Geistlich Surgery

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Collagen-Covered Autologous Chondrocyte Implantation (ACI-C) versus Autologous Matrix-Induced Chondrogenesis (AMIC®) for Cartilage Repair in the Knee

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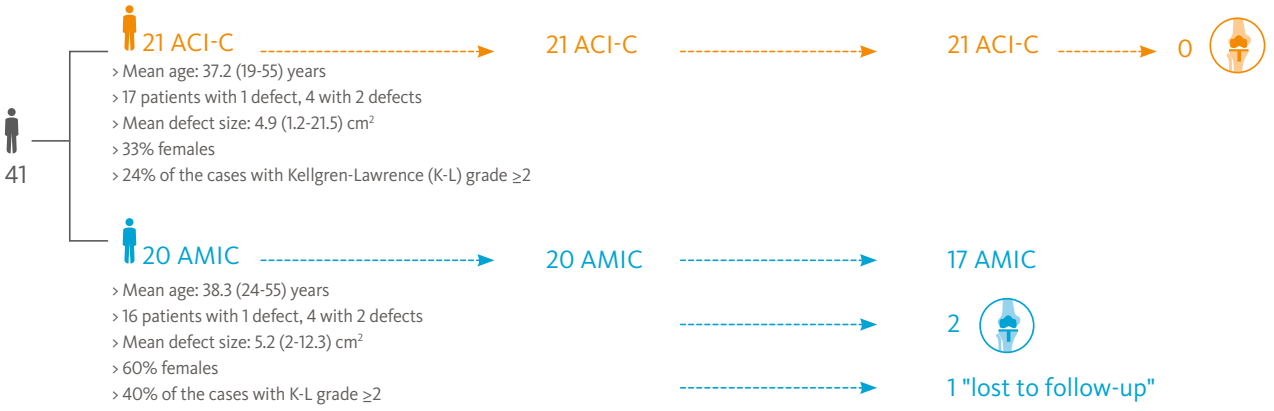
- First randomized controlled clinical study (Level 2) comparing clinical outcomes between ACI-C and AMIC® Chondro-Gide® for the treatment of chondral or osteochondral defects in the knee
- At 2 years, both treatment methods resulted in a similar significant improvement in clinical outcomes while no significant superiority of either ACI-C or AMIC® was observed.

Start
- Patients with 1 or 2 chondral or osteochondral lesions of the distal femur and/or patella were randomly assigned to undergo either AMIC® or ACI-C treatment
- Symptomatic defects > 2cm² was an inclusion criterion.
- All patients had 1-6 prior surgeries in the index knee and 50% had a prior microfracture procedure

At 1 year follow-up
- No treatment failures and no patients were lost-to follow-up

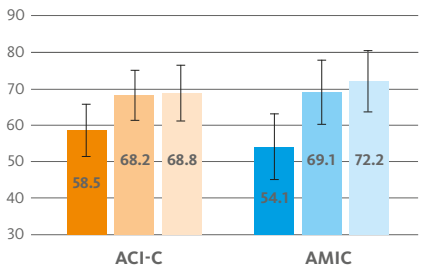
At 2 years follow-up
- Failure was defined as any deterioration in KOOS during the 2-year follow-up (= clinical failure) or patients needing a new resurfacing procedure of the index lesion or a total knee replacement (= "hard failure")



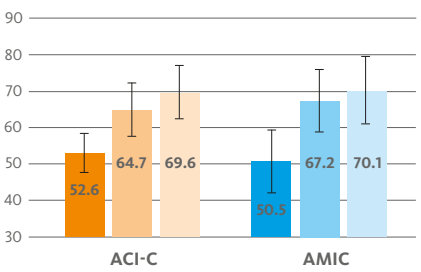
Significant Improvement of Knee Function (KOOS/Lysholm) and Pain VAS Score

- Both cartilage repair methods resulted in significant improvement of average KOOS and Lysholm scores as well as a significant reduction in pain VAS at 1- and 2-year follow-up, when compared to baseline values.
- Despite a larger mean defect size and more patients with K-L grade ≥ 2 in the AMIC® group, at 1 and 2 years, this group showed a higher mean improvement in all clinical scores compared to the ACI-C group (see graphs below).

