The Practical Limitations of Resurfacing Hip Arthroplasty

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Abstract: Resurfacing hip arthroplasty has recently experienced a resurgence in popularity, associated with an unprecedented amount of coverage in the media. This article assesses what proportion of a consecutive series of young adults presenting for total hip arthroplasty would have been suitable for resurfacing arthroplasty. Retrospective review of the preoperative radiographs was performed, with templating for the resurfacing prostheses. The hips were divided into those appropriate and those inappropriate for the procedure, and those in whom the procedure would be technically challenging. Sixty-one hips in 57 patients were reviewed, with ages ranging from 17 to 49 years. Twenty-eight hips were assessed as suitable, 26 as unsuitable, and 7 as technically challenging. Reasons for unsuitability included collapse and/or cystic degeneration of the femoral head. **Key words:** resurfacing, hip arthroplasty, young, AVN, DDH, templating.

Early attempts at metal-on-metal resurfacing were associated with an unacceptably high incidence of failure [1]. The importance of polar bearing in a metal couple had not been appreciated, and equatorial bearing led to high shear forces at the implant-bone interface. The acetabular component of metal-polyethylene resurfacing devices, such as the ICLH [2,3], the Tharies [4], and the Wagner [5,6], failed catastrophically because of inadequate polyethylene thickness, among other mechanical problems.

The incrimination of polyethylene particle–mediated osteolysis [4,7-10] resulted in a resurgence of interest in the metal-on-metal articulations. The importance of a polar bearing with an optimized equatorial design was recognized. McMinn et al [11] and Amstutz et al [12] have led the development of new metal-on-metal resurfacing devices and have improved the fixation interfaces. After problems with acetabular cementation [13], cementless fixation of the acetabular component and cementation of the femoral shell are currently favored.

The media have enthusiastically presented these new resurfacing arthroplasties as the panacea for the surgical treatment of arthritis, particularly in the younger patient who is keen to resume a fully active lifestyle [14,15]. This has resulted in the surgeon being exposed to considerable pressure from patients specifically requesting a resurfacing procedure. Only recently, however, has peered reviewed literature been published reporting the early results of these devices [16,17].

The objective of this article was to assess the proportion of young patients from a general population presenting for hip arthroplasty in whom resurfacing would be a practicable surgical option. The exponents of the resurfacing technique feel they can offer the procedure to 80% to 85% of their patients younger than 50 years (personal communication). This paper hypothesizes that

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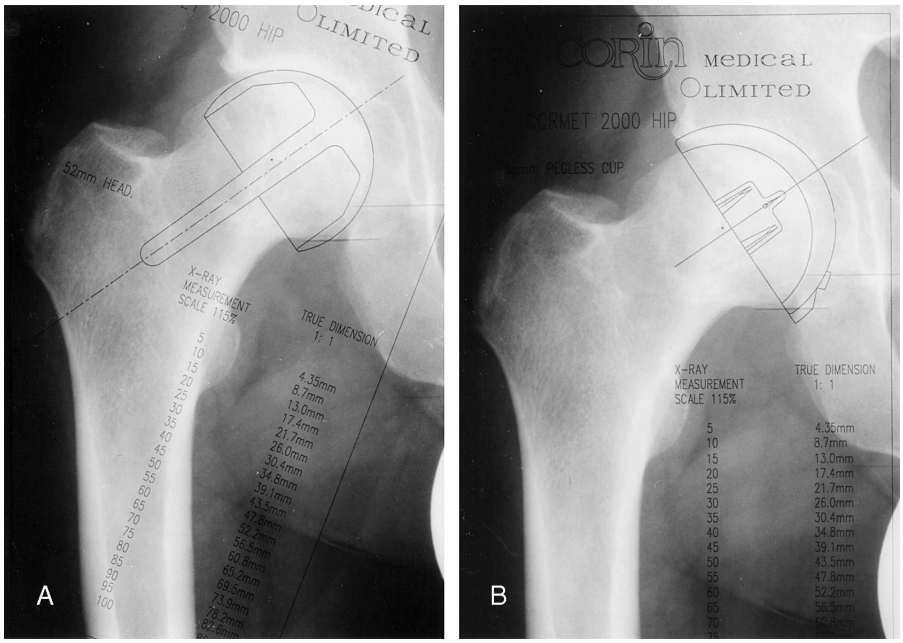

Fig. 1. A, B, Templating to assess suitability for resurfacing.

for a surgeon for whom resurfacing arthroplasty is merely 1 option in a surgical armamentarium, the indications for the procedure are likely to be more limited.

Materials and Methods

The hip arthroplasty practice of the senior author at a tertiary referral center was reviewed from 1995 to 1999. The records and radiographs of all consecutive patients younger than 50 years who had total hip arthroplasties were reviewed retrospectively.

Details regarding age at presentation, age at surgery, diagnosis, difficulties encountered at surgery, and implants used were recorded from the notes. Radiographs were assessed for center-edge angle and percentage subluxation of the femoral head. Templates provided by a resurfacing arthroplasty manufacturer were used to assess whether resurfacing was possible on morphological grounds and, if so, the likely size of components (Fig. 1)A and B.

Table 1.

Primary diagnosis	No. of cases
AVN	15
Perthes	2
DDH	17
OA	13
SUFE	5
Trauma	1
Rheumatoid arthritis	1

The radiographs were then reassessed by a second surgeon. The senior author arbitrated on any equivocal measurements or where there was disagreement between assessors.

In considering the patients suitability for resurfacing, 3 groups were identified. Those clearly suitable for resurfacing, those obviously unsuitable, and those who would present particular technical difficulties and would therefore be likely to have a higher incidence of complications and failure.

Results

Sixty-one hips in 57 patients were reviewed, with ages ranging from 17 to 49 years, mean 35.3 years.

Table 2. Unsuitability for Resurfacing

Reason	Frequency	Notes
Mechanical		
Primary deformity of head	4	Usually in DDH, too severe to be shaped
Collapse (head)	11	ie, AVN
Severe cystic degeneration	7	AVN or OA (confirmed at surgery or on MRI) (Fig. 2)
No functional femoral head	2	Nonunion of # neck (Fig. 3) or previous arthrodesis (Fig. 4)
Functional		
Severely anteverted neck	2	Would require rotational osteotomy to approximate head and cup