



## A CLASSIFICATION SYSTEM FOR SHORT STEM UNCEMENTED THA

By:  
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### Introduction:

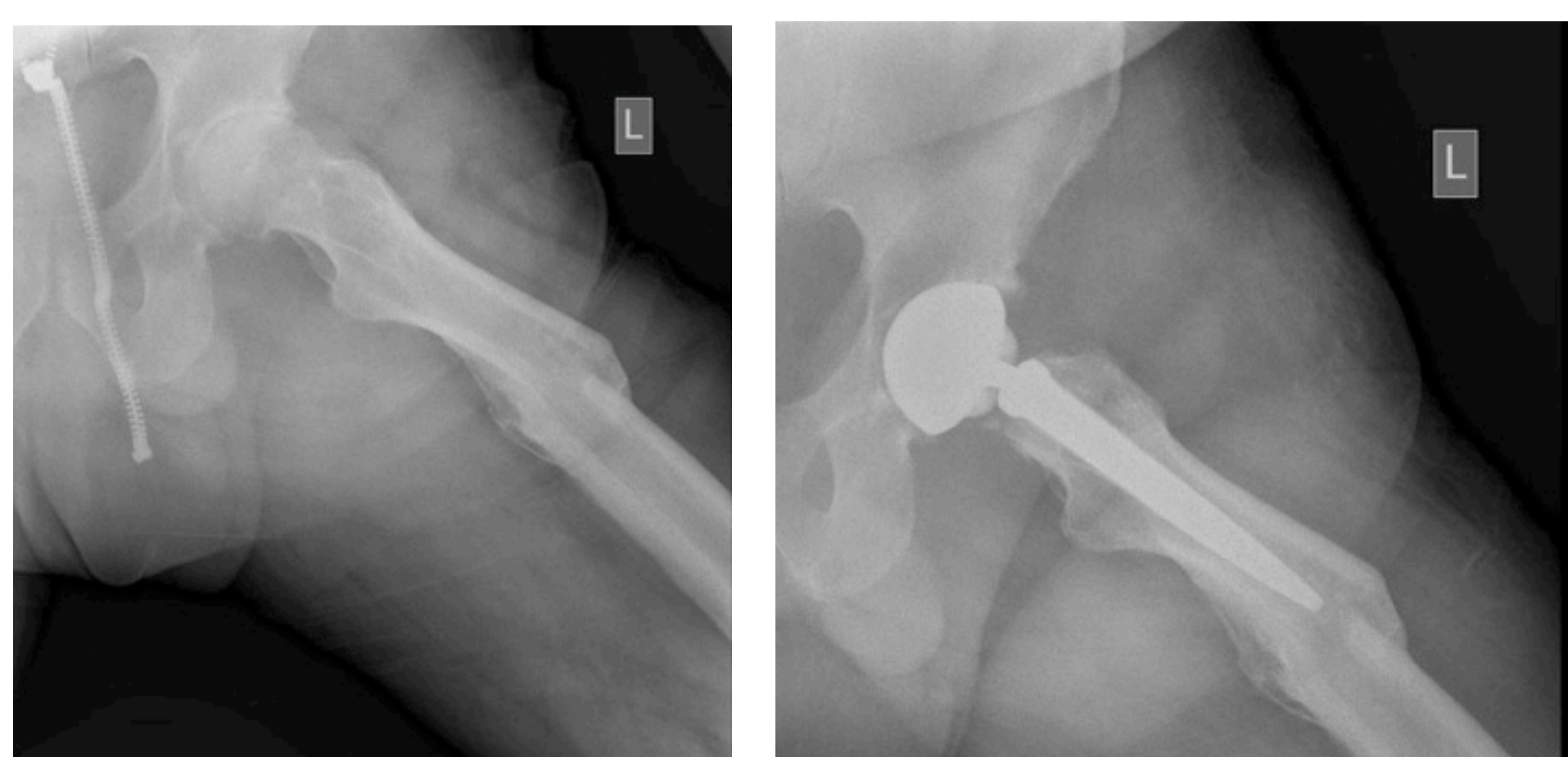
The use of short stems is growing. Initial short and mid-term follow up studies of a number of these stems suggest that stable, durable fixation and excellent clinical outcomes can be achieved. As a result, a very large number of short stem designs are available. However, there does not exist a classification system for uncemented short stem implants that would allow comparisons of clinical and radiographic results. The purpose of this presentation is to propose a classification system based upon the length of the stem and the method by which the stem seeks to achieve stability.

