of CT scan to measure proximal femoral anteversion and calculation of the proximal femoral anteversion intraoperatively. The second question can be answered with a randomized, prospective study that includes a detailed cost analysis.

Reference

1. Steve Jobs quotes. Available at: <http://www.brainyquote.com/quotes/quotes/s/stevejobs416904.html>. Accessed August 10, 2015.