

Table E-1: Study Characteristics

Author	Sample Size	Inclusion Criteria	Exclusion Criteria	Intervention	Outcomes
Rogmark* (2002)	409	Displaced femoral neck (Garden III/IV), age >70 years	Rheumatoid, confusion, bedridden, or nursing home	IF (hook pins, screws, n = 217), HA (Moore, Variokopf, n = 89), THA (n = 103)	Mortality, revision, complications, mobility, pain
Davison (2001)	280	Displaced femoral neck, age 65-79 years	Decreased mental status, Parkinson dis., pathologic fracture, malignancy, Paget dis., steroids	BHA (Monk, cemented, n = 97), HA (Thompson, cemented, n = 90), IF (Ambi comp. screw and plate, n = 93)	Mortality, revision, pain, function (Barthel), complications
Puolakka (2001)	32	Displaced femoral neck (Garden III/IV), age >75 years	Rheumatoid, dependent ambulator	IF (Ullevaal screws, n = 17), HA (Thompson, cemented, n = 15)	Mortality, revision, complications
Parker (2000)*	208	Displaced femoral neck, age >70 years	Rheumatoid, renal failure, delay >48 hr, unfit patient, pathologic fract., Paget dis.	HA (uncemented Moore, anterolateral, n = 106), IF (AO screws, n = 102)	Mortality, revision, pain (Charnley), function (Parker), complications
Ravikumar (2000)*	271	Garden III/IV, age >65 years	Rheumatoid, pathologic fract, old fracture	THA (cemented, Howse II, n = 89), HA (Moore, n = 91), IF (comp. screw and plate, n = 91)	Mortality, revision, pain (Sikorski), function (Harris), complications
van Dortmont (2000)*	60	Garden III/IV, age >70 years, senile dementia (DSM-III criteria)	Not suffering from senile dementia	HA (Thompson, anterior, n = 29), IF (AO screws, n = 31)	Mortality, revision, function, complications
Johansson (2000)*	100	Displaced femoral neck, ambulatory	Not fit for O.R., malignancy, rheumatoid	THA (cemented, posterior, n = 50), IF (Uppsala, Olmed screws, n = 50)	Mortality, revision, function (Harris), pain, complications
Tidermark (1999)*	39	Displaced femoral neck, age >70 years, independent, normal walking capacity	Severe cognitive deficit	THA (n = 22), IF (2 cannulated screws, n = 17)	Mortality, revision, function (SF-36), pain (VAS), complications
Neander* (1997)	20	Displaced femoral neck (Garden III/IV), age >65 years	Dependent, previous injury, no HRT	THA (Bimetric, cemented, n = 10), IF (Olmed screws, n = 10)	Mortality, bone density
Jonsson (1996)	47	Garden III/IV, independent	Nonambulatory	THA (Charnley, n = 23), IF (Hansson hook pin, n = 24)	Mortality, revision, function, complications
van Vugt (1993)	43	Garden III/IV, age 71-80 years, independent	Not specified	BHA (Stanmore variocup, n = 22), IF (comp. screw and plate, n = 21)	Mortality, revision, function (Sheperd), complications
Jensen (1984)	102	Displaced femoral neck, age >70 years	Pathologic fract.	HA (Moore, uncemented, n = 52), IF (AO screws, n = 50)	Mortality, revision
Sikorski (1981)	218	Garden III/IV, age >70 years	Surgeon belief toward particular treatment	HA (Thompson, n = 114), IF (screws, n = 76), irreducible (n = 28)	Mortality, revision, function, pain, complications
Soreide (1979)*	104	Garden II/III/IV	Pathologic fract.	BHA (Christiansen, n = 53), IF (von Bahr screws, n = 51)	Mortality, revision, function, pain, complications

HA = hemiarthroplasty, THA = total hip arthroplasty, BHA = bipolar hemiarthroplasty, IF = internal fixation, O.R. = operating room. *Information verified by direct communication with author.

Table E-2: Study Methodologies

Author	Eligibility Well Defined	Randomization Concealed	Blinding		Follow-up		Withdrawals/ Dropouts/Exc luded Pts	Intention to Treat Analysis	Quality %
			Patient	Outcome Assessor	%	Yrs			
Rogmark* (2002)	Yes	Envelope, Possible	?	No	100	2	?	Yes	80
Davison (2001)	Yes	? Yes	?	Yes	100	3	?	No	65
Puolakka (2001)	Yes	Envelope, Possible	?	No	100	2	?	No	60
Parker (2000)*	Yes	Envelope, Possible	No	No	100	3	Reported	Yes	80
Ravikumar (2000)*	Yes	Day of Week, No	No	No	93	13	Reported	No	60
van Dortmont (2000)*	Yes	Envelope, Possible	Yes	Yes	100	2	None	Yes	80
Johansson (2000)*	Yes	Envelope, Possible	No	No	90	2	Reported	No	75
Tidermark (1999)*	Yes	? No	No	No	100	1	Reported	No	60
Neander* (1997)	Yes	? No	No	No	100	2	None	No	55
Jonsson (1996)	Yes	Envelope, Possible	No	No	75	2	Reported	No	65
van Vugt (1993)	Yes	? ?	?	?	98	3	Reported	No	55
Jensen (1984)	Yes	Envelope, Possible	?	?	50	2	?	No	60
Sikorski (1981)	Yes	Card from Box, No	?	?	56	2	Not Reported	No	55
Soreide (1979)*	Yes	Date of Birth, No	?	?	64	2	Reported	No	65

*Information verified by direct communication with author.