#### A variety of short stems available in the market

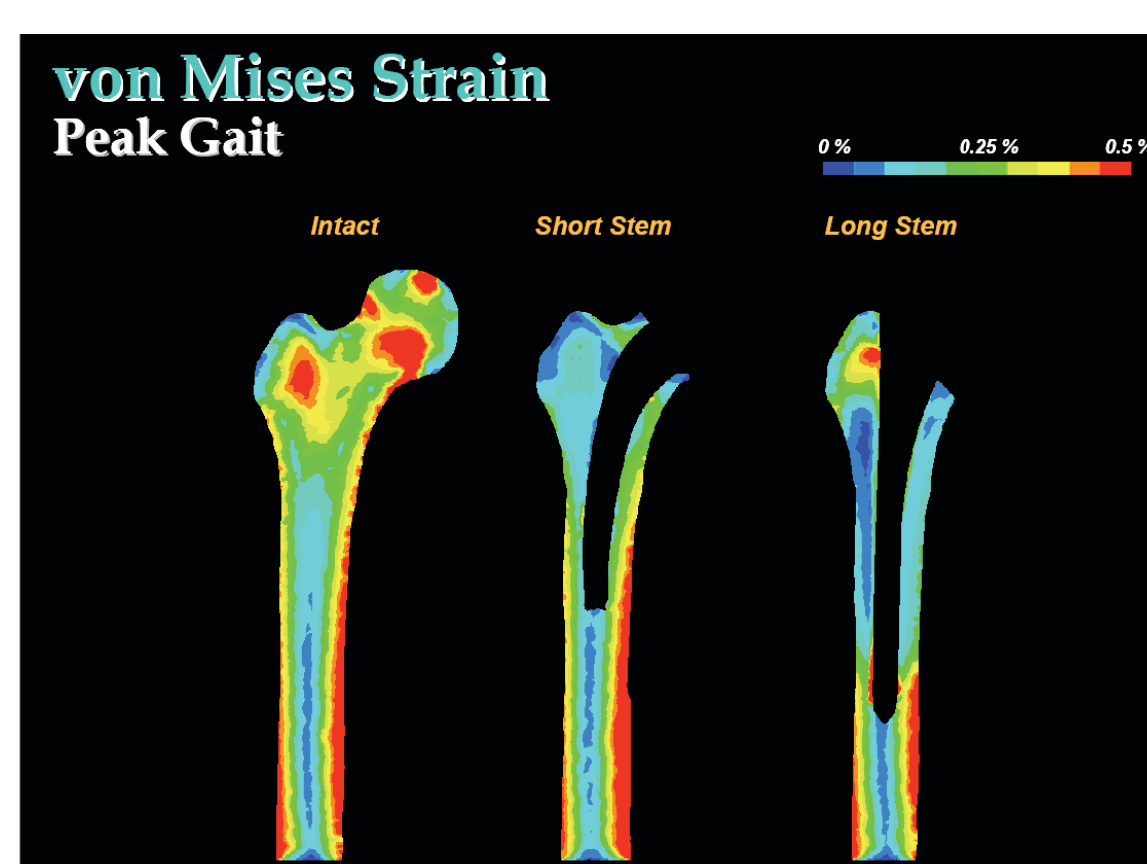


#### The suggested advantages of these stems are:

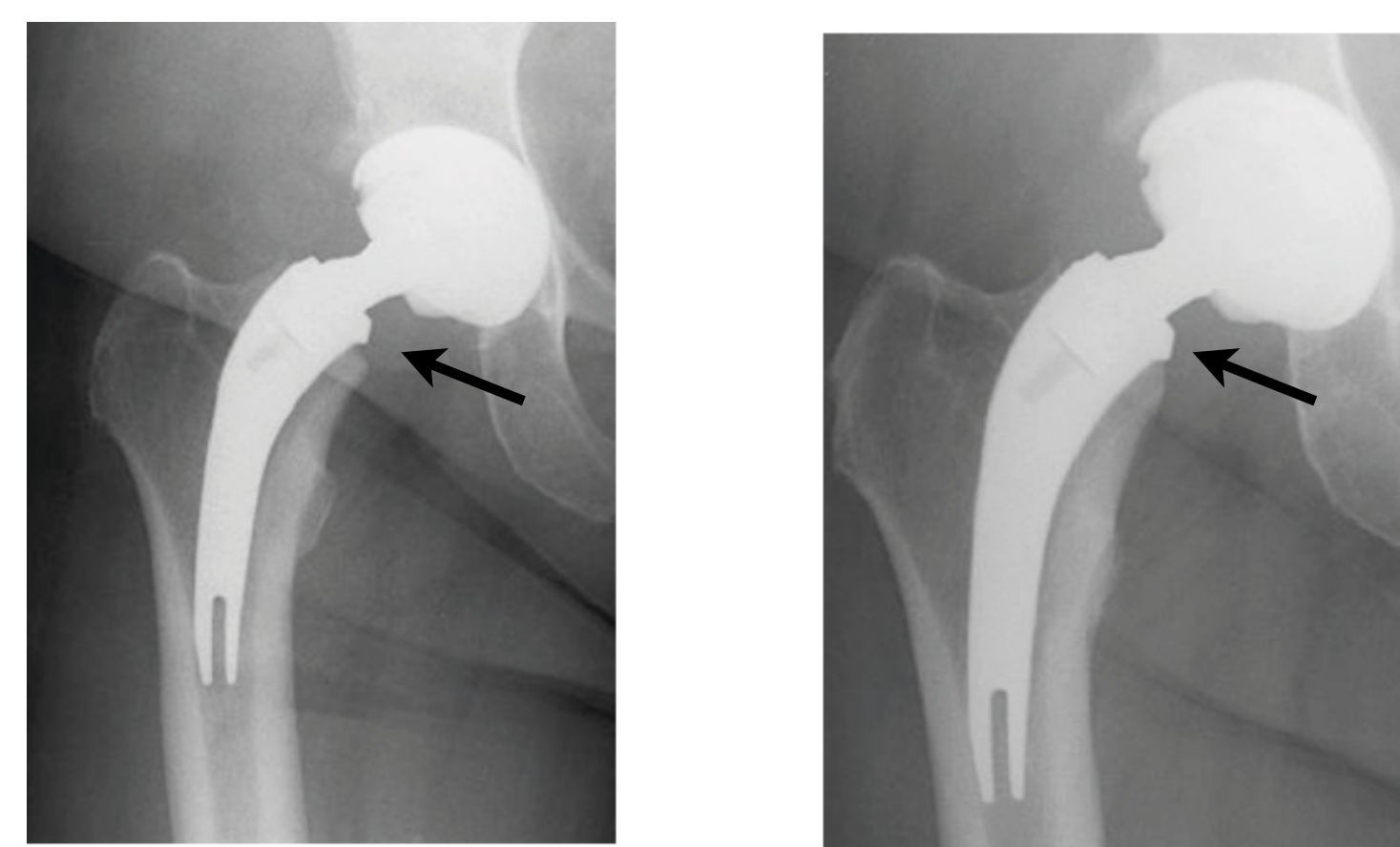
1. Elimination of femoral proximal-distal mis-match issues.



