SUMMARY

Partial and full-thickness cartilage injuries, as well as ostechondral pathology in weight bearing joints, have produced deleterious effects in knees in both the short and long term. The decreased capacity of damaged articular cartilage to heal or regenerate has contributed measurably to these effects. Attempts to resurface focal areas of damage in weight-bearing joints have been made, but ultimate and lasting success has remained elusive.

Osteochondral transplants, in comparison to some of the other technical procedures available, have many advantages and few reported drawbacks. The goal is to resurface defects with hyaline cartilage in a one-step procedure. This procedure offers this opportunity without the need for support labs or additional costs.

The aim of this work is to evaluate management of focal cartilage defects of the knee by Osteochondral Autograft transplantation.

Forty patients with focal cartilage full thickness defects of the knee were treated in the period between May 2002 and Jun 2005 by Osteochondral Autograft Transplantation (OAT). All cases were treated at Orthopaedic department of Marienkrankenhaus hospital, Düsseldorf, Germany. 19 patients were evaluated through a prospective study and 21were evaluated through retrospective study.

The follow up period ranged from 12 to 36 months with an average of (28 months).

The aged of the patients ranged from 19 to 50 years with an average of 30.7 years. There were 22 male and 18 females. The right side was affected in 26 patients and the left side in 14 patients. Preoperatively, 27 patients were complaining of: joint line pain, swelling especially after activities. While 13

patients suffered from: catching, functional limitations and partial given away with activities.

There were 12 cases of isolated chondral defect. In the other 28 cases, there were two cases of Osteochondral Dissecance, the other 26 cases were have associated injuries in the form of medial or lateral meniscus. Provisionally, the study excluded all cases associated with sever knee pathologies such as sever knee malaligment, complete medial collateral ligament tears, lateral collateral or anterior cruciate ligament or posterior cruciate ligament ruptures.

All patients were subjected to:

1} Pre and post-operative clinical examination and assessment according to the Hospital for Surgery knee Service rating system (H.S.S) using both subjective (pain and functional abilities) and objective parameters (ranging of motion, stability and muscle strength).

2} Pre operative radiological assessment was done, two patients diagnosed as OCD in x-ray with loose fragment and defect in bone in the medial femoral condyle. Twenty eight, patients in this study were subjected to pre-operative MRI while all patients post-operative subjected to MRI in follow up period.

3} Labaratory investigations were done to exclude other causes of arthritis or general disease.

Arthroscopic procedure was done for all cases except in sex cases needed to adjuvant by knee arthrotomy. Operative arthroscopy including: knee debridment, partial menisectomy, shaving of partial chondral lesions and autograft osteochondral transplantation for full thick defects. 29 was detected in medial femoral condyle while, 11 were present at the lateral femoral condyle. The size of chondral defect ranged from 1cm to 2 cm with average 1.2 cm.

The final end results were assessed according to (H.S.S) scoring. There were 22 patients (55%) with excellent and 9 (22.5%) with good results. These

constitute the satisfactory results (77.5%). While there were 4 patients (10%) with fair result and 5 patients (12.5%) with poor results. Both constitute the unsatisfactory results (22.5%). Age, sex, side affected or symptoms duration have no significant effect on the final end results while pre-operative clinical score, size and articular cartilage congruence had significant effect with worst result in patients with large defects and incongruent cartilage surface.

Follow up duration had a significant effect on the final end results with best results obtained up to three years.

Early post-operative complication met with in this study were moderate haemarthrosis in five cases (12.5%) where as one case (2.5%) developed tense haemarthrosis which were completely resolved after arthroscopic lavage without any squeal. Infection in one case (2.5%) developed moderate effusion and fever improved by arthroscopic lavage and antibiotics.

The late complications were: **1}** donor site morbidity was present in three cases (7.5%) two cases of them show improvement after lateral retinocular release. **2}** Graft failure was noticed in two cases (5%) with large size, not will engaged, incongruent surface geometry and early weight bearing by patients. **3}** Four cases (10%) have knee stiffness, three of them was mild and show improvement with extended physiotherapy and rehabilitation programs.

CONCLUSIONS

1- Osteochondral autgraft transplantation is currently one of the best surgical cartilage repair technique that provides and retains proper hyaline articular cartilage.

2- The procedure has a god rate of success, reliability of subchondral bone healing with a high survival rate of the articular cartilage graft and consequently improvement of joint function and decrease pain.

3- Pre-operative clinical score, size of chonral graft have a very highly significant effect on the final end results, with the best results observed in patients with score more than 69 points.

4- Primary stability of the grafts has been shown to play role in healing of these grafts. Grafts inserted in proud position or over drilled-recipient tunnel show poor bony incorporation, subchondral cavitations and more clefts between graft and recipient site interface.

5- Incongruity of the articular surface at the repair site can occur either due to technical problems or later as a result of degeneration of osteochondral plugs. Accurate alignment of the graft with the surrounding articular cartilage found to be statistically highly significant.

6- MR imaging is shown to be an effective method to diagnose chondral injury, to aid in selection of therapeutic intervention and to assess the short –term and long-term outcome of repaired articular cartilage.

7- In osteochondral autograft pre-operative planning using characteristic data of the donor & recipient sites with respect to articular cartilage thickness, concavity and contact pressure seem to be very helpful.

8- Patients' co-operation is important to obtain a satisfactory result.

9- Osteochondral autograft transplants have been associated with good rate of success, but further long term follow up & biomechanical evaluation are essential.