TABLE E-1 Description of Study Centers

			No. of Patients (No. of Hips That Dislocated)	
Hospital	Type of Hospital	No. of Surgeons	Primary	Revision
Australia				
Royal Adelaide	Teaching, tertiary referral	12	135 (5)*	33 (3)
St. Andrew's, Adelaide	Metropolitan	1†	28	1
Glenelg, Adelaide	Metropolitan	1†	5	0
Modbury, Adelaide	Teaching, metropolitan	1†	10	0
Whyalla, Whyalla	Non-metropolitan	1†	5	0
Royal North Shore, Sydney	Teaching, tertiary referral	2	58 (1)	0
St. John of God, Ballarat	Non-metropolitan	1	45 (1)	1
Ballarat Base, Ballarat	Teaching, non-metropolitan	1†	8	0
Geelong, Geelong	Teaching, non-metropolitan	2	15 (1)	0
Maroondah, Melbourne	Metropolitan	2	11	0
St. Vincent's, Melbourne	Teaching, tertiary referral	2	8	3 (1)
England				
Royal Bournemouth	Teaching, tertiary referral	1	124 (2)	43 (3)
Southampton General	Teaching, tertiary referral	2	79 (3)	0
Scotland				
Ninewells, Dundee	Teaching, tertiary referral	2	26 (1)	6
All 14 hospitals		26	557 (14)	87 (7)

*A different surgeon operated on each of the five patients. †Surgeon also in trial at other listed hospital.

TABLE E-2 Numbers of Patients Excluded Preoperatively According to Exclusion Criteria, by Type of Total Hip Arthroplasty

	No. of Patients Excluded*	
Exclusion Criterion	Primary Total Hip Arthroplasty	Revision Total Hip Arthroplasty
Too young (<60 years old for primary procedures†; <50 years old for revision procedures)	559	20
Simultaneous bilateral total hip arthroplasty	2	0
Contralateral hip already in trial	50	6
Previous infection in hip	11	7
Diagnosis other than osteoarthritis, rheumatoid arthritis, inflammatory arthritis, or previous fracture/dislocation/surgery involving the hip	13	NA
Revision for hip instability	NA	34
Revision for infection	NA	17
Second stage of 2-stage revision or previous excision arthroplasty	NA	15
Not revision of hemiarthroplasty or conventional total hip arthroplasty	NA	5
Planned prosthesis		
Not Trilogy/CPT	455‡	NA
Not Trilogy/CPT or ZMR	NA	50
Planned approach		
Not posterior	4	NA
Not posterior, transtrochanteric, or transfemoral	NA	0
Intention to return to sports involving running or contact sports	0	0
Abnormal acetabulum	29	NA
Abnormal abductor mechanism	4	8
Likely postoperative leg-length inequality of >5 cm	1	1
Neuromuscular disease affecting hip	15	1
Primary or metastatic tumor involving index hip	10	1
Unable to provide informed consent (insufficient ability to communicate in English language/cognitive disorder/psychiatric illness)	73	15
Unable to complete follow-up (life expectancy <2 years/unable to complete English-language questionnaires/unable to return easily)	27	17
Total	1253	197

*Patients were excluded in a hierarchical manner, with only the first listed relevant exclusion criterion being recorded. NA = not applicable. †All Australian surgeons excluded patients less than sixty-five years old, one surgeon from the UK excluded patients less than seventy years old, and the other surgeons from the UK excluded patients less than sixty years old. ‡In one collaborating center, elderly, less-active patients received a cemented cup for cost reasons.

TABLE E-3 Numbers of Patients Excluded Intraoperatively According to Exclusion Criteria, by Type of Total Hip Arthroplasty

	No. of Patients Excluded*	
Exclusion Criterion	Primary Total Hip Arthroplasty	Revision Total Hip Arthroplasty
Surgical approach		
Not posterior	2	NA
Not posterior, transtrochanteric, or transfemoral	NA	0
Infection involving joint	0	0
Abnormal acetabulum	8	NA
Abnormal abductor mechanism	4	5
CPT or ZMR stem not inserted	2	11
Acetabular component not Trilogy with an outer diameter of ≥50 mm and fixed with at least one screw	8	14
Trial 28-mm liner not in place or trial stem not reduced	NA	2
Standard 28-mm or offset 36-mm liner not appropriate, or plan to use a long-neck skirted head	1	0
28 and 36-mm heads and liners for inserted shell not in operating room	9	1
Total	34	33

*Patients were excluded in a hierarchical manner, with only the first listed relevant exclusion criterion being recorded. NA = not applicable.

Appendix E-1

Prior to randomization, patients undergoing primary arthroplasty were stratified by surgeon, age (sixty to seventy-four years; seventy-five years or more), and diagnosis (previous fracture, traumatic dislocation, or surgery involving the index hip, irrespective of diagnosis; osteoarthritis without previous fracture, traumatic dislocation, or surgery; rheumatoid arthritis or inflammatory arthritis without previous fracture, traumatic dislocation, or surgery). If a patient had a diagnosis of osteoarthritis without previous fracture, traumatic dislocation, or surgery and was under seventy-five years old, he or she was also stratified by Charnley grade (A or B; C) and, if the patient was classified as Charnley A or B, he or she was further stratified by sex, resulting in eight strata per surgeon. Allocation of randomization sequences, with an allocation ratio of 1:1, was undertaken in block sizes of two, four, six, or eight on the basis of the anticipated prevalence of patients in each stratum, with larger block sizes being used for initial allocations. All ninety-eight possible allocation sequences were listed numerically, and each specific sequence was then chosen with random-number generation in Excel, without repetition, with use of the RANDBETWEEN command to choose from the required block size (block of two, sequences one to two; block of four, sequences three to eight, etc.). Each surgeon's unique randomization protocol initially allowed for forty-eight patients over the eight strata, with further allocations added subsequently if required. Sealed envelopes containing a folded piece of cardboard with either a "36" or "28" sticker were prepared in accordance with each consecutive allocation of a 36 or 28-mm articulation, over consecutive strata. Each envelope was then assigned a number with use of RANUNI, an SAS software random-number function (SAS Institute, Cary, North Carolina) programmed to generate forty-eight random numbers without replacement. The local study coordinator was notified of the next envelope number in the appropriate stratum, and that envelope was taken to the operating room.

Patients undergoing revision arthroplasty were stratified first according to the type of stem (cemented [CPT; Zimmer, Warsaw, Indiana] or uncemented [ZMR; Zimmer]) and then by whether they were undergoing revision of a hemi-arthroplasty or, if undergoing revision of a total hip arthroplasty, the number of previous revisions (first revision, second revision, or third revision [or greater]), resulting in four strata in each of the two randomization protocols, one being for revision with a CPT stem and the other for a ZMR stem. The randomization process for revision arthroplasty was the same as that described above for primary arthroplasty, except that each patient was allocated an envelope number from both the CPT and ZMR protocols, given that the decision to use a cemented or uncemented stem is occasionally made intra-operatively.

The Study Epidemiologist (O.T.H.) was responsible for every aspect of stratification and randomization. Participating surgeons and local study coordinators, who were responsible for enrolling patients, were not aware of the stratification and randomization

protocols. Local coordinators were advised by email of the allocated envelope number for each patient and ensured that this envelope was available in the operating room at the time of surgery. Envelopes allocated to patients who were excluded intraoperatively were returned unopened, to be reused when appropriate.