Summary and conclusion

The results of conventional hip replacement in young patients with osteoarthritis have not been encouraging even with improvements in the techniques of fixation and in the bearing surfaces so modern metal-on-metal hip resurfacing was introduced as a less invasive method of joint reconstruction for this particular group**.**

Conservation and restoration of anatomy and biomechanics is a fundamental goal of orthopaedic surgery, so the surface replacement concept remains attractive because the femoral head and neck are preserved and the proximal bone will be stressed in a more physiologic manner than with stem type devices. Further, the ball size is large, enhancing stability. Preservation of bone stock is especially attractive for young patients who are likely to need more than 1 operation in their lifetime.

There are two types of resurfacing arthroplasty of the hip, hemisurfacing arthroplasty, which uses a cemented hemispherical femoral head prosthesis that is matched roughly in diameter to the patient's native acetabulum, and total resurfacing which uses acetabular component besides the femoral component.

Patient selection remains an issue for hip resurfacing in general and especially for patients with osteonecrosis. The general experience indicates an increased risk for loosening of surface replacements associated with smaller component size and or localized loss of bone (bone cyst)greater than 1 cm in diameter.

Now there are not definitive contraindications to resurfacing, but patients who have compromised bone stock, particularly large femoral

head cysts and small femoral heads, have higher risk of failure than others.

High volumetric wear of polyethylene plays a central role in peri-prosthetic bone resorption and the failure of metal on polyethylene total hip resurfacing prostheses in the past .

Total hip resurfacing can be successful if the wear rate is sufficiently low. One of the major proposed advantages of metal-on-metal couplings is reduced wear, resulting in a lower rate of osteolysis. Recently several manufacturers reproducing metal-on-metal surface replacement components with a cementless acetabular component, and a cemented femoral component.

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.

In the past, titanium cannot be used as an articulating surface so a forged CoCrMo alloy surface is factory mounted to the Ti backing. Rough blasted Ti surfaces are intended to bring about rapid osseointegration, because of protein adsorption on Ti surfaces.

Now the metal acetabular components (CoCrMo alloy) had the addition of hydroxyapatite coating , as it fastens, and strengthens the osseointegration between the acetabular component and the acetabulum.

A low wear bearing would allow young patients to take full advantage of the features of surface replacement including preservation

of femoral bone stock at the initial surgery and postoperatively (absence of stress shielding), normal joint biomechanics, and joint stability.

Some technical points in surgical procedure are important as, ensuring a neutral or mild valgus position of the component, avoiding notching the femoral neck, preserving soft tissue cover over the neck, using low viscosity cement to facilitate good micro interlock, and placing a suction vent through the lesser trochanter to reduce risk of systemic embolization and to ensure femoral neck viability by reducing small vessel intraosseous embolization.

Also knowledge of the extracapsular anatomy of the MCFA and its surrounding structures will help to avoid iatrogenic avascular necrosis of the head of the femur in reconstructive surgery of the hip as surface arthroplasty through the posterior approach.

The resurfacing arthroplasty, now can be done using a minimal approach developed by the senior author (**McMinn**), using a single posterior incision. This mini-incision resurfacing arthroplasty of the hip has made resurfacing more attractive to surgeons and patients.

Most important complications of RHR are fracture and notching of the neck of the femur which are likely to occur as the cylindrical reamer moves across the femoral head/neck junction, most commonly engaging the lateral aspect of the neck. Damage to the retinacular vessels in this area may sufficiently impair the blood supply to the femoral head so as to increase the risk of an avascular event and lead to subsequent femoral failure**.**