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Review of 29 autologous chondrocyte implant cases

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Purpose: This paper presents our 6.5 year experience with ACI.
Methods and Materials: We reviewed 29 consecutive cases using autologous chondrocyte implantation (ACI) to treat large Gr.IV lesions. Patient interviews and chart review using a modified Lysolm scale was used to determine outcomes
Results: Seventeen males and 12 females aged 17 to 48 were followed for a minimum of one year to a maximum of 6.5 years. One patient has been lost to follow up. There have been 5 failures, two fair results and 22 good to excellent results. We have done 9 second looks. There was one complication.
Conclusions: ACI is a viable treatment of some osteochondral defects.

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Novel autogenous cartilage patch Neocart for the treatment of cartilage defects in human knees. A prospective safety trial.

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Purpose: Clinical evaluation of Neocart, for treatment of isolated femoral chondyle lesions. Data from an FDA phase 1 study at 15 months.
Methods and Materials: Seven patients, average 40 years, with grade 3 (modified Outerbridge) chondral injury (average dimensions 1.2x1.7 cm^2) were treated with Neocart. This collagen-matrix seeded with autogenous chondrocytes is fixed with collagen bioglue CT3 allowing suture-free stabilization. Arthroscopic biopsy provided chondrocytes ($8.35x10^6$) for Neocart, subsequently implanted (average 67 days) via an out-patient, mini-arthrotomy procedure by one surgeon. Evaluations pre-operatively, 3, 6, 12 and 24 months included IKDC, VAS and MRI. MRI utilized cartilage-sensitive fast spin echo and quantitative T2 mapping.
Results: Average motion improved 125[0]±7 to 130[0]±6 with no arthrofibrosis. Pain decreased in all patients with an average of 1.0±1.6 from 2.9±2.8. Average IKDC improved from 63.0±18.7 to 74.0±22.2. Two adverse events; one patella fracture after a fall in the index knee, one meniscal tear in the index compartment. The implant remained patent in both. MRI showed all subjects with 66-100% defect fill and four demonstrating repair cartilage flush to native. Two demonstrated partial stratification of T2 values similar to hyaline cartilage at one year with prolongation of quantitative T2 values observed in both superficial and deep components. All demonstrated peripheral integration at 3 months with some fissuring. Four showed improved integration after 12 months.
Conclusions: Initial experience with Neocart found a trend towards reduced symptoms with improved function and motion. No statistical significance was evident. MRI indicates implant stability and integration after fixation with CT3, continued maturation, and potentially hyaline cartilage formation.

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Osteochondral autografting in defects of patellofemoral joint - an opportunity or misleading trial?

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Purpose: Can osteoarthritis of the patellofemoral joint be avoided by grafting osteochondral defects? Is this method still successfull after ten years or longer? This study tries to answer these main questions.
Methods and Materials: A number of 20 patients was operated between 1989 and 2004. A two step procedure was performed. An arhtroscopy first showed size and location of the defect. In the 2nd procedure an osteochondral cylinder was taken from the posterior femoral condyle through a popliteal approach. The defect was filled by a press fit ceramic cylinder. Then the patient was turned and the osteochondral cylinder was implanted into the joint defect by arthrotomy. All Patients were called by phone and current symptoms and complaints were noted due to the main clinical scores. 10 patients additionally were physically examined and X-rays were taken in 3 planes. These data were collected due to IKDC score.
Results: All patients had less complaints and better function than at time before surgery. Exact clinical data are still in process at time of abstract submission.
Conclusions: This method of autologous osteochondral grafting leads to satisfactory and good results. The benefit of this procedure does not significantly decrease with time after surgery. Donor site morbidity can be prevented by harvesting the graft from a non weight bearing area of the knee. Using large singular cylinders from up to 16 millimeters diameter produces a more stabil surface reconstruction compared to other methods like mosaic technique. These may be the reasons for better clinical results.

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Importance of sports in cartilage regeneration after autologous chondrocyte implantation. A prospective study with a 3 year follow up

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Purpose: There has been no data in the literature reporting the influence of sports on the outcome of autologous chondrocyte implantation (ACI) in chondral defects of the knee. Using a sports activity rating scale the present study describes the influence of different activity levels on the final outcome of ACI.
Methods and Materials: Between 1997 and 2003, 118 patients with an average age of 36 years underwent an ACI. According to the sports activity level before start of symptoms, the patients were assigned to 2 different groups: group I with no or rare sports (1-3 times/month); group II with regular (1-3 times/week) or competitive sports (4-7 times/week). All patients underwent clinical and MRI evaluation preoperative and 6, 18 and 36 months after ACI.
Results: In the two groups I / II, 50 / 28 defects were located on the femoral condyles, 11 / 12 on the patella and 8 / 9 on the trochlea. The preoperative activity level was in both groups grade 4. The patients of group I showed significantly better results (<0.01) in the ICRS- and Cincinnati-score as the patients of group II. Preoperative evaluation revealed no correlation between the sports activity levels and the clinical scores ($p>0.05$). However from the 6th month on, correlation was statistically significant and increased from 6 to 18 and from 18 to 36 months postoperative.
Conclusions: Moderate sports during postoperative rehabilitation is an important tool for improving the final outcome after autologous chondrocyte implantation and should be performed over 2 to 3 years following a rehabilitation program.