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Patellofemoral cartilage lesions treated with both autologous cultured chondrocytes implantation and surgery to optimize the biomechanical environment

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**Purpose:** To evaluate a comprehensive treatment approach that includes autologous chondrocytes implantation (ACI) and biomechanical altering procedures to reduce impairment and symptoms in patients with patellofemoral lesions and biomechanical pathologies.

**Methods and Materials:** Thirty-eight patients (35 knees; mean age 33 years) had large isolated (trocchlear = 4.3cm²; patellar = 4.4cm²) or bipolar (mean total surface area = 8.8cm²) patellofemoral lesions between September 1998 and November 2005. Eight-seven percent (33/38) of patients had a surgical procedure concomitantly with the ACI. The most common concomitant procedure was anterior cruciate ligament reconstruction (ACLR). Patient data was prospectively recorded for all patients treated with ACI. The subset that had patellofemoral joint ACI treatment between September 1998 and November 2005 were evaluated in this study. At baseline, patient outcome scores, patient demographics, prior surgeries, and data from a physical exam were collected. Articular cartilage defect characteristics and information on concomitant surgeries were collected during implantation. At periodic follow-up visits, clinical outcomes were prospectively assessed using the modified scales of the Cincinnati Knee Rating System (patient-reported and physician-rated), the patellar tendo function scale, and patient-reported VAS for maximum pain and pain at rest.

**Results:** Median clinical follow-up was 3.1 years. Eighty percent of patients reported their overall condition as good, very good, or excellent according to the modified Knee Society Score.

**Conclusions:** The results from this study lend support for the strategy of combining ACI and corrective procedures to treat knees with symptomatic patellofemoral compartment chondral lesions in which there is a suboptimal biomechanical environment.

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Salvage and repair of osteochondritis dissecans with articular cartilage paste grafting

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**Purpose:** Osteochondritis dissecans is traditionally managed by debridement, fixation, or a combination of cartilage stimulation and transplantation techniques. Failure of these treatment methods may further compromise the defect site. We present a case series of our experience with primary and failed OCD reconstruction and demonstrate the utility of articular cartilage paste grafting as a treatment option for OCD lesions, particularly for those that have already failed standard treatment.

**Methods and Materials:** Eight subjects diagnosed with OCD (average age 31, range 17 to 53) were surgically treated for OCD lesions using an articular cartilage paste graft technique. Average lesion size was 634 mm² (range 100 to 1400 mm²) with a measured mean of over 10 mm deep. Three had no previous surgery and 5 presented with previously failed procedures. An ideal treatment could heal both articular cartilage surface and subchondral bone without risk of worsening the articular surface. Furthermore, if primary repair fails, few options exist for salvage of the articular surface. An ideal treatment could heal both articular cartilage surface and subchondral bone without risk of worsening the treatment site should failure occur. Our studies support the efficacy of articular cartilage paste grafting as a treatment for primary and salvage OCD reconstruction.

**Conclusions:** Patellofemoral cartilage lesions treated with both autologous cultured chondrocytes implantation and surgery to optimize the biomechanical environment.

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Arthroscopic debridement and abrasion for knee osteonecrosis in young patients

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**Purpose:** Osteonecrosis is often a difficult situation for orthopedic surgeons because of the young age and the patients functional request. Knee arthroplasty does not give the same long term excellent functional result than hip arthroplasty. Therefore we opt for a conservative treatment which is the arthroscopic debridement and abrasion. The purpose of this retrospective study was to expose the results of this surgical technique.

**Methods and Materials:** We retrospectively review 17 knees (12 patients). The surgical procedure consisted in an arthroscopic debridement: the joint injury assement was first done, the visualisation of chondral flaps lead to the resection of the debridable cartilage until the sub-chondral bone was bleeding and every joint foreign bodies were extracted. The functional scores used were the Lysholm score and the knee society score. These scores were assessed before surgery and at the last follow up. A radiological (MRI and plain radiographs) study during the follow up aimed to determine the cartilage evolution.

**Results:** The mean follow-up was 5.5 years (1–13). The mean age at the time of surgery was 27.8 years (18–46). The Lysholm score and the Knee Society Score 24 points increased (49-73 and 52-76). The mean volume of the treated necrotic area was 15.3 cm³. At last follow-up, three patients showed osteoarthritic changes. None required a total joint arthroplasty.

**Conclusions:** Arthroscopic debridement is an attractive issue for the treatment of knee osteonecrosis in young patients. It permits to relieve them waiting for a potential arthroplasty.

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Two years clinical results for chondrocytes in a hydrogel in lesions of the femoral condyle

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**Purpose:** Validation by a Phase II clinical study of histological healing and clinical improvement of femoral condyle cartilage defects treated by autologous chondrocytes implantation in an agarose-alginic matrix.

**Methods and Materials:** A two years prospective multicentric study has been conducted for grade 3/4 (ICRS) single lesions of the femoral condyle (Surface < 5cm²) to evaluate cell therapy (Chondrocyte in A hydrogel) versus a conservative approach (Acetabular trephine). The IKDC is a reliable tool to evaluate the chondrocyte in a hydrogel. The IKDC outcomes were significantly superior to the control group. The IKDC outcomes were significantly superior to the control group. The IKDC outcomes were significantly superior to the control group. The IKDC outcomes were significantly superior to the control group. The IKDC outcomes were significantly superior to the control group. The IKDC outcomes were significantly superior to the control group.

**Results:** 20 patients have been included, 17 completely treated: 12 Men & 5 Women, average of 30 years old, 37 average IKDC initial score and 3 cm² lesions surface. IKDC at 24 months: 79, 8 (<0,001), a 16% points improvement. The IKDC results were significantly superior for lesions > 3 cm², and almost significant for osteochondritis dissecans grade 2 and grade 4 lesions. MRI: 10 patients on 15 presented an original signal / normal cartilage, no visible transition for 11 /15, 13/15 for sapphire: average ICRS score of 10/12. Histology: O'Driscoll average score of 16/21. 8 patients (over 60%) presented a predominantly hyaline cartilage, 3 a mixed hyaline and 2 fibrocartilage. The average surgery time was 41 minutes.

**Conclusions:** The cartilage graft in hydrogel allows a significant clinical improvement especially in deep and large lesions with a homogeneous cells distribution explaining the good histological results.