Original Research Article

The Clinical outcome of Core decompression and autologous iliac crest bone grafting for avascular necrosis of the femoral head before collapse.

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Abstract

Iliac crest bone graft offers three properties (i:e.) osteogenesis,Osteoinduction and Osteoconduction.Removing of dead bone and providing structural support to prevent collapse is the key concept in treatment of core depression and autologous iliac crest bone grafting for avascular necrosis of the femoral head before collapse.

Keywords: A vascular necrosis,iliac crest bone, Autologus, depression.

Introduction

The blood supply to the neck and head of the femur is extensive, intricate and complicated.Approximately 5% - 18% of all hip arthroplastiesare done for 2° OA due to AVN of femoral head. Young males are affected up to three times than females. Bilateral femoral head osteonecrosis seen up to 75% of cases[1-2].

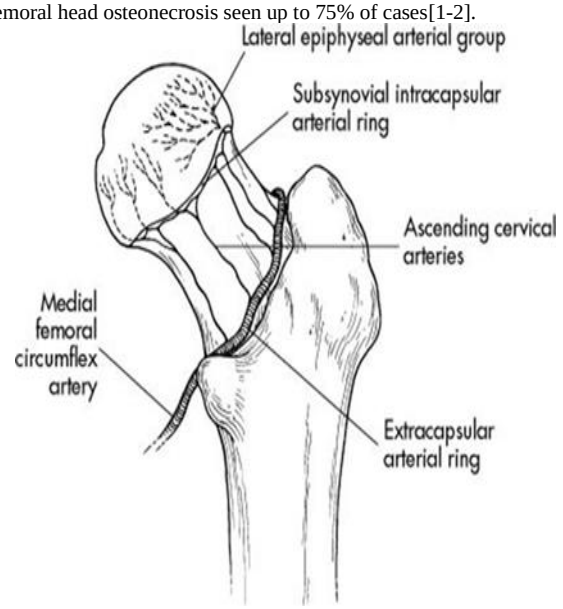

Fig 1:Femoral Head

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Blood Supply to Proximal Femur

Aims and Objectives of Study

To preserve the head of the femur rather than replacing femoral head and cartilage, through early intervention which has favorable impact on the disease prognosis. The subjects were the patients treated in between 1-7-2012 to 31-12-2019. In this study we evaluated the radiographic and clinical outcome of core depression with autologous iliac crest bone grafting as treatment option for Avascular Necrosis of the femoral head.

Materials and Methods

A prospective study of core decompression with autologous iliac crest bone grafting for Avascular necrosis was conducted in 23 hips including unilateral (73.91%) and bilateral (26.08%) among 20 patients between 1-7-2012 to 31-12-2019, with 2 to 7 years of follow up. All the clinical data was collected in case record form. Data was categorized and expressed as percentages[5-8]

Inclusion Criteria

1. All patients who presented with hip joint pain and radiograph suggestive of avascular necrosis of femoral head.
2. Both males and females were considered
3. Total number of patients studied were 27.

Exculsion Criteria

1. Patients with Avascular necrosis and collapse of femoral head were excluded (6 patients).
2. Patients who has not given their consent were excluded (1 patient).
3. Very high surgical risk.
4. Neurological disorders that may significantly influence walking ability.

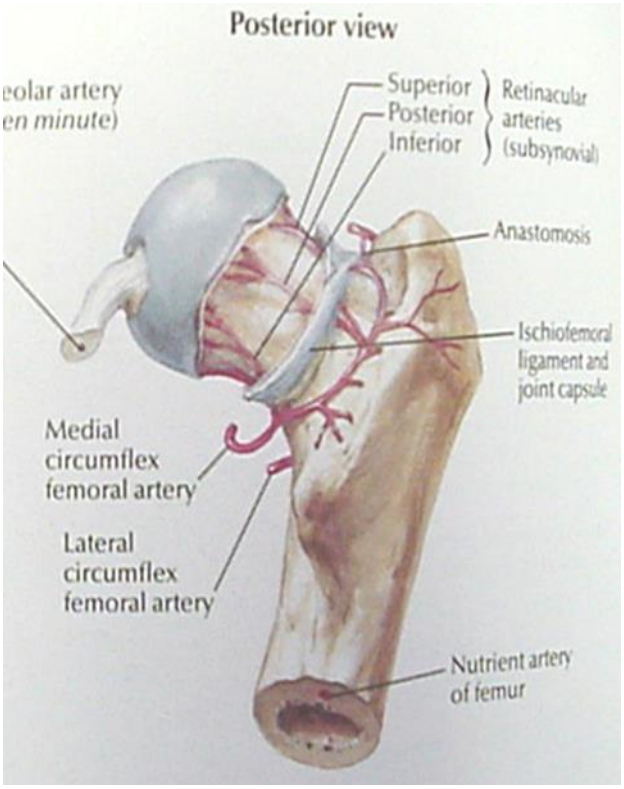

Fig 2:Posterior view

	System	
	Ficat/Arlet	**Steinberg/U Penn**
Stage I	Normal radiographs	Normal radiographs
Stage II	Subchondral cyst formation and sclerosis	Femoral head lucency/sclerosis
Stage III	Femoral head flattening, subchondral collapse, "crescent sign"	Subchondral collapse without femoral head flattening, "crescent sign"
III A		
III B		
Stage IV	Osteoarthritic joint space narrowing, degenerative changes	Subchondral collapse, femoral head flattening, normal joint space
Stage V		Flattening with joint space narrowing, acetabular changes, or both
Stage VI		Advanced degenerative changes, secondary osteoarthritis

