



Orthopaedics

EVALUATION OF RESULTS OF CEMENTLESS TOTAL HIP ARTHROPLASTY IN AVASCULAR NECROSIS OF FEMORAL HEAD

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ABSTRACT **Purpose Of Study:** To assess functional outcome in patients having Avascular necrosis of femoral head treated by Cementless Total Hip Arthroplasty as per harris hip score. **Method:** 30 patients with avascular necrosis of femoral head were selected for this study after informed consent. They were evaluated pre-operatively and Cementless Total Hip Arthroplasty was done in all 30 cases. Patients were followed up upto 1 year and clinical evaluation done using harris hip score. **Results:** Patients were evaluated using Harris hip score. There was improvement of the score in all cases. **Conclusion:** In our study of 30 patients, All had excellent to good outcomes with Cementless Hip Arthroplasty, suggesting it offers good functional outcome in such patients

KEYWORDS : Hip joint, Femoral Head, Avascular Necrosis, Cementless Total Hip Arthroplasty, Harris hip scores, Functional outcome

INTRODUCTION:

The hip joint is subjected to many forces and stresses during daily activities. It is one of the major weight bearing joints of the body and its normal function is essential day-to-day life. Avascular necrosis (AVN) of the femoral head is one of the common causes of painful hip in adults. The natural course of this disease is progression with eventual collapse of the femoral head, followed by secondary osteoarthritic changes in the hip^[1].

Once the diagnosis of AVN is confirmed, management varies depending upon the age of the patient, stage of the AVN, occupation & previous treatment received etc. Core decompression, bone grafting and valgus osteotomy can be considered in early stages and total hip arthroplasty in later stages of AVN of femoral head^[2]. Arthrodesis can be considered in young vigorous patients with unilateral hip disease^[3]. Excision arthroplasty which gives mobility at the cost of stability is also an alternative available. In advanced stages of disease Total hip replacement has shown good results.

This prospective study is aimed at evaluating the functional outcomes of cementless total hip arthroplasty in patients with avascular necrosis of the hip.

MATERIALS AND METHOD:

Thirty cases of advanced AVN of femoral heads (Ficat and Arlet stage III and IV) admitted at tertiary care hospital in Bharuch and treated surgically by cementless total hip arthroplasty between april 2023 and march 2024 were the included in this study after informed consent. Before advocating total hip arthroplasty conservative measures like reduction of weight, anti-inflammatory medication, reasonable restriction of activity and the use of supportive devices while walking were advised.

The inclusion criteria for this study were stage III and IV (Ficat and Arlet) AVN of femoral head with degenerative arthritis due to various etiologies. The exclusion criteria was other associated hip pathologies, active infection in body and patients deemed very high risk for anaesthesia.

Proper pre-operative assessment was done. In all cases, posterolateral approach was taken. Postoperatively limb was kept in abduction with pillow between lower limbs and drain removed after 48 hours. Patients were monitored for any complications. Patients were ambulated with walker after 24 hours with weight bearing as tolerated. The sutures were removed on post operative 15th day and range of motion exercises were started. The Harris hip scoring system^[4] was used to evaluate each hip pre-operatively and post-operatively. Rating of 90 to 100 points was considered excellent; 80 to 89 good; 70 to 79 fair and less than 70 poor.



Fig 1: pre and post operative radiographs of avn femoral head treated with cementless total hip Arthroplasty

RESULTS:

In our study, the minimum age was 25 years and the maximum age was 73 years and the average age was. Out of 30 patients, 24 were males and 6 were females. The overall male to female ratio was 4:1. Four cases of AVN were post traumatic, 6 cases had history of chronic alcoholism, 3 cases had history of long term steroid intake, rest were idiopathic.

The average preoperative Harris hip score was 44.5, and the postoperative average Harris hip score was 88 at 1 year follow up. The results showed that all patients had good to excellent results at 1 year follow up, Harris hip score ≥ 80 , demonstrating good pain relief, improvement in function and range of motion.