2. Improved positive proximal femoral remodeling;

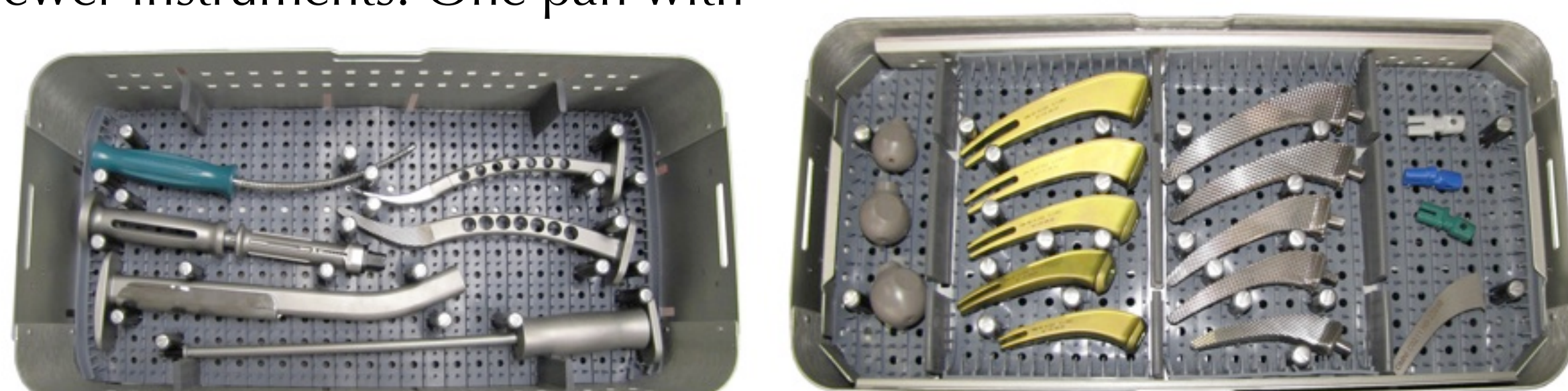


FEA Modeling clearly demonstrates certain style short stems have less stress shielding than certain conventional cementless stems.

