

Comparison of Core Decompression with Autologous PRP Infusion v/s Core Decompression Alone in Treatment of AVN Hip

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ABSTRACT

Objective: To evaluate the result of core decompression and autologous PRP infusion over other treatment modalities of AVN HIP.

Introduction: Osteonecrosis is a disease of impaired blood flow affecting mainly young people in their third, fourth or fifth decades. Proposed risk factors include, chemotherapy, alcoholism, excessive steroid use, post trauma, sickle cell anaemia and Gaucher's Disease.

Materials and Methods: Retrospective study of 25 patient of Avascular necrosis of hip. 25 patients were included in study. Autologous PRP was prepared a day before surgery. Decompression of the head of femur was done by using Michele trephine of size 8mm.

Outcome measures used during study were

- Anteroposterior and lateral radiographs
- MRI
- Harris hip score
- VAS for pain

Keywords: Core decompression, Autologous prp, Vas score, Harris hip score, Avn hip

CONCLUSION AND SUMMARY

The outcome and results were significantly higher in patients treated with core decompression and autologous PRP infusion than in patients treated with core decompression alone. ($P < .05$). Patients with adverse prognostic features at initial presentation like lower Harris Hip score, significant x-ray changes, bone edema, and/or effusion on MRI had significantly poorer clinical outcome and hip survival rates. There were very few complications in

our study due to the procedure per se. however long term follow-up is needed.

INTRODUCTION

Objective: To evaluate the result of core decompression and autologous PRP infusion over other treatment modalities of AVN HIP.

Table 1: Staging of Avascular Necrosis

STAGE	CLINICAL	X-RAY/CT	MRI
0	Asymptomatic	Normal	Normal
1	Symptomatic	Normal	Abnormalities present
2	Symptomatic	Osteopenia; Subchondral radiolucency is absent	Abnormalities present
3	Symptomatic	Osteopenia; Subchondral radiolucency is present (Crescent Sign) ; Shape of femoral head intact	Abnormalities present
4	Symptomatic	Collapse of femoral head.	Abnormalities present
5	Symptomatic	Collapse of femoral head; Osteoarthritis with sclerosis of acetabulum.	Abnormalities present

MATERIALS AND METHODS

Retrospective study of 25 patient of Avascular necrosis of hip

- 25 patients were included in study. Autologous PRP was prepared a day before surgery. Decompression of the head of femur was done by using Michele trephine of size 8mm. Entry point in the femur was from just below greater trochanter and reaming was done up to the center of necrotic lesion to within 5mm of articular surface. Autologous PRP was infused in that tract and patient is kept in slightly up in lateral position. So that PRP can come in contact with necrotic area and bone block is put.

Main Outcome Measures: Outcome measure used during study were:

1. Anteroposterior and lateral radiographs,
2. MRI
3. Harris hip score
4. VAS for pain

DISCUSSION

According to trial conducted by Fairbank and Bhatia et. al(1995),core decompression had done a trial based on results of core decompression as the only treatment for stages I, II and III ischaemic necrosis of 128 femoral heads in 90 patient.

Table 1: Survival Rate Of Patients In Stage 1,2,3 In Fairbank And Bhatia Study

STAGE	5YEAR	10 YEAR	15 YEAR	IF NO SURGERY DONE
1	100%	96%	90%	88%
2	85%	74%	66%	72%
3	58%	35%	23%	26%

In spite of these results 56% of the hips had progressed radiographically by atleast one stage according to Ficat-Arlet classification. There occurred a few Complications in this procedure, which included fractures (4), which occurred due to fall and one head perforation which occurred due to technical error. They concluded that core decompression done in early stages of avascular necrosis in young patients delays the need for total hip replacement.

In a study conducted by Wei, et al. (2011) regarding the effect of core decompression along with fibular allograft and autologous bone graft, following were the results.

Table 2: Survival Rate Of Patients In Stage 1,2,3 In Wei Study

STAGE	2 YEAR	NO SURGERY DONE
2	93.3%	81%
3	87%	81%

The study included 162 patients (223 hips; 61 females, 101 males, mean age 33.5 years, range 19-54 years) with stage II-III avascular necrosis of the femoral head. The patients were evaluated on the basis of changes in Harris hip score, radiographic progression according to Ficat-arlet classification and the need for total hip replacement. It was concluded that core decompression combined with an allogeneic, autolysed fibular allograft and autologous impacted bone grafting is the treatment of choice, particularly in the stage-I and 2A.

Although Most of the studies have a weak study design with lack of control population and small sample size, results were similar and supported the earlier conclusion that core decompression is a safe procedure and may result in prevention or delay of total hip replacement in hips with avascular necrosis (AVN) at stage I or II, according to Ficat-arlet classification with a proportionally higher likelihood of success at stage. Joint survival rates for hips at stage I and stage 2A were quite high (82% to 100%). In all studies, joint survival declined with increasing the severity of disease.

OBSERVATION AND RESULTS

Our study included 25 patients within age group of 25-45 years with 5 females and 20 male patients with follow up ranging from 6 months to 3 years. Significant clinical improvement was seen over time (mean fall in Harris hip score 20 ± 5 , mean VAS score improvement 2.5 ± 5) and only 3 patients required total hip replacement later.

CONCLUSION

The outcome and results were significantly higher in patients treated with core decompression and autologous PRP infusion than in patients treated with core decompression alone. ($P < .05$). Patients with adverse prognostic features at initial presentation like lower Harris Hip score, significant x-ray changes, bone edema, and/or effusion on MRI had significantly poorer clinical outcome and hip survival rates. There were very few complications in our study due to the procedure per se. however long term follow-up is needed.

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