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TOTAL HIP ARTHROPLASTY VERSUS HEMIARTHROPLASTY FOR DISPLACED FEMORAL NECK FRACTURE. A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

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Appendix 1: Search Strategy

Databases to be searched:

- 1. Web of Science
- 2. Medline
- 3. Embase
- 4. Cochrane Central Register of Controlled Trials

Search Strategy:

- 1. Hip
- 2. Femoral neck
- 3. Proximal femur
- 4. Proximal femoral
- 5. 1 or 2 or 3 or 4
- 6. Fracture
- 7. 5 AND 6
- 8. Hip
- 9. Joint prosthesis
- 10. Prostheses
- 11. Implant
- 12. 9 OR 10 OR 11
- 13. 8 AND 12
- 14. Hip arthroplasty
- 15. Hemiarthroplast*
- 16. Hemi-arthroplast*
- 17. Bipolar
- 18. Unipolar
- 19. 13 OR 14 OR 15 OR 16 OR 17 OR 18
- 20. Random*
- 21. Clinical trial*
- 22. 20 OR 21
- 23. 7 AND 19 AND 22
- 24. Limit 10 to: Humans, English

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Appendix 2 - Overall Risk of Bias Across Studies

• • • • • • • • • • • • • • • • • • • •						
	Was the allocation sequence	Was the allocation	Blinding: was knowledge of the allocated	Was loss to follow-up	Are reports of the study free of	Was the study apparently free of other problems that
Study	adequately generated?	adequately concealed?	interventions adequately prevented?	infrequent?	selective outcome reporting?	could put it at risk of bias?
Baker	Y	PY	N	Υ	Omit	Υ
Blomfeldt	Y	PY	N	Υ	Omit	Y
Cadossi	Y	PY	N	PN	Omit	Υ
Chammout	Y	PY	Υ	Υ	Omit	Y
Dorr	N	N	N	Omit	Omit	Υ
HEALTH Investigataors	Υ	Y	Y	PY	Υ	Y
lorio	N	PN	N	PN	Omit	PN
Keating	PY	Y	PN	N	Omit	Y
Macaulay	Y	PY	N	N	Omit	Y
Mouzopoulos	N	N	PN	PN	Omit	Υ
Parker	PY	Y	PN	Υ	Omit	Υ
Ren	PN	PN	PN	Υ	Omit	PY
Sharma	PY	PN	N	Υ	Omit	PY
Skinner	N	N	N	PY	Omit	PN
Sonaje	PY	PY	N	γ	Omit	PN
van den Bekerom	Y	Y	N	Υ	Omit	γ

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Appendix 3 – Risk of Bias for Studies Reporting Revision Rates

Study	Was the allocation sequence adequately generated?	Was the allocation adequately concealed?	Blinding: was knowledge of the allocated interventions adequately prevented?	Was loss to follow-up infrequent?	Are reports of the study free of selective outcome reporting?	Was the study apparently free of other problems that could put it at risk of bias?
Baker	Υ	Y	Υ	Υ	Omit	Υ
Cadossi	Υ	Y	Υ	N	Omit	Υ
Chammout	Υ	Y	Υ	Υ	Omit	Υ
Dorr	N	N	Υ	Omit	Omit	Υ
HEALTH Investigators	Υ	Υ	Υ	Υ	Υ	Υ
Iorio	N	N	Υ	N	Omit	N
Keating	Υ	Υ	Υ	N	Omit	Υ
Macaulay	Υ	Y	Υ	N	Omit	Υ
Mouzopoulos	N	N	Υ	N	Omit	Υ
Parker	Υ	Υ	Υ	Υ	Omit	Υ
Skinner	N	N	Υ	Υ	Omit	N
Sonaje	Υ	Υ	Υ	Υ	Omit	N
van den Bekerom	Υ	Y	Υ	Υ	Omit	Υ

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Appendix 4 – Risk of Bias for Studies Reporting Functional Outcomes

Study	Was the allocation sequence adequately generated?	Was the allocation adequately concealed?	Blinding: was knowledge of the allocated interventions adequately prevented?	Was loss to follow-up infrequent?	Are reports of the study free of selective outcome reporting?	Was the study apparently free of other problems that could put it at risk of bias?
Blomfeldt	Υ	Υ	Υ	Υ	Omit	Υ
Chammout	Υ	Y	Υ	Y	Omit	Υ
HEALTH Investigators	Υ	Υ	Υ	Y	Υ	Υ
Keating	Υ	Y	N	N	Omit	Υ
Macaulay	Υ	Y	N	N	Omit	Υ
Mouzopoulos	N	N	N	N	Omit	Υ
Sonaje	Υ	Υ	N	Υ	Omit	N

 $Total\ Hip\ Arthroplasty\ Versus\ Hemiarthroplasty\ for\ Displaced\ Femoral\ Neck\ Fracture.\ A\ Systematic\ Review\ and\ Meta-Analysis\ of\ Randomized\ Controlled\ Trials$