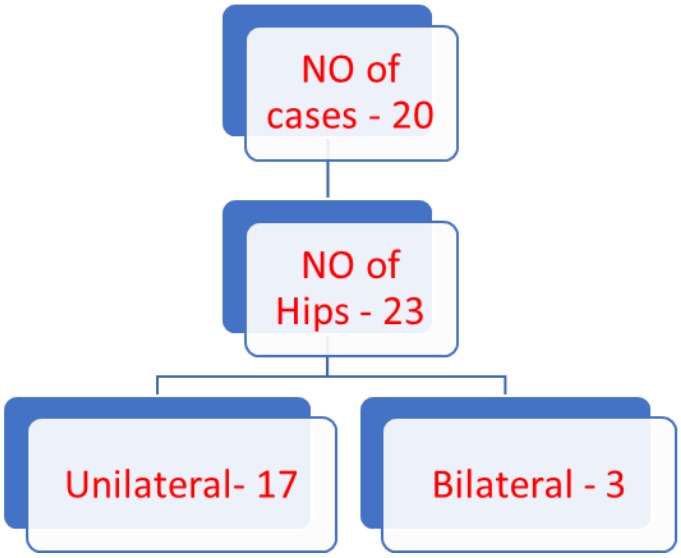

Fig 3:Depiction of cases

Follow Up

Out of total 20 patients, on 23 hips core decompression was performed. 17 patients were unilateral and 3 were bilateral. They were observed regularly during their hospital stay till they discharged. They were asked to come for follow up regularly to the outpatient department. All patients were followed to look for progression of disease, major complications, total hip arthroplasty. After performing core decompression and iliac crest bone grafting to these patients, follow up was done for 2-7 years.

Post-operative follow-up protocol:

Patients were not allowed to bear weight for 4-5 months. Check X-rays were taken regularly with an interval of 6 weeks. Patients were not allowed to perform strenuous works for 6 months. Tablet Fosavance 70 mg (Alendronate) was given once every week for 6 months. Patients are supplemented with rich protein diet and Calcium tablets.

Clinical Outcome

There were no major complications noted in these patients. Both clinical and radiological outcome was good. No patient had further progression.

Observation and Results

Table 1: Age incidence

Age in Years	Number of Cases	Percentage
20-30	4	20
30-40	6	30
40-50	10	50
Total	20	100

