performed to include healthy knees without high degrees of joint wear or associated ligamentous injuries. The lateral menisci were circumferentially implan-
ted with radiopaque spherical markers. They were mounted to a testing apparatus applying muscle and ground-reaction forces. The meniscus was evaluated at 0, 30, 90, and 120 degrees of knee flexion using Roentgen stereophotogrammetric analysis (RSA) and with a second method using two markers put on the posterior cruciate ligament and the lateral meniscus, and the load distribution were assessed using a pressure mapping sensor system after applying a loading force of 200 N to the knee joint. Measurements were recorded for 4 states: the native lateral meniscus, the injury of the lateral meniscus-tibial liga-
ment, the primary repair of the mentioned ligament, the injury of the lateral meniscus-tibial ligament without repair but performing the arthroscopic tech-
nique of capsulodesis. Both cyclic loading and load-to-failure testing were per-
formed. The displacement, stiffness, response to cyclic loading, and mode of failure were recorded and analyzed statistically. Results: The maximum values of extrusion occurred at 60 degrees of flexion, during biomechanical testing, the mean absolute meniscal extrusion at baseline was 1.3 ± 0.5 mm. After creation of the menisco-tibial ligament lesion, the mean absolute meniscal extrusion was significantly increased (3.7 ± 0.9 mm) (P < 0.001). After repair, the extrusion was reduced to 1.8 ± 0.4 mm and after the capsulodesis the extrusion was reduced to 2.0 ± 0.5 mm. There were no statistically significant differences between the results of these last two groups. The average contact pressure of the tibial cartilage was significantly higher in the injury group than in the intact group or the primary repair and capsulodesis group. Conclusions: This study indicates that the lateral menisco-tibial ligament contributes to meniscal stability restricting the radial mobility of the lateral meniscus as lesions cause the meniscus to extrude and that repair of these ligaments and the capsulodesis technique can significantly reduce extrusion.

Category: Knee · Meniscus

**Prospective Long-Term Outcomes of The Medial Collagen Meniscus Implant Versus Partial Medial Meniscectomy: A 20-Year Follow-Up Study**

**Abstract ID# 21996**

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**Summary:** Differently from the 10 years follow-up, the clinical and the radiological out-
comes of the medial CMI were not superior compared to the patients who un-
derwent medial meniscectomy.

**Data:**

**Background:** The collagen meniscal implant (CMI) is a biologic scaffold that could be used to replace the meniscus host tissue after partial meniscectomy. The short-term results of this procedure have already been described, however, there is a paucity of comparative long-term studies. Purpose: The aim of the study was to compare the clinical outcomes, failures and osteoarthritis progression of pa-
tients who underwent partial medial meniscectomy and partial meniscus scaffold implantation. Study design: Prospective cohort-study; level of evidence, 2.

**Methods:** Thirty-six nonconsecutive patients with medial meniscal injuries un-
derwent medial CMI (MCMI) implantation or partial medial meniscectomy (PMM) between 1997 and 2000 and were included in a prospective study with an inter-
mediate 10 year follow-up examination. Outcome measures at the last follow-
up included the Lysholm score, visual analog scale (VAS) for pain, Inter-
national Knee Documentation Committee (IKDC) knee form, and Tegner activity level. Bilateral weightbearing radiographs were also completed at final follow-up to evaluate Hip-Knee-Angle (HKA), medial Joint Line Height (JL) and the medial joint line difference between the medial joint line angles. Data regarding comp-
lications and failures were collected. Results: At the final follow-up, 31 patients (15 MCMI, 16 PMM, 83% follow-up rate) were included in the final analysis at 23.1 years of follow-up. Two failures (1 per group) were reported: 1 Total Knee Arthroplasty and one medial meniscus transplant, therefore, the survival rate of the CMI was 93%. When comparing the clinical results of the two groups, no difference was found considering the Lysholm score (p = 0.86), KOOS subscales (p = 0.45 – 0.92), Tegner (p = 0.29) and the IKDC (p = 0.70). Moreover, 17 patients underwent Radiographic examination (7 MCMI, 10 MM) and no significant difference was reported with respect of the presence and incidence of Osteoar-
thritis between the two groups. Conclusion: The CMI implant for partial medial meniscectomy provided good long-term results and a low failure rate. However, differently from the 10 years follow-up, the clinical and the radiological out-
comes were not superior compared to the medial meniscectomy group.