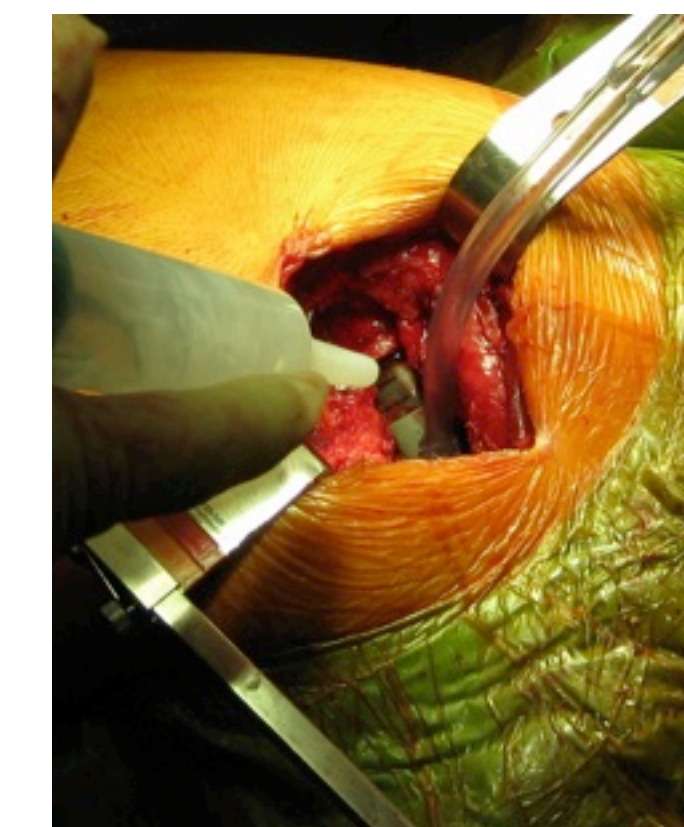


1 Yr. follow up demonstrates positive bone remodeling filling in calcar gap with this short curved proximal conical neck sparing stem.

3. Reduction in insertion instrumentation (newer short stem designs have fewer sizes resulting in fewer instruments. One pan with two trays.)



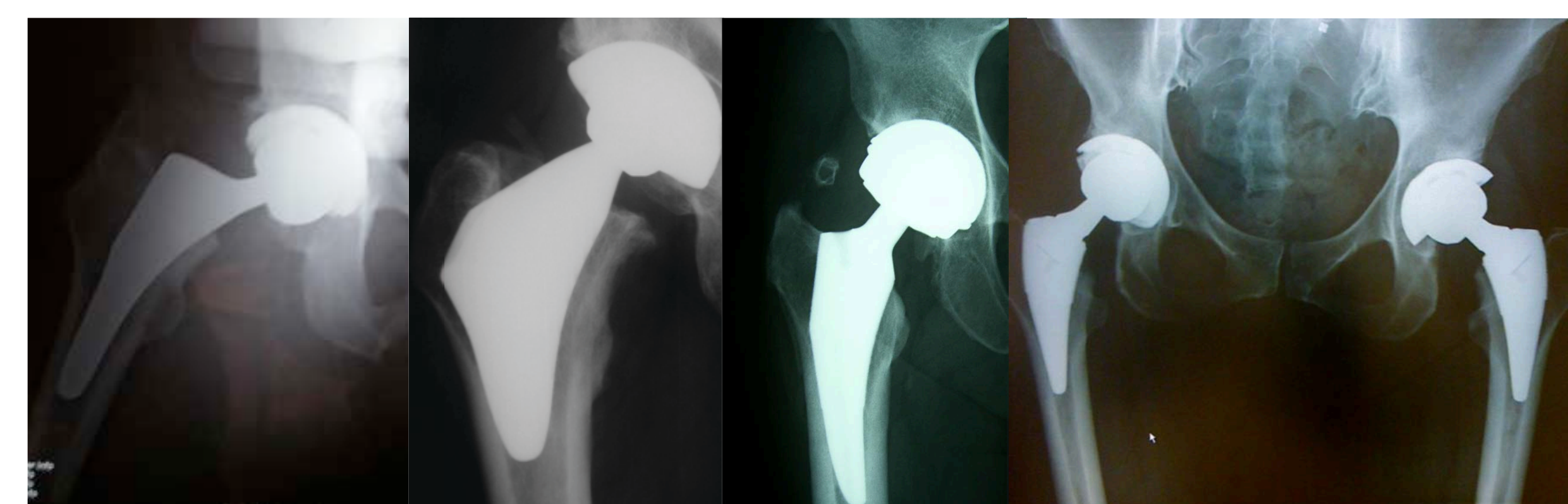
4. Facilitation of less invasive surgical exposures especially with short curved stems.



