Summary and Conclusion

Summary and Conclussion

Although the introduction of bone cement in hip surgery by (charnley in 1960) , had revolutionized total hip arthroplasty, the problem of a permanent and a safe fixation of the implant to bone has yet to find a definite solution (Morscher, 1983) .

Early and mid-term results of arthroplasties with bone cement are entirely satisfactory . However, the long term loosening of the implant and consequently the necessity for revision stills the main long-term problem . The reported loosening rates ranged from 9% to 60% (Gustilo and Pasternak, 1988) .

The improvements made in recent years in prosthetic materials, design and operating techniques must be considered . In particular improvement in cementing techniques, have already achieved improved results, as well as the development of new bone cement-such as bioactive bone cement and carbon-reinforced acrylic cement-may well change the current but-look on long-term results with resurgence of interest in the use of bone-cement (Harris et al., 1982 ; Poss et al., 1986 ; Mulroy and Harris 1990) .

Despite the improvement in long-term results achieved through improvements in cementing techniques, the biological, as well as, the mechanical limitations of PMMA make cementless fixation a suitable alternative (Engh et al., 1988) .

The major consideration today in clinical research regarding total hip arthroplasty is , whether one should abandon cemented fixation for cementless one ? (Rothman and Cohn, 1989) .

Why cemented fixation should be abandoned ?

The answer for this question involves several contributing aspects :

Firstly, the rate of component loosening in the intermediate and long term follow-up studies was less than satisfactory, and was even more disappointing in younger patients and in the revision total hip arthroplasty (Collis 1984 ; Callaghan et al., 1985 ; Pellici et al., 1985)

Secondly, progressive bone loss caused by focal nonseptic osteolysis observed frequently around loose cemented components of T.H.A., and occasionally around well fixed cemented components (Goldring et al., 1983 ; Gasty et al., 1986 ; Willert et al., 1990) .

Thirdly, it has been concluded from a review of laboratory studies that PMMA undergoes aging a time-dependent alteration of it's material properties . Several studies have emphasized the degradation of PMMA with time and becomes biologically active, in a negative sense, with loosening and, to a lesser extent, even in the absecnce of loosening . Thus, cemented fixation undergoes inevitable and inexorable deterioration of function starts at time of implantation. (Hungerford and Jones 1988) .

FourthLy, it has become clear that generation of particulate debris from cement and wear of prosthetic surfaces, both plastic and metallic, inicites a biologic response which induce progressive bone

resorption and consequently loosening of the proshesis .

(Salvati et al., 1992) .

Lastly,when considering the local tissue conditions in most T.H.A. loosening, a new implant embeded with bone cement may appear especially hazardous . Extended bone lesions at the cement contact, and in some cases a suspected indiscernible low-grade infection may suggest saving as much as possible of the remaining bone stock to ensure a prompt and easy third operation in case of flaring infection . A repeat excision of the cement,. especially if pressurized, would be harmful for the bone and difficult for the surgeon (Lord et al., 1988) . The high incidence of aseptic loosening following cemented revision T.H.A has been well documented, and the range varied from 25% to 51% for femoral component, and from 9% to 37% for the acetabular side (Engh et al., 1988) .

The second question to be answered is

Why cementless fixation ?

The impetus for the renewed interest in cementless fixation have been two concerns : the finite longevity of fixation with cement as inferred from long-term follow-up studies (Sutherland et al., 1982), and the high failure rates of cemented revision T.H.A. .

(Pellici et al., 1985) .

Cementless fixation was found to be most rewarding, And offers several potential advantages over cemented ones, including : reduced operating time, reduced initial trauma to the endosteal bone

surfaces, preservation of bone stock, less foreign material , long-term interface stability and osteointegration, improved bio-compatibility, and ease of revision (Walker and Robertson, 1988) .

Regarding the conservation of bone stock; it is a vitally important principle, especially when considering that cementless implants are typically used in younger patients where the potential for revision during the patient's lifetime is high and the need to keep reconstructive options open is paramount (Rothman and Cohn, 1989).

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