

Figure S1. Circle diagram of the relative percentage of outer coverage arc angle. The chord of cup in total hip arthroplasty passed close to center of circle and the chord of head in bipolar hemiarthroplasty run from 12 % to 28 % south.

Table S1. Implants used for hip arthroplasty

|  |  |  |  |
| --- | --- | --- | --- |
| Component | | Product Name | Number |
| Total hip arthroplasty | Acetabular cup | Continuum (Zimmer Biomet, Warsaw, Indiana, USA) | 13 |
| EP-FIT plus (Smith & Nephew, Andover, Massachusetts, USA), | 3 |
| G7 (Zimmer Biomet) | 2 |
| Trilogy (Zimmer Biomet, Warsaw, Indiana, USA) | 1 |
| Plasmacup (Aesculap, Tuttlingen, Germany) | 1 |
| Stem | Alloclassic (Zimmer Biomet) | 7 |
| M/L Taper (Zimmer Biomet) | 6 |
| SL-PLUS (Smith & Nephew) | 3 |
| ARCOS (Zimmer Biomet) | 2 |
| Bicontact (Aesculap) | 1 |
| TaperLoc Microplasty (Zimmer Biomet) | 1 |
| Bipolar hemiarthroplasty | Bipolar cup | Bencox Bipolar Cup (Corentec, Cheoan, Korea) | 8 |
| Multipolar Cup (Zimmer Biomet) | 4 |
| RINGLOC Cup (Zimmer Biomet) | 4 |
| Bipolar Prosthesis (Smith & Nephew) | 3 |
| Bipolar cup (Lima, Udine, Italy) | 1 |
| Stem | Bencox M stem (Corentec) | 3 |
| Taperloc (Zimmer Biomet) | 3 |
| Bencox II (Corentec) | 2 |
| MIA stem (Smith & Nephew) | 2 |
| Alloclassic (Zimmer Biomet) | 2 |
| MUTARS (Implantcast Ltd, Buxtehude, Germany) | 1 |
| Taperloc Microplasty (Zimmer Biomet) | 1 |
| Benﬁx Long (Corentec) | 1 |
| C2 (Lima) | 1 |
| Bencox ID stem (Corentec) | 1 |
| CLS (Zimmer Biomet) | 1 |
| M/L Taper (Zimmer Biomet) | 1 |
| SL-plus (Smith & Nephew) | 1 |

Table S2. Outer coverage arc angle of hip arthroplasty

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Type | Manufacturer | Brand | Cup size | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 64 | 66 | 68 | 70 | 72 | 74 | 76 | 78 | 80 |
| Bipolar cup | Depuy\* | Selfcentering Hip |  |  | 211 | 210 | 205 | 203 | 220 | 217 | 215 | 220 | 218 | 216 | 211 | 208 | 206 | 206 | 207 | 204 | 203 | 202 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Corentec | Bencox Bipolar Cup |  | 207.4 | 206.6 | 206.0 | 205.4 | 204.8 | 206.2 | 211.6 | 210.8 | 210.2 | 209.6 | 209.0 | 208.4 | 207.8 | 207.2 | 206.6 | 206.1 | 205.6 | 205.2 | 204.8 | 204.4 | 203.8 | 203.4 | 203.0 |  |  |  |  |  |  |  |  |  |  |  |
| Stryker\* | UHR Universal Head |  | 222 | 216 | 212 | 215 | 212 | 215 | 213 | 213 | 213 | 211 | 212 | 213 | 212 | 212 | 212 | 212 | 212 | 212 | 212 |  | 212 |  |  | 211 |  | 211 |  | 210 |  | 209 |  |  |  |  |
| Zimmer Biomet\* | Multipolar Cup |  | 220 | 218 | 223 | 220 | 219 | 218 | 230 | 227 | 222 | 226 | 223 | 222 | 227 | 218 | 219 | 219 | 217 | 217 | 217 | 216 | 216 |  | 215 |  | 214 |  |  |  |  |  |  |  |  |  |
| Acetabular cup | Depuy | Pinnacle |  |  |  |  |  |  |  |  |  |  |  | 180.0 |  | 180.0 |  | 180.0 |  | 180.0 |  | 180.0 |  | 180.0 |  | 180.0 |  | 180.0 | 180.0 | 180.0 |  |  |  |  |  |  |  |
| Duraloc |  |  |  |  |  |  |  |  |  |  |  | 165.2 |  | 165.8 |  | 166.4 |  | 166.9 |  | 167.4 |  | 167.8 |  | 168.2 |  | 168.6 | 169.0 | 169.3 |  |  |  |  |  |  |  |
| Corentec | Bencox |  |  |  |  |  |  |  |  |  | 190.2 |  | 183.4 |  | 180.9 |  | 185.8 |  | 180.9 |  | 180.8 |  | 180.8 |  | 180.8 |  | 180.8 | 180.7 | 180.7 | 180.7 |  |  |  |  |  |  |
| Hybrid |  |  |  |  |  |  |  |  |  | 190.2 |  | 183.4 |  | 180.9 |  | 185.8 |  | 180.9 |  | 180.9 |  | 180.8 |  | 180.8 |  | 180.8 | 180.7 | 180.7 | 180.7 | 180.7 | 180.6 | 180.6 |  |  |  |
| Mirabo |  |  |  |  |  |  |  |  |  | 186.6 |  | 181.5 |  | 181.4 |  | 186.6 |  | 180.8 |  | 179.2 |  | 178.4 |  | 178.4 |  | 178.4 | 178.6 | 178.6 | 178.6 | 178.6 | 178.8 | 178.8 |  |  |  |
| Zimmer Biomet\* | Continuum |  |  |  |  |  |  |  | 185 |  | 186 |  | 186 |  | 187 |  | 187 |  | 186 |  | 186 |  | 186 |  | 185 |  | 185 | 185 | 185 | 184 |  |  |  |  |  |  |
| Trilogy | 185 | 184 |  | 182 |  | 181 |  | 181 |  | 181 |  | 181 |  | 181 |  | 181 |  | 181 |  | 181 |  | 180 |  | 180 |  | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 |
| G7 |  |  |  |  |  | 186 |  | 184 |  | 185 |  | 185 |  | 184 |  | 184 |  | 185 |  | 185 |  | 183 |  | 184 |  | 184 | 183 | 183 | 183 |  |  |  |  |  |  |
| Stryker\* | Trident |  |  |  | 186.5 |  | 190 |  | 187 |  | 187 |  | 186 |  | 186 |  | 185 |  | 184 |  | 184 |  | 184 |  | 184 |  | 184 | 184 | 183 | 183 | 183 | 183 |  |  |  |  |
| Trident II |  |  |  |  |  | 180 |  | 180 |  | 180 |  | 180 |  | 180 |  | 180 |  | 180 |  | 180 |  | 180 |  | 180 |  | 180 | 180 | 180 | 180 | 180 | 180 |  |  |  |  |

\*: manually measured on the templates