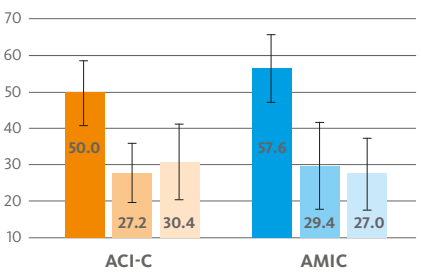
Mean total KOOS Score



Mean Lysholm Score



Mean Pain (VAS) Score



ACI-C: Baseline, 1 year, 2 years
AMIC: Baseline, 1 year, 2 years

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CHONDRO-GIDE® LITERATURE HIGHLIGHT

The bilayer collagen membrane is an established product for cartilage therapies with 20 years of clinical use. AMIC® Chondro-Gide®, a technique that combines bone marrow stimulation with the use of a collagen membrane, has been used for over 15 years. Based on pre-clinical and clinical evidence, AMIC® was included in the treatment recommendations for cartilage lesions of the talus, knee and hip by the respective committees of the German Society for Orthopaedics and Trauma (DGOU).

This literature highlight addresses important aspects of the evidence for Chondro-Gide® and AMIC®.

› Patients with previous microfracture surgery to the study knee exhibited a lower improvement of mean total KOOS, but this difference was not significant.

› At 2 years, there were 3 clinical failures with KOOS deterioration in both groups. In addition, 2 patients in the AMIC® group were classified as "hard failures" with progression to a total knee replacement (both patients with a K-L score of 2 at baseline) while there were none in the ACI-C group.

Conclusions

› These good results at 2 years after AMIC® repair were achieved in **relatively large, degenerative lesions** (mean defect size of 5.2 cm^2).

› The **clinical outcomes** showed **no significant difference in improvement** when comparing the ACI-C and AMIC® group at 2 years, which may be due to the small number of patients in each group resulting in a low power of the study.

› **Cell source** (bone marrow stem cells or expanded autologous chondrocytes) **did not appear to affect** the results of this study.

› The authors concluded that if the results of the study can be confirmed after 5- and 10-year follow-up, **AMIC®** could be considered an **equal alternative to techniques based on chondrocyte transplantation** for treatment of knee cartilage defects.

› Furthermore, if comparable long-term results are obtained, AMIC® as a one-step procedure would be preferable to the more complex, two-stage ACI-C procedure.

For details of the study refer to the original article:

Collagen-Covered Autologous Chondrocyte Implantation Versus Autologous Matrix-Induced Chondrogenesis

A Randomized Trial Comparing 2 Methods for Repair of Cartilage Defects of the Knee

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› Chondro-Gide®, the original AMIC® membrane[1]
› One-step procedure for cartilage regeneration techniques [1,2,3]
› With more than 10 years of clinical experience[4]

1 Geistlich Pharma AG, data on file
2 Schiavone Panni, A. et al. Good clinical results with autologous matrix-induced chondrogenesis (Amic) technique in large knee chondral defects. Knee Surg Sports Traumatol 2018 Apr;26(4):1130-1136. doi: 10.1007/s00167-017-4503-0. (Clinical study)
3 Niemeyer, P, et al. Significance of Matrix-augmented Bone Marrow Stimulation for Treatment of Cartilage Defects of the Knee: A Consensus Statement of the DGOUWorking Group on Tissue Regeneration. Z Orthop Unfall 2018; 156(05): 513-532. doi: 10.1055/a-0591-6457
4 Kaiser, N., et al. Clinical results 10 years after AMIC in the knee. Swiss Med Wkly, 2015, 145 (Suppl 210), 43S. (Clinical study)

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