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Appendix 5 – Risk of Bias for Studies Reporting Health-Related Quality of Life

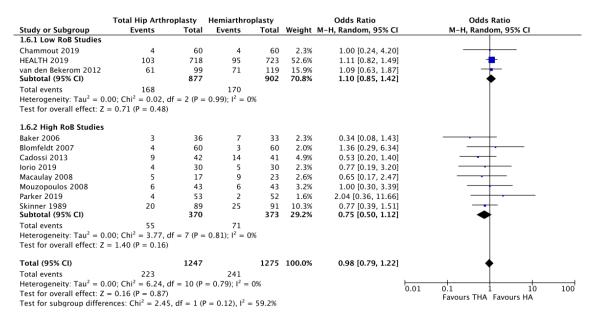
Study	Was the allocation sequence adequately generated?	Was the allocation adequately concealed?	Blinding: was knowledge of the allocated interventions adequately prevented?	Was loss to follow-up infrequent?	Are reports of the study free of selective outcome reporting?	Was the study apparently free of other problems that could put it at risk of bias?
Blomfeldt	Υ	Υ	Υ	Υ	Omit	Υ
Chammout	Υ	Υ	Υ	Υ	Omit	Υ
HEALTH Investigators	Υ	Υ	Υ	Υ	Υ	Υ
Keating	Υ	Υ	N	N	Omit	Υ
Macaulay	Υ	Υ	N	N	Omit	Υ
Mouzopoulos	N	N	N	N	Omit	Υ

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Appendix 6 - Forest plot of mortality

RoB: Risk of Bias, CI: Confidence Interval, THA: Total Hip Arthroplasty, HA: Hemiarthroplasty

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Appendix 7 – Risk of Bias for Studies Reporting Mortality

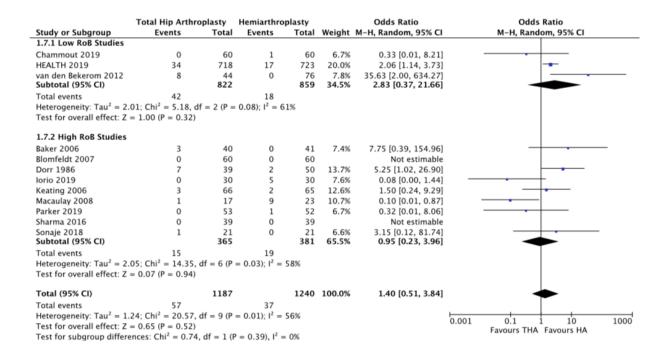
Study	Was the allocation sequence adequately generated?	Was the allocation adequately concealed?	Blinding: was knowledge of the allocated interventions adequately prevented?	Was loss to follow-up infrequent?	Are reports of the study free of selective outcome reporting?	Was the study apparently free of other problems that could put it at risk of bias?
Baker	Υ	Υ	Υ	Υ	Omit	Υ
Blomfeldt	Υ	Υ	Υ	Υ	Omit	Υ
Cadossi	Υ	Y	Υ	N	Omit	Υ
Chammout	Υ	Υ	Υ	Υ	Omit	Υ
HEALTH Investigators	Υ	Y	Υ	Υ	Υ	Υ
Iorio	N	N	Υ	N	Omit	N
Macaulay	Υ	Υ	Υ	N	Omit	Υ
Mouzopoulos	N	N	Υ	N	Omit	Υ
Parker	Υ	Y	Υ	Υ	Omit	Υ
Skinner	N	N	Υ	Υ	Omit	N
van den Bekerom	Υ	Υ	Υ	Υ	Omit	Υ

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Appendix 8 – Forest plot of dislocation

RoB: Risk of Bias; CI: Confidence Interval; THA: Total Hip Arthroplasty; HA: Hemiarthroplasty

TOTAL HIP ARTHROPLASTY VERSUS HEMIARTHROPLASTY FOR DISPLACED FEMORAL NECK FRACTURE. A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

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Appendix 9 – Risk of Bias for Studies Reporting Dislocation Rates

Study	Was the allocation sequence adequately generated?	Was the allocation adequately concealed?	Blinding: was knowledge of the allocated interventions adequately prevented?	Was loss to follow-up infrequent?	Are reports of the study free of selective outcome reporting?	Was the study apparently free of other problems that could put it at risk of bias?
Baker	Υ	Υ	Υ	Υ	Omit	Υ
Blomfeldt	Υ	Υ	Υ	Υ	Omit	Υ
Chammout	Υ	Υ	Υ	Υ	Omit	Υ
Dorr	N	N	Υ	Omit	Omit	Υ
HEALTH Investigators	Υ	Υ	Υ	Υ	Υ	Υ
Iorio	N	N	Υ	N	Omit	N
Keating	Υ	Υ	Υ	N	Omit	Υ
Macaulay	Υ	Υ	Υ	N	Omit	Υ
Parker	Υ	Υ	Υ	Υ	Omit	Υ
Sharma	Υ	N	Υ	Υ	Omit	Υ
Sonaje	Y	Υ	Υ	Y	Omit	N
van den Bekerom	Y	Υ	Υ	Υ	Omit	Υ