Category: Knee · Meniscus

**Needle Arthroscopic Repair of Meniscal Tears Under Local Anesthesia: Patient Experience and Outcome Compared to the Traditional Approach**

**Abstract ID# 22377**

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**Summary:** Needle arthroscopic repair of meniscal tears under local anesthesia is safe and yields clinical outcome equal to more invasive traditional approaches, with less postoperative pain and less time spend on the surgical floor.

**Data:**

Purpose To compare patient experience and outcome of needle arthroscopic all-
inside repair of meniscal tears using only local anesthesia with the traditional arthroscopic approach. Methods This was a pragmatic, prospective and comparative trial including 20 consecutive adult patients that suffered a tra-
umatic meniscal tear in the red or red-white zone – equally divided between an innovation study arm and a control arm. In the innovation arm, procedures were performed using needle arthroscopy under local anesthesia. In the control arm, procedures were performed with traditional arthroscopy and under general or spinal anesthesia. Participants were allocated to a study arm based on shared decision making. The Hospital Anxiety and Depression Scale (HADS, 0–42, lower is better), Numeric Rating Scales (NRS, 0–10) of pain and satisfaction, use of pain medication (in addition to acetaminophen) and a Net Promotor Score (NPS; 0–10) were collected at baseline prior to the procedure, at discharge and at 1-
day, 2-days, 7-days, 6-weeks and 3-months post-op. The KOOS domains, EQ5D-
Qol and return to work were collected at baseline and 3-months post-op. Pain during the procedure was collected for needle arthroscopy patients, and pro-
cedure times for all participants. Occurrence of (serious) adverse events was monitored during the entire study. An a-priori power calculation with the baseline HADS as primary outcome measure indicated that 10 patients should be included in each group in order to detect a five-point difference between both groups. Results 20 patients were included in each group. Mean age was 34 in the needle arthroscopy arm and 37 in the traditional arm (t = 0.55, p = 0.59). Patients in the needle arthroscopy group experienced a lower NRS of pain at discharge compared to the traditional arthroscopy group (2 vs 7, p = 0.048), and less needle arthroscopy group participants used pain medication (in addition to acetaminophen) at discharge (2 vs 8 patients, p = 0.003) and at postoperative day 7 (4 vs 8 patients, p = 0.012). The EQ5D-Qol at 3 months post-op was higher in the needle arthroscopy group (80 vs 70.5, p = 0.041). Median NRS of pain during the needle arthroscopic procedure was 2 (IQR 1–6). At 3-month follow-up, there were no differences in HADS, NRS of pain, NRS of satisfaction, NPR, return to work, the KOOS domains, use of pain medication and ability to walk without supportive devices. Surgical time was longer in the needle arthroscopic group (27 vs 14 minutes, p = 0.003), yet time between arrival in the OR and discharge to the ward was longer in the traditional group (53 vs 92 minutes, p = 0.003). One pa-
tient from the traditional group was converted to a meniscectomy 9 months after the index procedure. There were no further complications. Conclusion This study indicates the feasibility of needle arthroscopic repair of meniscal tears under local anesthesia. In well selected and counseled patients, patient experience and outcome – including anxiety, satisfaction, pain and quality of life – is equal to the traditional arthroscopic approach. Postoperative pain and use of pain medication may be less and patients spend less time on the capacity constrained operative floor.

Category: Knee · Meniscus

**Arthroscopic Capsulodesis Decreases Meniscal Extrusion At 1 Year Follow Up When Combined With Transtibial Repair of Postero-medial Root Lesion. A Multicenter Prospective Randomized Study**

**Abstract ID# 22575**

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