Table E-3: Study Outcomes

Author	% Mortality		Revision Surgery		% Pain (none, minimal)	% Function (good)	Complications
	1 yr	>1 yr	%	Procedure			
Rogmark (2002)							
IF	12	21	48.8	THA, HA, EA	39	47	WI(0.5), HD(0), NU(28), AVN(12)
THA/HA	15	21	10.4	THA, ORIF	66	46	WI(0.5), HD(4.2)
Davison (2001)							
IF	8	19	30	THA	?	51	WI(1), HD(0)
HA	11	22	3.3	THA	98	52	WI(0), HD(1)
BHA	12	28	5.2	THA, EA	99	57	WI(1), HD(2)
Puolakka (2001)							
IF	?	47	44		?	?	ST(41), BL(54), NU(19), AVN(14)
HA	?	47	0		?	?	ST(65), BL(304)
Parker (2000)*							
IF	26	45	35	HA, THA	64	87	WI(0), NU(25), DVT(2), POC(7), BL(23mL), ST(22min)
HA	29	58	3.8	EA, THA	61	78	WI(5), HD(0), DVT(1), POC(11), BL(172mL), ST(47min)
Ravikumar (2000)							
IF	25	90	33	THA	52	74	WI(5.5), HD(0), NU(?), AVN(?)
HA	27	86	24	THA, EA	46	66	WI(7.4), HD(13)
THA	23	81	6.8		67	73	WI(3.3), HD(20)
van Dortmont (2000)							
IF	65	-	14.3	HA	?	20	WI(0), NU(4), BL(85mL), ST(60min)
HA	48	-	0		?	24	WI(17), BL(300mL), ST(80min)
Johansson (2000)*							
IF	30	36	38	THA, EA	NA	9.3	WI(2), HD(0), POC(40), NU(12)
THA	22	30	0		NA	27	WI(2), HD(22), POC(50)
Tidermark (1999)*							
IF	0	NA	32	THA	NA	73	WI(0), NU(27), AVN(5)
THA	6	NA	0		NA	75	WI(6), HD(0)
Neander (1997)							
IF	20	20	10	THA	NA	NA	WI(10)
THA	10	10	0		NA	NA	WI(0), HD(10)
Jonsson (1996)							
IF	0	0	29	THA	65	50	HD(0)
THA	4.3	4.3	4.3	THA	75	35	HD(4.3)
van Vugt (1993)							
IF	9.5	24	29	?	-	94	WI(4.8), NU(29), AVN(9.5), BL(200mL), ST(66)
BHA	23	27	23	THA	-	60	WI(14), HD(0), BL(400mL), ST(80)
Jensen (1984)							
IF	?	?	32	?	?	?	WI(0)
HA	?	?	0		?	?	WI(5.3)
Sikorski (1981)							
IF	35	36	32	?	72	73	WI(5), HD(0), AVN(18)
HA	31	33	4	?	93	76	WI(18), HD(18)
Soreide (1979)*							
IF	20	NA	18	HA	?	35	WI(4), HD(0), AVN(4), ST(38min), DVT(0)
BHA	21	NA	9.5	BHA	?	36	WI(6), HD(6), ST(86min), DVT(4)

*Information verified by direct communication with author, NA = not available/not collected, IF = internal fixation, HA = hemiarthroplasty, BHA = bipolar hemiarthroplasty, THA = total hip replacement, EA = excision arthroplasty, WI = wound infection, HD = hip dislocation, NU = nonunion, AVN = avascular necrosis, ST = surgical time, BL = blood loss, DVT = deep venous thrombosis, POC = postoperative confusion.

Table E-4: Sensitivity Analysis

Study Characteristic	No. Studies	Sample Size	Relative Risk*	95% Confidence Interval	P Value	Difference**
Mortality						
Quality Score > 70	4	777	0.88	0.85-1.51	0.38	P > 0.05
Quality Score < 70	10	990	1.49	0.91-2.41	0.11	
Cognitively Impaired	2	160	0.75	0.51-1.08	0.13	P > 0.05
Unimpaired Patients	12	1607	1.37	0.85-2.0	0.11	
Type of Arthroplasty						
Total Hip	5	386	1.20	0.81-1.79	0.36	P > 0.05
Bipolar	3	333	1.35	0.78-2.32	0.27	
Hemi	7	855	1.14	0.77-1.69	0.51	
Type of Internal Fixation						
Compression Screw and Plate	3	590	1.75	0.74-4.16	0.20	P < 0.05
Screws Only	7	617	0.86	0.68-1.10	0.21	
Revision Surgery						
Quality Score > 70	4	777	0.09	0.04-0.23	0.0001	P < 0.01
Quality Score < 70	10	1124	0.37	0.15-0.75	0.006	
Cognitively Impaired	2	160	0.05	0.01-0.40	0.004	P < 0.01
Unimpaired Patients	12	1741	0.36	0.16-0.62	0.002	
Type of Arthroplasty						
Total Hip	5	386	0.17	0.08-0.33	0.0001	P > 0.05
Bipolar	3	333	0.39	0.18-0.85	0.019	
Hemi	7	957	0.15	0.05-0.45	0.001	
Type of Internal Fixation						
Compression Screw and Plate	3	590	0.59	0.25-1.37	0.22	P < 0.01
Screws Only	7	751	0.11	0.06-0.18	< 0.0001	

*The relative risk of the outcome (i.e., mortality or revision surgery) with arthroplasty compared with that with internal fixation. Values of >1.0 favor internal fixation, and values of <1.0 favor arthroplasty. **p value for the difference between relative risks.