

Appendix

Search strategy:

custom OR custom*

AND

stem OR stems

AND

"total hip arthroplasty" OR "total hip replacement" OR "total hip implants" OR THA OR THR

Table A1 (Appendix): Information on the design of custom stems

| Author, Year | Manufacturer | Fixation | Material | Coating | Morphology/geometry | Length | Extra information | Total |
|---|------------------------------------|------------|----------|-------------------------|--|---------------------|---|-------|
| Short-term follow-up (≤ 2 years) | | | | | | | | |
| Sandiford, 2010 | NA | uncemented | NA | NA | NA | NA | | 1/6 |
| Grant, 2005 | Scandinavian Customized Prostheses | uncemented | Titanium | HA (partial & proximal) | NA | NA | collarless | 4/6 |
| Bargar, 1989 | NA | uncemented | NA | NA | maximises metaphyseal fill | long | collarless | 3/6 |
| Mid-term follow-up (3–10 years) | | | | | | | | |
| Chow, 2015 | Biomet | uncemented | Titanium | HA (partial & proximal) | metaphyseal-engaging (stem diameter: 9–23) | short (70–105 mm) | | 6/6 |
| Al-Khateeb, 2014 | Stanmore Implants | uncemented | Titanium | HA | metaphyseal-engaging | NA | proximal collar and lateral flare; intertrochanteric portion with numerous macro- | 5/6 |
| Benum, 2010 | Scandinavian Customized Prostheses | uncemented | Titanium | HA (partial) | NA | medium-short | | 5/6 |
| Gotze, 2009 | Endopro | uncemented | NA | HA (partial & proximal) | straight, rectangular | long | collarless | 5/6 |
| Albanese, 2009 | Stanmore Orthopaedics & DePuy | uncemented | NA | HA (full) | NA | short & ultra-short | large lateral flare | 4/6 |
| Reize, 2007 | Endopro | uncemented | Titanium | NA | straight, rectangular | long | | 5/6 |
| Wettstein, 2005 | Symbios | uncemented | Titanium | HA (partial & proximal) | best fit and fill in the proximal metaphysis | 132 \pm 2.4 mm | | 6/6 |
| Aubaniac, 1995 | Symbios | uncemented | NA | HA | straight | NA | | 4/6 |
| Long-term follow-up (>10 years) | | | | | | | | |
| Jacquet, 2020 | Symbios | uncemented | Titanium | HA (full) | intramedullary proximal femoral fit | NA | | 5/6 |
| Flecher, 2018 | Symbios | uncemented | Titanium | HA (full) | intramedullary proximal femoral fit | NA | | 5/6 |
| Akbar, 2009 | Orthopedic Services | uncemented | Titanium | HA (partial & proximal) | NA | 140–160 mm | | 5/6 |

Abbreviations: NA, not available; HA, hydroxyapatite

Table A2 (Appendix): Additional clinical scores of the studies included in the systematic review

| Author, Year | Control/comparator | Final cohort | | FU (yrs) | OHS PREOP | | OHS POSTOP | | PMA PREOP | | PMA POSTOP | | UCLA PREOP | | UCLA POSTOP | | WOMAC PREOP | | WOMAC POSTOP | | HOOS POSTOP | | | | |
|---|---|--------------|------------------|----------------|-----------|----------|------------|----------|-----------|----------|------------|----------|------------|----------|-------------|----------|-------------|----------|--------------|----------|-------------|------|-----------|-----|-----|
| | | Hips | Patients | Mean | (Range) | Mean ±SD | (Range) | Mean ±SD | (Range) | Mean ±SD | (Range) | Mean ±SD | (Range) | Mean ±SD | (Range) | Mean ±SD | (Range) | Mean ±SD | (Range) | Mean ±SD | (Range) | Pain | Symp-toms | ADL | QOL |
| Short-term follow-up (≤2 years) | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sandiford, 2010 | Custom stem vs hip resurfacing | 134 | 2 | (0 -3) | 41 | (16 -75) | 15 | (12 -33) | | | 2 | | 9 | | | 51 | (3 -96) | 5 | (0 -39) | | | | | | |
| Grant, 2005 | Custom uncemented vs off-the-shelf cemented | 137 | 1 | (0 -3) | 37 | (13 -57) | 15 | (12 -35) | | | 3 | | 9 | | | 46 | (1 -94) | 6 | (0 -56) | | | | | | |
| Mid-term follow-up (3-10 years) | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chow, 2015 | Custom vs off-the-shelf | 69 | 61 ^a | 6 | (5 -7) | | | | | | | | | | | 51 | (13 -80) | 4 | (0 -35) | | | | | | |
| Al-Khateeb, 2014 | None | 148 | 139 ^a | 6 | (4 -8) | | | | | | | | | | | 48 | (2 -91) | 3 | (0 -27) | | | | | | |
| Benum, 2010 | None | 15 | 14 | 10 | (5 -15) | | | | | 10 | | 17 | | | | | | | | | | | | | |
| Gotze, 2009 | Custom vs off-the-shelf | 152 | | 7 | (3 -5) | | | | | | | | | | | | | | | | | | | | |
| Albanese, 2009 | Short custom vs ultra-short custom | | | 4 | (3 -5) | | | | | | | | | | | | | | | | | | | | |
| Reize, 2007 | None | 175 | | 6 | (4 -7) | | | | | | | | | | | | | | | | | | | | |
| Wettstein, 2005 | None | 62 | 57 | 8 | (6 -11) | | | | | | | | | | | | | | | | | | | | |
| Aubaniac, 1995 | Custom from CT (Symbios) vs custom from x-ray (Egoform) | | | 4 | | | | | | | | | | | | | | | | | | | | | |
| Bargar, 1989 | Custom primary vs custom revision vs off-the-shelf primary & revision | | | 3 ^b | | | | | | | | | | | | | | | | | | | | | |
| Long-term follow-up (>10 years) | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jacquet, 2020 | Young patients (<50 years) vs Severe DDH (Crowe III or IV) | 200 | 20 | 16 | (14 -27) | | | | | 8 | (0 -13) | 16 | (9 -18) | 5 | (2 -8) | 7 | (4 -10) | | | | | | | | |
| Flecher, 2018 | None | 26 | 23 ^a | 15 | (10 -22) | | | | | | | | | | | | | | | | | | | | |
| Akbar, 2009 | None | 70 | 59 | 14 | (10 -16) | | | | | | | | | | | | | | | | 82 | 78 | 64 | 57 | 47 |

Abbreviations: FU, follow-up; yrs, years; OHS, Oxford hip score; PMA, Postel Merle d'Aubigné; UCLA, University California Los Angeles; WOMAC, Western Ontario and McMaster Universities Osteoarthritis Index; HOOS, hip disability and osteoarthritis outcome score

^a Discrepancy in data between tables and text

^b Number of hips at this follow-up not specified