	Total Hip Arthr	oplasty	Hemiarthro	plasty		Odds Ratio		Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI		M-H, Random, 95% CI
Baker 2006	0	36	1	33	1.9%	0.30 [0.01, 7.54]		· -
Blomfeldt 2007	1	58	0	58	1.9%	3.05 [0.12, 76.48]		
Chammout 2019	0	60	0	60		Not estimable		
HEALTH 2019	38	718	35	723	90.8%	1.10 [0.69, 1.76]		-
Iorio 2019	0	30	0	30		Not estimable		Т
Parker 2019	2	53	1	52	3.4%	2.00 [0.18, 22.75]		
Sonaje 2018	1	21	0	21	1.9%	3.15 [0.12, 81.74]		
Total (95% CI)		976		977	100.0%	1.14 [0.73, 1.78]		•
Total events	42		37					Ī
Heterogeneity: Tau2 =	= 0.00; Chi ² = 1.6	3, df = 4	$(P = 0.80); I^{\circ}$	$^{2} = 0\%$			0.01	0.1 1 10 10
Test for overall effect							0.01	0.1 1 10 10 Favours THA Favours HA

Appendix 10 – Forest plot of Periprosthetic Fracture

CI: Confidence Interval; THA: Total Hip Arthroplasty; HA: Hemiarthroplasty

TOTAL HIP ARTHROPLASTY VERSUS HEMIARTHROPLASTY FOR DISPLACED FEMORAL NECK FRACTURE. A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

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Appendix 11 - Risk of Bias for Studies Reporting Periprosthetic Fracture

Study	Was the allocation sequence adequately generated?	Was the allocation adequately concealed?	Blinding: was knowledge of the allocated interventions adequately prevented?	Was loss to follow-up infrequent?	Are reports of the study free of selective outcome reporting?	Was the study apparently free of other problems that could put it at risk of bias?
Baker	Υ	Υ	Υ	Υ	Omit	Υ
Blomfeldt	Υ	Υ	Υ	Υ	Omit	Υ
Chammout	Υ	Υ	Υ	Υ	Omit	Υ
HEALTH Investigators	Υ	Υ	Υ	Υ	Υ	Υ
Iorio	N	N	Υ	N	Omit	N
Parker	Υ	Υ	Υ	Υ	Omit	Υ
Sonaje	Υ	Υ	Υ	Υ	Omit	N

	Tota	l Hip Arthropla:	sty	H	emiarthroplasty	,		Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% CI	I IV, Random, 95% CI
Chammout 2019	99	25	60	77	19	60	14.6%	22.00 [14.05, 29.95]]
lorio 2019	59	7.25	30	48	5.25	30	15.3%	11.00 [7.80, 14.20]] -
Keating 2006	79.7	21	69	58.5	26	69	14.6%	21.20 [13.31, 29.09]]
Macaulay 2008	89	36	17	82	35	23	10.6%	7.00 [-15.30, 29.30]]
Parker 2019	83.9	16.5785714	53	83.9	14.81571429	52	15.0%	0.00 [-6.01, 6.01]	1 +
Ren 2017	89.26	10.05	50	68.49	9.76	50	15.2%	20.77 [16.89, 24.65]] -
Sonaje 2018	119.1	16.75	21	51.8	8.7	21	14.6%	67.30 [59.23, 75.37]]
Total (95% CI)			300			305	100.0%	21.73 [8.70, 34.77]	1 •
Heterogeneity: Tau ² = Test for overall effect:			df = 6 (F	o.00	0001); I ² = 97%				-100 -50 0 50 100 Favours THA Favours HA

Appendix 12 – Forest plot of operative time

CI: Confidence Interval; THA: Total Hip Arthroplasty; HA: Hemiarthroplasty

TOTAL HIP ARTHROPLASTY VERSUS HEMIARTHROPLASTY FOR DISPLACED FEMORAL NECK FRACTURE. A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

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Appendix 13 – Risk of Bias for Studies Reporting Operative Time

Study	Was the allocation sequence adequately generated?	Was the allocation adequately concealed?	Blinding: was knowledge of the allocated interventions adequately prevented?	Was loss to follow-up infrequent?	Are reports of the study free of selective outcome reporting?	Was the study apparently free of other problems that could put it at risk of bias?
Blomfeldt	Υ	Υ	N	Υ	Omit	Υ
Chammout	Υ	Υ	Υ	Υ	Omit	Υ
Iorio	N	N	N	N	Omit	N
Keating	Υ	Υ	N	N	Omit	Υ
Macaulay	Υ	Υ	N	N	Omit	Υ
Parker	Υ	Υ	N	Υ	Omit	Υ
Ren	N	N	N	N	Omit	Y
Sonaje	Υ	Υ	N	Υ	Omit	N