

1.4 Long-term Experience with the GSP and Anca Fit System

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From October 1993 up to 31st December 1998 our department performed 1097 hip implants.

Out of these 49% (535) concerned hybrid prostheses, 44% (483) uncemented prostheses and 7% (79) revision prostheses.

For uncemented arthroprostheses we used GSP stems assembled with ANCA monobloc threaded ceramic cups with titanium threaded ring until the beginning of 1996, when we switched to the press-fit cup (Anca-fit) with inlay in Al_2O_3 and Anca fit stem derived from the GSP stem.

As for the revision prostheses we used the prostheses called Profemur.

Both GSP and Anca fit prostheses use the Biolox forte ceramic-ceramic coupling.

For the Profemur we used both press-fit cups with ceramic inlays and, in case of serious bone reabsorption, cups fixed by means of screws and with polyethylene inlays.

The prosthesis we use in our department has the advantage of being composed of a stem and a cup as close as possible to the anatomic reality of each patient.

To meet with this exigency we use modular prostheses.

The first expression of modularity in prosthetic stems was the introduction of modular heads with the possibility of using three different lengths of neck.

Afterwards Cremascoli enhanced its range of products (for both first implants and revisions) by adding to it necks of various lengths and angles.

This thanks to the introduction of the neck-stem assembly by means of an elliptical Morse cone, which grants a stronger resistance to the rotatory forces than the trunk-conical Morse cone.

This allowed us to start the systematic search of the most suitable rotation centre for each patient.

Another advantage of the modular neck is the possibility of removing it by means of the appropriate instruments set in case of cup revision thus

allowing an excellent visibility of the acetabulum.

As for cups the exigency of modularity is certainly less important even though, in case of revision, the availability of hooks, rings or fins has resulted to be useful especially when bone graft is required.

In the first implants we used, as previously said, the ceramic-ceramic coupling, because all studies show that the use of polyethylene causes debridging, responsible for the osteolysis which leads to the loosening of the implant.

Also the metal-metal coupling has led to an even larger debris release and shown a lower biocompatibility than the ceramic-ceramic which is therefore, in our opinion, the most advantageous coupling.

The ceramics used in these couplings is alumina (alumina oxide, Al_2O_3).

This material, besides the excellent biocompatibility, the absence of toxicity and mutagenicity, does not present any degradation.

Thanks to its surface it has a very low friction and is resistant to wear and rigid.

On the other hand the disadvantages of such coupling are implied in the characteristics of ceramics.

The criticisms initially raised against the ceramic-ceramic coupling were based upon the conviction that the rigidity in load transmission, the possibility of an incorrect positioning of the acetabulum or stem led to the possibility of a serious wear of ceramics with consequent failure of the implant.

Such disadvantage was clear in the implants where the alumina cup was cemented. The rigid load transmission entailed the break of the cement and consequently an anomalous ceramic-ceramic contact due to the cup instability.

The present assembly of ceramics in titanium metal-back and the use of press fit avoids this complication. When we used threaded cups where an important primary stability had to be

found through the reaming of the acetabulum, we had to retain as much subcondral bone as possible.

Presently with press fit cups the stabilisation is no longer so important as the bone ingrowth must be reached in a short time. When implanting these cups, therefore, a particular care must be paid to expose as much bleeding cancellous bone as possible in order to get the osteointegration in a short time.

The implant of a press fit cup in a sclerotic and not bleeding bone will easily lead to an absence of bone ingrowth and a successive instability of the cup.

Another precaution we use during our ceramic-ceramic implant is that of avoiding the use of fixation screws in the cups.

Moreover the press fit uncemented cups reduce positioning mistakes as it is possible to correct the inclination of the cup during the implant phase (which was impossible with threaded cups).

Results

325 were recontrolled with a minimum follow up of 24 months (max 63 months), by carrying out outpatient, clinical and x-rays controls at 3rd, 6th, 12th month and afterwards every year.

Our surgical technique envisages a lateral transgluteal approach according to Bauer which allows a rapid access to the joint and an excellent visibility.

All the patients did not load the limb operated on for about 25 days after the surgery.

The functional clinical evaluation according to Harris showed good or excellent results with average values higher than 80 points, also considering the young age of the patients treated; also from the x-rays point of view the results were encouraging (though the survey and follow up were short). We have evaluated the correct orientation of the cup and stem, their possible mobilization, the possible presence of periprosthetic calcification.

In all the cases the orientation of the cup resulted to be satisfactory, there were no cases of prosthetic luxation, neither lines of radioshine nor osteolytic areas were found in the stem and cup area, on the contrary both resulted to be perfectly osteointegrated.

Pitfalls

The only problem which rose with the ceramic-ceramic coupling was the break of the ceramic inlay of a cup in a young patient (46 years) suffering from coxarthrosis in hip dysplasia. The incorrect positioning of the inlay in the metal-back caused an inaccurate alignment of the former and after few days of loading of the limb caused the break of the inlay.

The inlay was easily replaced.

Amongst our failures there were also two precious infections of the implant. They were treated with specific antibiotic therapy and successively the implants were performed again.

At the beginning of our survey we had some problems due to the rigidity of the implant caused by the formation of several periarticular calcifications. The problem was solved through the administration of Indometacina 100mg suppositories for 8 days starting from the day of the surgery. In the cases regarded as riskier we used with excellent results a pre-operative cobalt therapy session (one hour before the surgery).

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