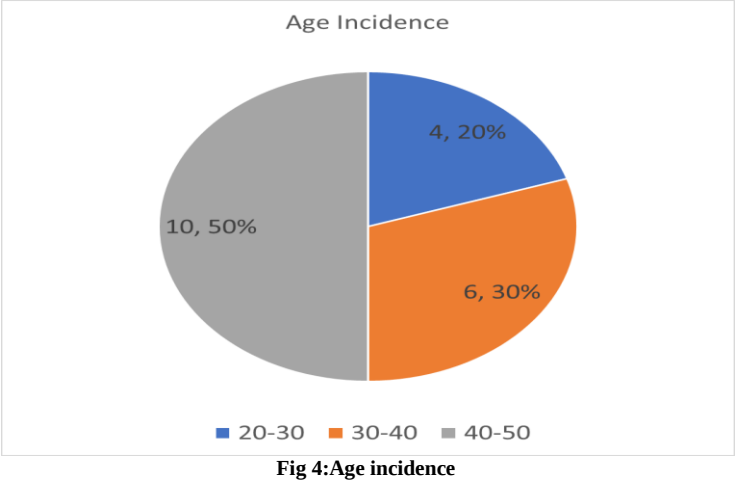

Fig 4:Age incidence

Table 2: Sex incidence

Sex	Number of Cases	Percentage
Male	14	70
Female	6	30
Total	20	100

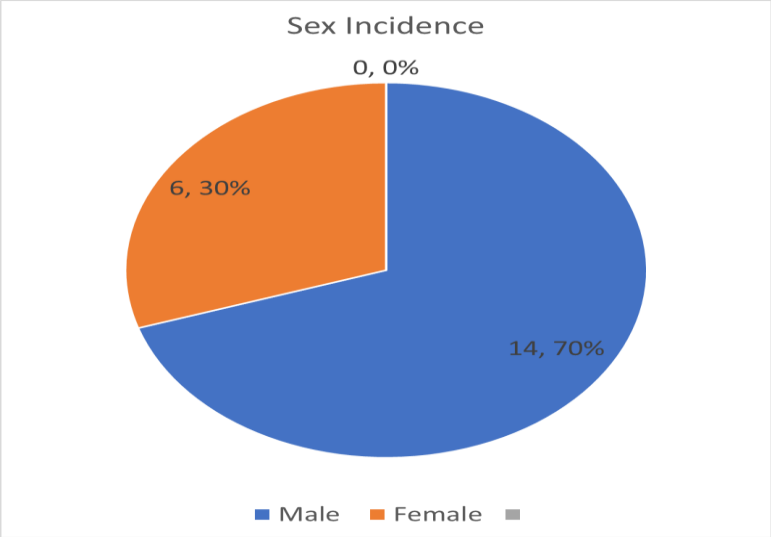

Fig 5:Sex incidence

Table 3: Unilateral/Bilateral

	Number of Cases	Percentage
Unilateral	15	73.91
Bilateral	5	26.08
Total	20	100

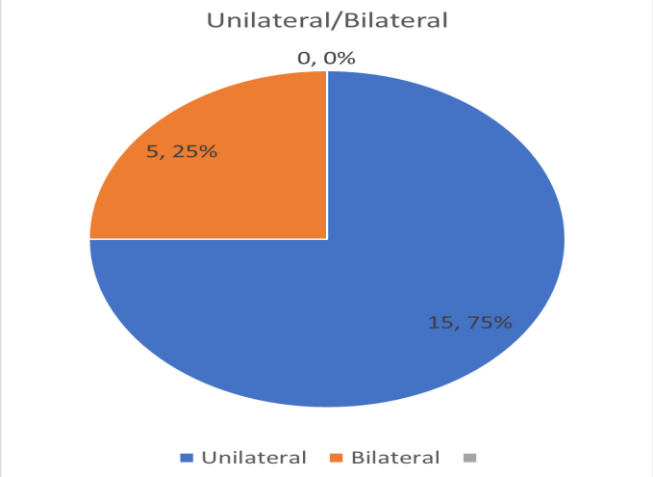

Fig 7:Unilateral/Bilateral

Table 4:Ficat/ArletRadiological Classification

Stages	Percentages
Stage2	69.56%
Stage3	30.43%

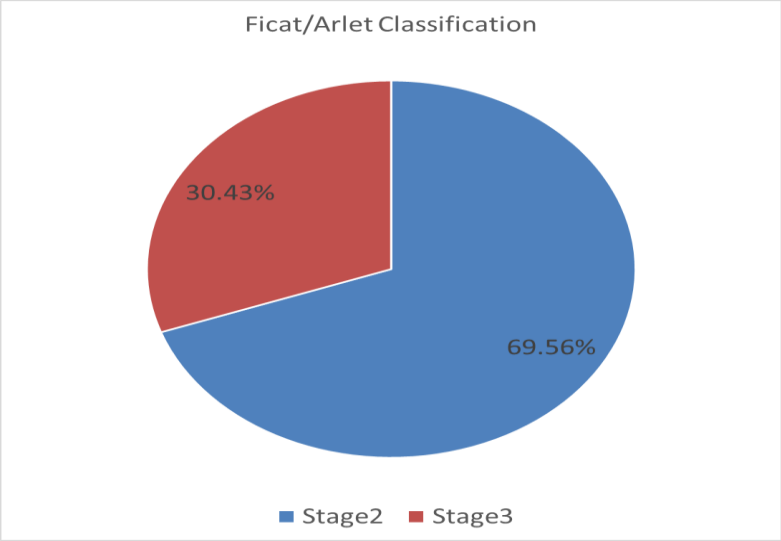

Fig 8:Ficat/Arlet Classification

Summary

A prospective study of core decompression with autologous iliac crest bone grafting for Avascular necrosis in 23 hips including unilateral 73.91% and bilateral 26.08% among 20 patients who attended 7 years follow-up. Patients were in stage 2 69.5% and Stage3 30.43% of Avascular necrosis before collapse of the femoral head. All patients were in age group of 20-50 years. There were no major complications the clinical and radiological outcome were good and no patient had further progression.

Conclusion

Core decompression with autologous iliac crest bone grafting is a safe and effective procedure for the treatment of Avascular necrosis of the femoral head before collapse. It has become a good treatment of choice in those patients with improved quality of life, decreased number of complications and the need forsubsequent total hip replacement.

Discussion

Avascular necrosis of the hip is a painful condition caused by disruption of blood supply to bone due to various etiological factors leading to cell death, collapse culminating into disruption of hip joint and arthritis in young population although non-surgical treatment options can relieve pain but doesn't prevent progression.Iliac crest bone graft offers three properties (i:e.) osteogenesis, Osteoinduction and Osteoconduction. Removing of dead bone and providing structural support to prevent collapse is the key concept in treatment of core depression and autologous iliac crest bone grafting for avascular necrosis of the femoral head before collapse[3-4].

The most successful treatment options are surgical. The purpose of the study was to evaluate the effectiveness of core decompression and autologous iliac crest bone grafting in halting the progression of Avascular necrosis before collapse of the femoral head and prevention of subsequent total hip arthroplasty[5-10].

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