Methods: This is a cross-sectional study of a consecutive cohort of 110 patients with OA of the knee unresponsive to anti-inflammatory therapy who underwent arthroscopic debridement. The mean follow-up time was 34 months (range 24-74 months). The cohort consisted of 36 males and 74 females with an average age of 61.7 years. Pain was assessed with the pain domain of the Knee Society scoring system. X-rays were scored by the Kellgren-Lawrence method, and limb alignment and medial and lateral joint space widths were measured. The severity of cartilage lesions was scored intraoperatively by a modified Noyes grading system. Following grading, a standardized surgical debridement of damaged cartilage was performed.
Results: Overall, 72/110 (65%) of patients had substantial pain relief post-operatively. The severity of pre-operative pain and the type of symptoms had no influence on postoperative pain scores. The severity of OA, as measured by the Kellgren-Lawrence score had a profound effect on outcome. 84% of knees with minimal radiographic changes (grade 2) had substantial pain relief post-operatively, while only 25% of knees with severe OA (grade 4) experienced adequate pain relief. Of knees with moderate OA (grade 3) about one half (53%) experienced pain relief while an equal number were treatment failures. 85% of knees with a normal tibiofemoral angle were considered treatment successes. A joint space width of 2mm or less was associated with poorer post-operative pain scores and a higher likelihood of treatment failure compared to knees with a joint space 3mm or greater. Lesion severity was also highly predictive of clinical outcome.
Conclusions: A consensus on the usefulness of arthroscopy for OA of the knee has been elusive for 20 years. Most studies have aggregated outcome scores without regard to the extent of arthritis. We performed subgroup analysis to identify the knee characteristics, if any, that predicted symptomatic improvement. Our data revealed radiographic subsets of the population of knees with OA that can be associated with outcome after arthroscopic debridement. Still unresolved is the role of arthroscopy in the relatively large population of patients with moderate OA (Kellgren-Lawrence grade 3). For this group, cartilage lesion severity measured intraoperatively was the only indicator of clinical outcome. Patients need to be counseled that their clinical outcome may depend upon the severity of cartilage lesions determined at surgery and their expectations of benefit need to take this into account.

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PARALLEL INHIBITION OF BONE AND CARTILAGE TURNOVER BY A NOVEL ORAL FORM OF SALMON CALCITONIN IN POSTMENOPAUSAL WOMEN: A NEW POTENTIAL TREATMENT OF OSTEOARTHRITIS

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To investigate parallel effects of a novel oral form of salmon calcitonin (sCT) on bone resorption and cartilage degradation in elderly women, and associations between rate of cartilage degradation, surrogate markers of osteoarthritis, and responsiveness to the pharmacodynamic effects of sCT.
This was a randomized, double-blind, placebo-controlled clinical trial including 152 postmenopausal women. Participants received either sCT (0.15, 0.4, 1.0, 2.5 mg) combined with an Eligen® technology-based carrier molecule (CNAC, 200 mg), or placebo for 3 months. The efficacy parameters were the changes in the 24-hour urinary excretion of the C-telopeptide of collagen type II (CTX II; marker of cartilage degradation) and the C-telopeptide of collagen type I (CTX I; marker of bone resorption) from baseline at Month 3. Values were corrected for creatinine excretion. Personal interview collected information on joint symptoms, used medications, or joint replacements related to osteoarthritis.
There were no differences between the different intervention groups in terms of age, BMI, and baseline measures of CTX I and II. At baseline, there was a weak correlation between measures of CTX I and CTX II (R^2=0.17, $p<0.05$). sCT induced dose-dependent decreases in the 24-hour urinary excretion of CTX II (p=0.002). Compared with baseline values, the inhibition was significant at the 0.4 mg dose and reached maximum at the 1.0 mg dose (-19.7%, p=0.009). Similar pattern of changes was seen with CTX I. The maximal inhibition of CTX I excretion was seen at the 1.0 mg dose (-41.0%, $p<0.001$). There was a significant association between the 3-month changes in CTX I and CTX II (R^2=0.33, $p<0.001$). In this population, 27% of women reported diagnosed OA or chronic joint pain. Women ih the highest CTX II tertile (390±17 ng/mmol) reported joint symptoms and history of osteoarthroplasty more frequently compared with women in the lowest tertile ($p<0.05$). Furthermore, there were generally more pronounced decreases in CTX II to sCT in women belonging to the highest tertile of baseline CTX II. When focusing on subjects with high cartilage turnover at baseline, women who received treatment with 1.0 mg sCT showed statistically significant decreases compared with the effects of placebo (–30.6%, 95% CI -55.5 to –5.7%, p=0.01).
The parallel decreases in CTX I and CTX II levels to sCT suggest that inhibition of bone turnover may confer favourable effects on cartilage turnover, but does not exclude the possibility of direct effects of sCT on chondrocytes. Based on these potential chondroprotective effects and the well-documented analgesic effects of calcitonin, further clinical assessment of this novel oral formulation as a candidate drug for the prevention of osteoarthritis seems warranted.

