HA-coated hip implants: a 10 year follow-up
(May ’87 - Dec ’98)

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Summary: We started using HA-coated hip prostheses on May 1997 and our personal experience reaches to date 2075 HA hips of which 1898 were primary hips. This study was based upon a consecutive series of 134 consecutive HA cases implanted from May ’87 until December ’88, at the Clinique Médico-Chirurgicale of Bruay-Labuissière, France. No patient was lost to follow up. 26 patients deceased and of the 104 remaining cases, 58 complete dossiers were available for addressing clinical and radiological scored results. Within the 58 over 10 year cases cohort, mean age was 56 years. Main aetiology was osteoarthritis in 81% and necrosis in 17%, 1 case was a revision one. Femoral component was HA Omnifit stem in all the cases, fitted with Arc 2f cup. No case of loosening nor any mechanical failure was observed within this over 10 yr of FU series, since 4 reoperations were related to 2 stiffnesses and 2 recurrent dislocations with neither retrieval of acetabular nor femoral component.

As regards radiographic findings, femoral lysis over 10 yr was none in 48%, limited to neck area in 28%, proximally extended in 24%, as no case of distal lysis was observed. 88% of cups had no lysis at 10 yr of FU. All our 58 “10 yr+” cases belonged to the “ingrowth confirmed” group. Mean values of HHS scores were preoperatively 33.34 ± 12.46 out of 100 pts preoperatively up to 97.6 pts at 10 year. Thus results were “excellent” in 86%, “good” in 9%, “fair” in 5%, and “poor” in 0%. Mean values according to Merle d’Aubigne score (MDA) were 7.98 ± 1.74 pts out of 18 preoperatively up to 16.90 pts at 10 yr, leading to 84% of “excellent”, 11% of “good”, 5% of “fair” and 0% of “poor” results.

When considering the cumulative survival analysis since 1987, the results at 10 year, based upon the 1922 primary cases reaches 0.9889 ± 0.0061 when considering all types of failures (Mechanical loosening + Clinical failure + Radiological failure). While considering a 10 year follow-up period as a major milestone in terms of hip results, the results of this series may look very encouraging and lead us to remain confident in bioactive coatings.

Key words: Hydroxyapatite — Total hip arthroplasty

We started using HA-coated hip prostheses on May 1997 and our personal experience reaches to date 2075 HA hips of which 1898 were primary hips. This study is based upon a consecutive series of 134 consecutive HA cases implanted from May ’87 until December ’88. Of this number:
- 30 cases were followed up upon phone interview: all of them remained satisfied with their prosthesis and the replacement fully met their expectation. However they were unable to make them available for a direct examination. None of these prostheses was retrieved. These cases were not included into the clinical assessment, but taken in account in cumulative survival curve.
- 26 patients deceased and the death was not related to the hip replacement.
- No patient was lost to follow up.
- 74 cases were clinically and radiologically reviewed at 10 year + and fitted with complete clinical assessment and X-rays. Nevertheless 16 cases did not meet the requirements for scoring assessment due to another major non hip related disabling problem. Thus 58 complete dossiers were finally available for addressing clinical results over 10 yr, which will be presented as compared to a 2 year group of 738 cases in order to evaluate any change in terms of radiological and clinical results according to a longer follow up.
Within this 58 over 10 year cases cohort, mean value for age was 56.2 ± 10.03 year, since at the beginning of our experience non cemented hip indications were strictly restricted to young patients. Male were 53.5%. Main aetiology was osteoarthritis in 81.03%, necrosis in 17.24%. Only 1 case was a revision case. 63.8% (Charnley A) had no other significant disabling problem while 12.7% were Charnley B and 24.1% Charnley C. No obesity was found in only 34% of cases, obesity was mild in 41.3%, moderate in 24.5% (mean BMI index value as 26.71 ± 4.66). Femoral component was HA Omnifit stem in all the cases. Acetabular component was mainly Arc 2f cup (Titanium plasma sprayed, as HA Arc 2f was available later on in 89) in 89.5%, Harris Galante HG1 porous coated cup in 4 cases (7%) and HA threaded 2014 cup in 2 cases (3.5%).

As regards complications, no periproperative complication was observed. Late complications were 5.2% (7/134 cases): 2 stiffnesses leading to reoperation (synovectomy – tenoarthrolysis) with final good result; 3 recurrent dislocations of which 2 underwent reoperation (no retrieval of the components) and finally 2 non related traumatic injuries. Thus no case of loosening nor any mechanical failure was observed within this over 10 yr of FU series, since our 4 reoperations were related to 2 stiffnesses and 2 recurrent dislocations with neither retrieval of acetabular nor femoral component.

Radiographic findings were mainly focused on femoral side. (1) Calcar remodelling was none in 62%, moderate in 31%, marked in 7%, no case of hypertrophy. (2) No femoral cortical hypertrophy was found in 40%; as 43% experienced a limited hypertrophy onto Gruen zone 5 and 16% a circumferential hypertrophy (zones 3,4,6 and 7); one hypertrophy onto zone 3 was observed. (3) Endosteal ossification was observed as moderate in 8.6% and marked in 91.4% of cases. (4) Femoral lysis over 10 yr was none in 48.3%, limited to neck area in 27.6%, proximally extended in 24.1%, as no case of distal lysis was observed. Cup lysis was observed in a few cases: limited to the upper zone (Charnley 1) in 12% and circumferential in 2 cases (3.5%), thus 84.5% of cups had no lysis at 10 yr of FU. Considering the ARA radiographic scoring system, mean values at 10 year were 4.64 ± 1.45 pts out of a total of 6 pts on acetabulum, and 3.47 ± 1.43 pts/6 on femoral side. Engh mean scores were as follows: 10 yr fixation as 7.93 ± 2.79 pts (2 yr: 6.66 pts); 10 yr stability score at 11.44 ± 3.16 pts (2 yr: 10.44 pts); total 10 yr score at 19.37 ± 4.32 pts (2 yr: 17.10 pts). All our 58 “10 yr+” cases belonged to the “ingrowth confirmed” group (2 yr: 94.4% of “ingrowth confirmed” and 5.6% of “ingrowth suspected”).

As regards Harris Hip Score (HHS), pain score was preoperatively 5.17 ± 8.76 pts out of 44 pts, up to 44 ± 0 pt at 10 year (2 year group: 4.2 preoperatively up to 43.4 postoperatively); in particular, no patient in this long term follow-up group experienced any thigh pain. Mean values of HHS scores were preoperatively 34.33 ± 13.47 out of 100 pts preoperatively up to 97.6 ± 1.43 pts (54-100) at 10 year (2 year group: 34.42 preoperatively up to 97.39 postoperatively). So clinical evaluations in 100% of patients were “poor” and “fair” preoperatively; while at 10 year 85.66% were “excellent”, 9.34% as “good”, 5% “fair”, 0 “poor” (As to be compared to the 2 year group results: 71.99% excellent; 24.75% good; 2.55% fair and 0.71% poor). Mean values according to Merle d’Aubigne score (MDA) were 7.98 ± 1.74 pts out of 18 preoperatively up to 16.90 ± 0.44 (16-18) pts at 10 yr, leading to 84.21% scored as “excellent”, 11.17% “good”, 4.62% “fair”, and 0% “poor” result.