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Abrasion arthroplasty with osteotomy for medial compartment osteoarthritis of the knee. A challenging alternative to unicompartmental or total knee replacement

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Purpose: At a highly specialized clinic for knee surgery with more than 1500 knee surgeries/year a preliminary retrospective study was performed to examine whether abrasion arthroplasty combined with osteotomy can be a viable alternative to endoprothetic knee replacement.

Methods and Materials: Between 1989 and 2002, 486 medial compartment abrasion arthroplasties with valgus osteotomy were performed at Alphaklinik, Munich. Surgery was carried out always by the chief of surgery Dr Toft himself with a standard protocol to ensure the same outcome without varying surgical skills. The Oxford Knee Questionnaire was sent to 470 patients (296 could be included for statistical analysis) All patients had grade III/IV (Outerbridge) cartilage lesions. The minimum follow-up was 12 months, the maximum 14, 4 years. Abrasion arthroplasty was performed with an abradar, combined with micro picks. Osteotomy was a closing-wedge osteotomy, with proximal fibular lysis and internal fixation. All patients followed strict 12-week non-weightbearing protocols.

Results: Ø Mean knee score for patients treated by abrasion arthroplasty/osteotomy was 38, 10 ± 8, 04. Only 2.5 percent had to undergo another operation of total knee replacement over a period of 15 years. Tissue samples of the grown replacement cartilage were taken five and nine years after surgery. Ø The nine-year samples resemble normal hyaline cartilage.

Conclusions: We conclude that abrasion/osteotomy is a true alternative to joint replacement. When compared to results for TKR and UKR, our results are challenging, with fewer, less severe complications and higher quality of life. Surgery is particularly indicated for younger patients and those, who refuse joint replacement surgery.

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Biophysical stimulation accelerates recovery of patients after arthroscopic reconstruction of ACL. Cres study group: prospective, randomized and double-blind study.F. Benazzo¹, L. Pederzini², F. Falez³, S. Giannini⁴, L. Massari⁵, S. Setti⁶;

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Purpose: Inflammatory response following surgery in a joint represents a potentially harmful event for the articular cartilage. Pre-clinical studies demonstrated that treatment of cartilage with specific biophysical stimuli controls inflammation via an adenosine A_{2A} receptor agonist activity. This study evaluates the effects of biophysical treatment in patients undergoing arthroscopic reconstruction of anterior cruciate ligament.

Methods and Materials: Patients with rupture of ACL underwent arthroscopically assisted reconstruction with use of double-looped semitendinosus and gracilis tendon grafts using biodegradable interference fit fixation. They were randomised in placebo or active group according to age, sex, smoking and severity. Biophysical treatment was performed by pulsed electromagnetic fields (I-ONE, Igea, Italy). I-ONE was used for 60 days, 5 h/die. Outcomes were assessed using the International Knee Documentation Committee form before, 30, 60 and 180 days after arthroscopy.

Results: Sixty patients completed the treatment until 180 days. Preoperatively, both groups were comparable with regard to demographic data, IKDC, health condition and pain. At day 30 the percentage of patients using NSAID to control pain was significantly lower in the active group compared to the placebo (p<0.005). At day 60, among the patients in the active group, joint swelling and limited range of motion of the knee were less frequent than among placebo (p<0.01). At 60 and 180 days the IKDC values were significantly higher in the control group (p<0.05).

Conclusions: After ACL reconstruction, biophysical stimulation, with I-ONE, leads to complete recovery in a significantly shorter time, (p<0.005). We did not observe any side effect that would lead to treatment interruption.

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Effect of the addition of growth factors in the results of ACL reconstructions with bone-tendon-bone allograftsG. Mora¹, J.R. Valenti², A. Valenti²;

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Purpose: ACL lesions are very common in sports practice. Results of reconstruction procedures are getting better and better, but the longer period (months) needed to go back to sports is still a concern. Objective: Our purpose was to analyze the effect of a platelet enriched gel (as carrier of growth factors) in the inflammatory process during the days after the operation and the clinical results at 6 months follow up.

Methods and Materials: Material and Methods: Prospective study with alternant selection in 50 patients. Group I.- Without platelet enriched gel (25 patients) and Group II - With platelet enriched gel (25 patients). The surgical technique used was always the same. All patients underwent the same type of anesthesia, and the same medication after the operation. Different scales were used to address the data (VAS, measurement of the knee perimeter pre and postop, Reactive C protein at 24 h and 7 days after the day of the surgery, IKDC score, X-ray and MRI).

Results: Statistically no significant differences have been found, although there is a statistical tendency to lower inflammatory response in group II.

Conclusions: Growth factors derived from autologous platelet enriched gel may play a role in the improvement of ACL reconstruction techniques.

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Repair of experimental articular cartilage lesions with autologous chondrocytes onto biodegradable scaffolds by arthroscopy in horsesM. Masri¹, C. Ibarra², G. Lombardero³, H. Villegas⁴, C. Velasquillo²;

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Purpose: to repair experimental articular cartilage lesions in horses by arthroscopic implantation of autologous chondrocytes expanded in vitro and seeded onto polyglycolic / polylactic acid (PGLA) and collagen scaffolds.

Methods and Materials: Twenty horses were used, divided into three groups. a) Group 1: 6 horses implanted with a chondrocytes seeded onto PGLA discs. b) Group 2: 6 horses implanted with a PGLA disc encapsulated with a chondrocyte monolayer. c) Group 3: 6 horses implanted with a collagen disc encapsulated with a chondrocyte monolayer. Controls (cartilage lesions with a drill hole in the subchondral bone) and osteochondral defects (donor sites) were also evaluated. Two additional horses were implanted with a construct of autologous chondrocytes transfected with AdGFP vector to verify the presence of autologous chondrocytes in the repair tissue. The cell-polymer constructs were implanted arthroscopically, fixed to the subchondral bone with biodegradable suture anchors. After 8 weeks (6 horses) and 6 months (12 horses) repair tissue was evaluated by arthroscopy using the ICRS and Oswestry's criteria. Two punch biopsy specimens per horse were evaluated histologically (H&E, safranin-O and trichrome stains). To assess morphology, and to determine the presence of proteoglycans, collagen, and to evaluate integration to the surrounding cartilage.

Results: All specimens retrieved showed the presence of repair tissue within the experimental lesions. Experimental groups showed significantly better tissue quality under all parameters evaluated than controls. Encapsulated PGLA constructs showed the best tissue characteristics between experimental groups.

Conclusions: Experimental cartilage lesions were repaired with cartilage-like tissue by arthroscopic implantation of autologous chondrocytes seeded onto biodegradable scaffolds.