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COMPARATIVE TRIAL ON THE EFFICACY OF THE TREATMENT OF OSTEOARTHRITIS BY INTRAARTICULAR APPLICATION OF SODIUM HYALURONATE AND CHONDROITIN SULFATE VS. HYLAN GF-20

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Objective: 1. To prove the efficacy over pain and function of Sodium hyaluronate and Chondroitin sulfate (HS/CS), blended in a gel, applied intraarticularly, vs. a Hylan G F 20 gel applied intraarticularly, in the treatment of Osteoarthritis of the knee.
2. To analyze the functional results using the proposed treatment.
3. To determine the efficacy of the treatment using a visual analog scale (WOMAC).
4. To report the final results.
The trial used a group of 20 persons, 13 women and 7 men with ostheoarthritis grade II in the knee or patellar chondromalasia. Men's age was 47±23.23 years (16 minimum, 80 maximum). Women's age was 60.5±16.02 years(30 minimum, 87 maximum). 10 of them were treated with HS/CS and 10 with H G-F 20. They were evaluated at the beginning with Womac-index and with x-rays. They will be assigned to a treatment group to one of the following dosing regimens: a blend of 30 mg sodium hyaluronate and 40mg. chondroitin sodium sulfate/c.c. 1.5 c.c. every 15 days for 3 applications, 1.5 c.c. 90 days later and 1.5 c.c. 180 days after that, or high molecular weight Hyaluronic Acid Hylane GF 20, 8 mg./c.c. 2. c.c. every 8 days (3 applications) 2 c.c. 90 days later and 2 c.c. 180 days afterwards; both by intraarticular application at the knee, after aspiration of the existing synovial fluid and with an aseptic technique.

Duration of the trial: 12 months, with monthly assessments, regardless of the day of application to each patient.
Of the 20 patients, only 2 had a diagnosis of Chondromalasia, the others had Osteoarthritis G-II.
Results: The assessment of the two treatment groups was evaluated by the WOMAC scale in 4 categories: Poor, Fair, Good and Excellent. The difference for both treatment groups was statistically significant (p=0.021).
Pain in the evolution of the treated patients was evaluated using a scale of four categories: No Pain, Occasional Pain, Moderate Pain and Intense Pain. 40% of the patients in the HS/CS group had occasional, moderate or intense pain. While 90% of those who received Hylan GF-20 had occasional, moderate or intense pain.
The evolution of the patients was evaluated by presence or absence of crepitation in the treated joint. In this regard, the difference between treatment groups was very significant (p=0.002), with presence of crepitation in 82% of the patients in the Hylan GF-20 group versus 18% of patients with crepitation in the HS/CS group.
Any adverse event in each group.
Conclusion: Definitely the evolution of the sintomatology and the function was better for the group treated with Sodium Hyaluronate and Chondroitin sulfate than for Hylan-GF 20. Although the beginning was similar for both in terms of controlling the pain, as the trial continued and time passed, the HS/CS group kept a stable improvement in this matter and in the function until the end of the trial.