### Methods:

Femoral implants described as "short stems" were evaluated. The range of lengths for each stem type and the method of achieving initial implant stability was determined. The optimum radiographic position of each of these implants and the proposed type of bone remodeling associated with this placement in the proximal femur was evaluated. Results: The proposed classification system addresses both the stem length and method of achieving stability. Stems were defined as "short" if the tip reached or was proximal to the metaphyseal-diaphyseal junction. This location on the proximal femur was defined as the place at which the medial-lateral metaphyseal flare became parallel. **Stems were then classified as: 1) Metaphyseal Stabilized; 2) Neck-Sparing Stabilized; and 3) Head Stabilized.**

1. Metaphyseal Stabilized



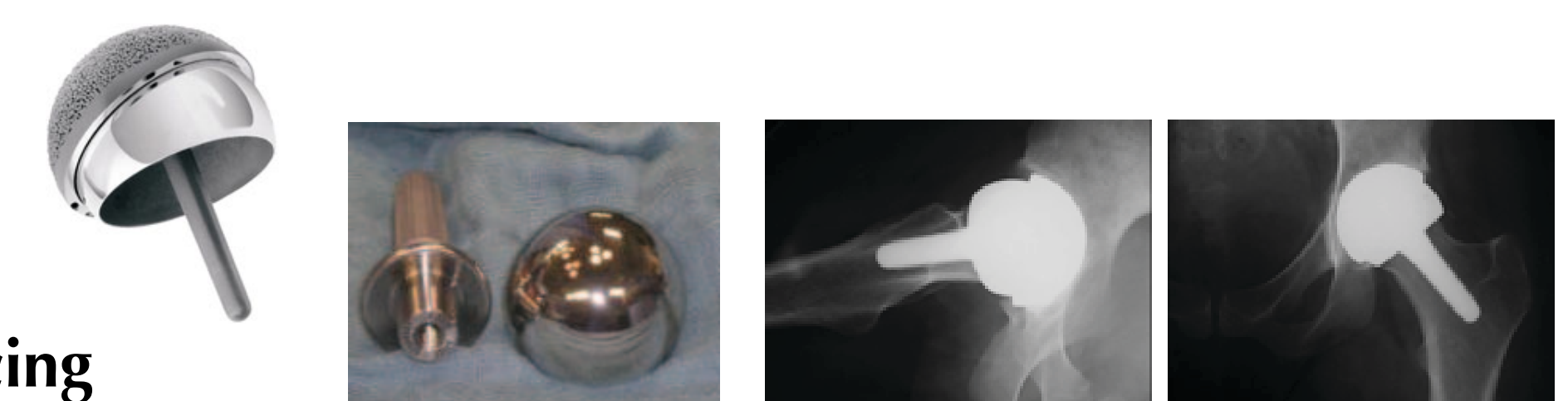
2. A.) Neck Stabilized (Plugs)



2. B.) Neck Stabilized Curved Stems



3. Head Stabilized A. Hip Resurfacing



- B. Mid Head Resurfacing

### Discussion:

A classification of short-stemmed femoral components has been developed that makes it possible to evaluate and differentiate the different styles short stems on the market. Not all short stems generate the same radiographic findings and or clinical results. It is also important to appreciate the specific design and appropriate surgical technique for a given design.

We believe there will be continued interest in this design approach in light of the recent MoM concerns with both HR and conventional stems.

Note: Not all short stems are created equal.



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