

Dr. Bose and Dr. De Smet's response regarding their opinion on the subject of Dr. Gross' paper on Uncemented.

Dr. De Smet's response

DEAR VICKY,

The loosening I see from resurfacing, you have to wait for at least 3 years before you are practically sure there is no problem.

So 1 year follow up for me is not enough to implant it in all my patients!!

Greetz

KOEN

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Dr. Bose response

Hi Vicky,

Thanks for sending the paper by Dr. Gross.

I agree with every word that Dr. Gross has said apart from the fact that his 'guess' that cement will be the cause of failure in resurfacings after 10 yrs. This particular statement is only a guess and may prove not to be true. Derek McMinn has many cases which have crossed 10 yrs and there are no cement related problems are new failure modes identified. Dr. Gross has also been slightly biased against cement

Although American surgeons have taken to porous layer uncemented methods of fixation in THR in a whopping majority of cases, cement is not such a bad thing in orthopaedics. Long standing Scandinavian hip registries do show superior or equal results with cemented fixation in THR as uncemented fixation. They do recommend cemented fixation of the stem and a majority of THR in these countries are cemented till date. The U.S does not have a joint replacement registry and thus the true performance of these implants is difficult to gauge. As a hip surgeon, I can say confidently, without a shadow of doubt, backed by joint registry data and peer reviewed published data, that one can achieve an equal result with a cemented THR as with an uncemented. However I do uncemented most of the time because it is much easier to use.

Dr. Gross has very correctly pointed out that of all the situations in arthroplasty, the captive resurfacing component is the best use of cement and exploitation of the best qualities of cement. By using a non-cemented femoral resurfacing, are we trying to address a problem that does not exist and in the process throw more unknown variables into the equation.?

Uncemented knees came along a decade or more ago, was found to be promising then lost its lustre. 90 - 95% of surgeons have gone back to cemented TKR.

There is still a dedicated group of surgeons who continue using uncemented TKR more work is presently being done on this. I predict the same for hip resurfacing as well.

I agree completely with Dr. Gross that all companies will manufacture uncemented resurfacings but all surgeons will not switch to this overnight. Personally, I would wait for uncemented fixation to be proven to work as well as cemented fixation in resurfacing before jumping on the bandwagon. In my experience of over 1200 cases, if uncemented fixation is proven, I probably would go uncemented for about 10% of resurfacing cases. This is due to bone quality issues.

It is also important to remember that science will never be static and will always be evolving . I am sure that the use of tantalum ( fiber - metal) in resurfacing will also be tried in future and it would be very interesting. I congratulate Dr. Gross on the excellent document that he has produced.

with best regards  
vijay bose  
Chennai, India

Questions from patients (**Message #141306, Message #141308 & Message #141364**) regarding paper on Uncemented, followed by Dr. Gross' answers:

Here are Dr. Gross' answers. Have a good day! Lee

- 1) Question: Why does he think that cemented femoral components will start to fail in large numbers at the ten-year mark? Does he believe the cement will crack and fail from repetitive impact loads?

**Dr. Gross: Yes, I believe cement will eventually prove to be the weak link by the mechanism of fatigue failure.**

- 2) Question: What is his interpretation of the fact that the survival rate of hybrid BHRs at 9 years or so seems to be totally unrelated to the activity level of the individual? (Intuitively, I would think that the people who have been running marathons on a BHR for ten years, with no femoral cap failures, would have put more stress on the cement in their implants than the average BHR recipient would experience in 30 years.) Does Dr. Gross believe that cement breaks down simply with time, not with impact-loading?

**Dr. Gross: I know of no study that has correlated failures with activity level. I do not believe time itself is a problem.**

- 3) On page 7 of the pdf release, Dr. Gross writes "I believe it will take at least two years of XR follow-up before I can be certain that the femoral component has achieved bone ingrowth in any one particular patient."

Question: Do you know if this means 2 MORE years of study on the patients that have already had this prosthesis for 1.5 years? Or 2 years in total on any patient, meaning another 6 months for the patients at the 1.5 year mark?

**Dr. Gross: 2 years total from time of implantation for each individual patient.**

- 4) Question: Early in the PDF, Dr. Gross discusses some of the history of THR along with HR. He mentions that a porous stem of a THR was already proving to be successful. If that is the case, why studies/trials not being done on HR prosthesis, where the stem implanted into the femoral head and neck is porous? Just the underside of cap is made to be porous, but not stem. Any insight?

**Dr. Gross: Most surgeons, including myself, do not feel we should be trying to gain fixation of the resurfacing stem. This would result in stress shielding of the proximal bone. Whether you**

cement or get fixation with bone ingrowth, the fixation should be to the undersurface of the component only, to optimize proper loading of the remaining femoral head.

Question: 5) Correct me if I am wrong, but there is some degree of angle calculation that requires the prosthesis to be installed with almost zero angular deviation. I understand that this is what prevent neck fracture to occur after few years of use.

Considering that a successful resurfacing depends on how well the prosthesis is geometrically installed, if the small stem was not firmly cemented into the top of the thighbone, then can the process of testing the movements of the leg during surgery affect the correct angle of the prosthesis? Isn't it true that cemented prostheses provide the surgeon greater flexibility to adjust the position of the femoral head in relation to the acetabular component? Have x-rays of recent successful cases revealed deviations of the prosthesis' angular position?

Dr. Gross' reply: 1) Position of the femoral stem should be neutral or slight valgus in most patients. We have some evidence that stem position affects the early femoral neck fracture rate slightly. But fractures almost never occur after 6 months (never in my experience n= 1500). There is no evidence to suggest what stem position is best to avoid long term failure. We assume slight valgus is best.

2) When an uncemented femoral prosthesis is impacted onto the femur in surgery it is wedged on so tight that you would risk breaking the neck if you tried to remove it. It is similar to cement, you can't change the position once you have attached it to the femur. There is no risk of displacing it during intraoperative testing. This has never occurred in any of my cemented or uncemented cases that I have ever done. Actually, if intraoperative testing is done to check the femoral component, it is done with the trial implant in place, prior to fixing the actual implant. (cement or porous)

3) There are five directions which must be considered when aligning the femoral component. (varus/valgus, anteversion/ retroversion, anterior/posterior translation, superior/inferior translation, axial translation along the path of the stem) All of them except the last must be accomplished when the thin initial wire is placed into the top of the femur. If a surgeon is not confident in his position usually, he could take an XR at this point. Once the surgeon is confident of his/her position, a larger hole is drilled matching the size of the stem. A large stable rod is then placed in this hole to allow accurate cutting of the femoral head surface. Only the translational position can be changed once the large hole is drilled. A final decision about the translational position is made after placing the trial implant and putting the hip back in joint. This is no different for cement or uncemented.

There is no difference in the surgeons' ability to adjust his/her component position, if he/she chooses cement or porous ingrowth as the method of fixation. Fixing the actual implant to bone is the very last step after all final cuts have been made. At this final stage the surgeon could theoretically still change his/her mind about the chosen method of fixation.

4) If the stem position changes postop, the femoral neck has fractured or the implant is loose. Both of these would be unsuccessful cases. I have had 3 femoral neck fractures (3/320= 1%). There have been no others with any changes in stem position. There are no loose cases so far; but it is too early to make a judgment on the rate of bone ingrowth or loosening.