Of the 30 patients, one patient had limb length discrepancy of 1.5cm shortening (operated side) for which a compensatory shoe raise was given. Another patient had delayed wound healing with superficial infection which resolved with course of intravenous antibiotics.

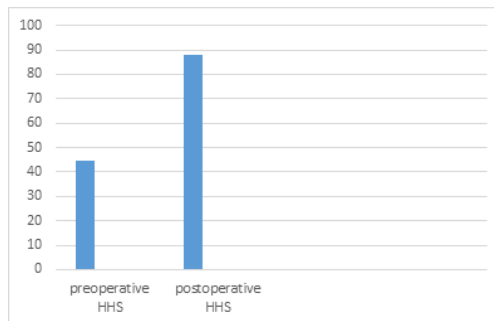


Fig 2: chart comparing preoperative and postoperative followup at one year Harris Hip Score in patients undergoing cementless total hip arthroplasty in AVN femoral head

DISCUSSION:

This study shows motivating results in patients of avascular necrosis of hip treated by cementless total hip arthroplasty over a follow-up period of one year. Total hip arthroplasty is the recommended treatment for advanced stages of avascular necrosis and accounts for 5%-12% procedures conducted due to avascular necrosis^[5,6].

The earlier published literature about cemented total hip arthroplasty for AVN femoral head was not encouraging. Salvati et al. reported prognosis of cemented total hip arthroplasty in their patients with a failure rate of 37% over an average period of eight years. Further, they reported a 100% failure in patients less than 30 years of age^[7]. Another study showed the prognosis of 53 cemented total hip arthroplasties with a final follow-up conducted at 10 years in 22 surviving hip arthroplasties that showed revision in eight hips, aseptic loosening in six hips, sepsis in one hip, and recurrent dislocation in one hip. Thus, they reported a poor prognosis of cemented total hip arthroplasty^[8].

Another study compared the failure rate of cemented and cementless total hip arthroplasty in patients older than 55 years of age. According to which, patients with age 65 years or more depicted better success rates with cemented implants in comparison to uncemented implants, whereas the results for cemented and uncemented implants in patients with age 55-64 years were similar^[9].

Cementless total hip arthroplasty consists of the porous-coated prosthesis that encourages bone growth onto its surface. It was developed to provide an alternative to poor outcomes of early cemented total hip replacements. The initial results for cementless total hip replacements were poor as the smooth surface of cementless prosthesis prevented strong adherence to the bone causing aseptic loosening a few years' post-surgery [11]. During the 1980s, the development of porous-coated material allowed bone ingrowth on the surface of prosthesis resulting in increased adhesion and improved prognosis [12]. Lins et al. published research in 1993 regarding the outcome of cementless total hip arthroplasty, the final results of which showed an increase in average Harris Hip Score(HHS) from 47 to 86 points as well as a decrease in revision in patients who received cementless total hip arthroplasty [13]. Another study conducted on 20 patients suffering from avascular necrosis reviewed over a minimum followup period of 24 months observed that the average HHS was 88 in 17 out of 20 hips [14]. Recently, a study was conducted in 2017 that compared the results of cemented and uncemented procedures for AVN, which showed a reduced failure rates and less pain in patients who received the cementless procedure at 2 year follow up [15].

Our study shows comparable and motivating results for Cementless total hip arthroplasty done for AVN femoral head. Limitation of our study are a single centre data and lack of longer term followup.

CONCLUSION:

Our study shows that Cementless total hip arthroplasty has excellent results in patients with avascular necrosis of the hip. It is not associated with any major significant early or late complications and has outstanding functional outcomes. Further studies on a larger scale and with a longer duration of follow-up are needed to prove the validity of the above-stated outcomes.

Compliance With Ethical Standards:

Conflict Of Interest: None declared

Ethical Approval: The study was approved by the institutional ethics committee.

All patients gave an informed consent for participating in this study

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