SUMMARY AND CONCLUSIONS

- Total hip arthroplasty is an operation designed to decrease pain and increase function; No implant design can overcome inadequate surgical technique.

- Joint replacement may provide a dramatic improvement in the quality of life of patients with end-stage arthritis of the hip. However, those who are young and active still pose a formidable problem, as conventional hip arthroplasty does not provide a lasting solution to their needs

- A major concern in total hip arthroplasty is the generation of polyethylene wears particles at the articulating surfaces; High volumetric wear of polyethylene plays a central role in peri-prosthetic bone resorption and the failure of metal on polyethylene total hip prostheses.

- In chronological order, the factors limiting the function and longevity of a total hip prosthesis are the surgical technique, fixation of the implant to the bone and osteolysis (often associated with wear of the bearing).

- The challenge is to obtain and maintain satisfactory fixation. The higher the physical activity, the more the stresses on the fixation interfaces and the implants.

- There is renewed interest in metal on metal bearings as a solution to this problem in view of their potential for greatly improved wear performance

- A Co-Cr on Co-Cr articulation is preferred as metal-on-metal couplings; it has an excellent wear resistance, a corrosion resistance, acceptable biocompatibility, and generally satisfactory fatigue life.

- The choice of an appropriate bearing couple for young and active patients should be made after weighing the known advantages and disadvantages, and the potential, although yet unproven, benefits and risks.

- Advances in manufacturing practices have allowed for precisely matched articulating surfaces, as well as improvements in the quality of the alloy used to form the components. These components are believed to produce approximately 100 times less debris than metal-on-polyethylene.

- The particles generated by metal-on-metal implants are smaller than those generated by polyethylene and are less likely to result in macrophage stimulation with the subsequent osteolysis.

- The advantages of metal-on-metal prosthesis includes not only reduced wear rates but also the ability to increase the size of the ball component to provide a greater range of motion and increased joint stability.

- metal-on-metal prosthesis also avoid the occurrence of bearing breakage that occurs in ceramic on ceramic bearings.

- Metal on metal articulations have the most complex tribology of the alternative bearings. The wear properties are dependant on the exact composition of the alloy, the clearance between the components, the diameter of the articulation, the time after implantation, and orientation of the components.

- With Large Metal- on- Metal articulation The Fluid Film Lubrication is exhibited with motion and a Mixed Lubrication is present on rest. This allows a film of joint fluid to flow across the entire bearing surfaces lubricating them and ensuring optimal clearance and allowing a very low wear rate.

- There is some concern regarding the potential systemic effects of MOM bearings surfaces as a result of elevation in the serum and urine Co and Cr. However the toxicological importance of these elevations in trace metal levels has not been established yet.

- Metal ion clearance is dependent upon renal function. Therefore any patient with compromised renal function, or with conditions that may predispose to the development of renal dysfunction, may be best served with one of the alternate bearing choices. So these implants are contraindicated in patients with established or impending renal failure.

- Dermal hypersensitivity to metals occurs in about 10% to 15% of the general population with double the incidence in patients with hip prostheses. The issue of metal hypersensitivity is a hot topic currently. The incidence is unknown. Unfortunately there are no screening methods and once suspected, no diagnostic tests to confirm the clinicians' suspicions.

- Metal wear debris also may cause inflammatory or allergic local tissue reactions in some individuals. This may lead to pain at the site of implantation from synovitis or implant loosening.

- There is no causal link between elevated metal ion levels and the development of malignancies. While the concern regarding metal ion carcinogenicity has been expressed, over 700,000 metals on metal total hip arthroplasties have been performed globally with no causal links to caner**.**

- While the placenta did provide a barrier, it was not complete, with umbilical cord blood having 60% of the cobalt levels and 30% of the chromium levels as the maternal blood levels. For this reason, many surgeons elect not to perform metal on metal bearing in women of child bearing age. It must again be emphasized that the concerns are theoretical, and that there has not been a single published report of an adverse affect on a newborn from metal ion exposure.

- Large diameter metal on metal bearings therefore have several advantages over conventional implants in terms of tribology, function and clinical applications. Therefore, in terms of function, bigger is definitely better.

- Improvements in the mechanical properties of cement and cementing techniques over the past 2 decades are leading to more promising results regarding the longevity of cemented prostheses. Femoral stems that were implanted with modern cement techniques have been shown to maintain stability and function beyond 10 years in 95-98% of the cases.

- Bone ingrowth into a cementless prosthesis can be achieved by both porous and hydroxyapatite coatings. This bony ingrowth into a cementless prosthesis theoretically enhances load transfer and minimizes bone stress shielding.

- No difference between the cases with cemented or cementless stems in the last follow up regarding the HHS or the ROM. while the ROM in the cases with cemented stems were much more better than the cases with cementless stems in the early post-operative period till the first 6 weeks.

- The problem is not cemented or cementless, the problem is who is suitable for cemented and who is suitable for cementless stems; and much more critical how does the surgeon do both?

- There is insignificant correlation between the degree of acetabular inclination and the clinical outcome; this is may be due to the large size of the femoral head that allows greater arc of motion without impingement.

- with large metallic head and metallic Cup; anteversion is markedly difficult to be measured accurately using the standard AP views due to the overlap between the metallic components So, to accurately detect and calculate the cup version, it is only the CT that can be used.

- There was highly significant difference between preoperative HHS and postoperative HHS in the last follow up

- There was statistically non significant difference between different age groups regarding the mean postoperative HHS, However, Younger age groups are much more motivated, much more active ,have adequate muscle power, and also shorter period of disability and adaptive changes to the pathological conditions that caused there hip disease .

- Large diameter metal bearings therefore have several advantages over conventional implants in terms of tribology, function and clinical applications. Perhaps then, these bearings may become the gold standard in the course of time.

- The potential for permanent biological fixation with noncemented components, combined with a bearing surface that does not fail due to wear or osteolysis, makes it conceivable that total hip replacement implants could survive even in active patients for more than 30 years.

- Stemmed, large diameter head, MOM THA has excellent short term results. However longer term follow up is needed to asses the wear, the longevity and the survivorship of these modern MOM bearings.