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PATIENT OUTCOMES FOLLOWING AN ARTHROSCOPIC TREATMENT REGIMEN FOR SEVERE OSTEOARTHRITIS OF THE KNEE

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Background: The benefits of arthroscopy for the treatment of osteoarthritis of the knee have recently been questioned. Although joint replacement has successful results, many patients are seeking an alternative treatment to delay replacement.
Type of Study: Case series
Hypothesis/Purpose: The purpose of this study was to evaluate the functional and subjective outcomes of patients with severe osteoarthritis of the knee that underwent a comprehensive arthroscopic treatment regimen.
Methods: Between August 2000 and November 2001, 69 knees in 61 patients were treated with a comprehensive arthroscopic regimen. Inclusion criteria included severe osteoarthritis (Kellgren-Lawrence score of 3 or 4) and minimum 2 year follow-up. Arthroscopic treatment included joint insufflation, lysis of adhesions, anterior interval release, contouring of cartilage defects and meniscus tears to a stable rim, synovectomy, removal of loose bodies, and removal of osteophytes that affected terminal extension. Exclusion criteria included treatment of chondral defects with microfracture. Failure of the arthroscopic protocol was defined as knees requiring arthroplasty. Preoperative radiographic analysis included joint space width, hip/knee angle, and shift in weight bearing axis measurements. The shift in the weight bearing axis was calculated as the ratio of the distance between the center of the knee joint to the point the axis intersected the knee and the width of the compartment through which the axis crossed.
Results: The average patient age was 57 (range 37 to 78), with 35 males and 26 females. Patients had an average of 1.5 previous surgeries (range 0 to 12). The average pre-operative Lysholm score was 49 (range 14 to 79). On average, knees were insufflated with 170cc of lactated ringer's solution (range 120 to 240). Nine knees failed, with a survivorship of 83% at 3 years. Average follow-up was 31 months (range 24 to 41). Average Lysholm was 74 (range 37 to 100), with an average improvement of 25 points. The average Tegner was 4 (range 0 to 8). Average patient satisfaction was 8 (range 1 to 10). Average WOMAC pain was 4 (range 0 to 14), WOMAC stiffness was 2 (range 0 to 4), and WOMAC function was 11 (range 0 to 44). Independent predictors of improvement in Lysholm score included shift in weight bearing axis and pre-operative Lysholm score.
Conclusion: This comprehensive, arthroscopic treatment regimen can improve function and activity levels in patients with end stage osteoarthritis and, furthermore, can delay arthroplasty. Long term results are needed to determine how long arthroplasty can be delayed by treatment with this protocol.

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MUSCLE STABILIZATION STRATEGIES AND MEDIAL KNEE OSTEOARTHRITIS

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Background: Osteoarthritis (OA) is the most prevalent type of arthritis in the United States and is most common in the medial compartment of the knee. Many studies describe hallmark gait deviations in people with medial knee OA (MKOA) including reduced knee flexion and greater knee adduction moments; however, little emphasis has been placed on the associated muscle activation strategies used by these patients. Our previous work has shown that patients with MKOA use greater medial muscle co-activation during walking that may be a compensation for greater passive laxity that appears only on the medial side of the joint. Higher medial muscle co-contraction could exacerbate the progression of OA by further increasing contact forces in the diseased medial compartment. Recent work indicates that many people with MKOA report knee instability, described as the sensation of shifting, buckling or giving way in the knee. We hypothesize that higher muscle co-activation may represent a strategy to reduce instability and that greater medial laxity may influence the instability thus eliciting more co-contraction among medial muscles.
Aim of Study: The purpose of our study was to investigate the influences of self-reported knee instability on muscle activation strategies during a disturbed walking paradigm in which knee stability is challenged.
Methods: Five persons (39-72 yrs) with diagnosed MKOA (KL Grade II or greater) and five control subjects (38 – 71 yrs) without history of lower extremity problems participated. Sagittal and frontal plane joint angles and muscle activation data were collected simultaneously as each subject walked across a moveable platform for 20 walking trials. During 10 randomly distributed trials the platform translated laterally immediately following heel strike to challenge the stability of the joint. Muscle co-activation was determined for four muscle groups – lateral quadriceps/hamstrings (LQH), lateral quadriceps/gastrocnemius (LQG), medial quadriceps/hamstrings (MQH) and medial quadriceps/gastrocnemius (MQG). Self-reported knee instability (Knee Outcome Survey) was obtained from each subject. Analyses were performed and significance was set at $p \leq 0.10$.
Results: Four of the five subjects with MKOA reported knee instability; 3 subjects reported that instability interferes with daily function. No control subjects reported instability. When stability was challenged, subjects with MKOA (OA) demonstrate greater knee flexion during midstance (p=0.016) and greater muscle co-contraction during the initial loading phase of gait as well as during midstance (p=0.019 – 0.10).