CaReS-1S®

The matrix makes the difference
CaReS-1S® - the new generation in the therapy of Cartilage Defects

- **Matrix – Technology**
  99.8% pure, native collagen is gelatinized to a formable, 3-dim. matrix with high biocompatibility

- **Hydrogel as a „cell catcher“**
  osmotic properties stimulate the ingrowth of cells into the implant

- **Migration of autologous cells**
  migrated autologous cells from the surrounding tissue proliferate and populate the entire implant

- **Complete conversion into collagen type II**
  together with migrated chondrocytes the cells express collagen type II in the extracellular matrix

Cartilage regeneration system for the formation of hyaline-like cartilage

CaReS-1S® - path to lasting cure by cartilage defects

- forms hyaline-like cartilage, no fibrocartilage
- marginal adaptation (bonding) by formable hydrogel
- complete conversion of collagen type I in collagen type II
- single-stage surgery
- no microfracture necessary
- suitable for defect sizes up to 8 cm²
- „ready to use“
- storage at room temperature

Native cartilage consists of collagen type II, chondrocytes and proteoglycan. Impelmenting CaReS-1S®, the challenging regeneration of damaged cartilage can be achieved.

CaReS-1S® supports the body by a hydrogel embedded in a multidirectional collagen matrix in the accretion of autologous chondrocytes.
“Cell-free collagen type I matrices appear to be a safe and suitable treatment option even for large cartilage defects of the knee.” *


Surgical Technique – Knee (short)

1. MRI side shot; defect area
2. Access on the location of cartilage damage
3. Debridement on the defect zone
4. Filling of the bone defect; e.g. with NanoBone
5. Adjustment of CaReS-1S®
6. Opening of the sterile packaging and transfer to a sterile pad
7. Cutting of the CaReS-1S® implant
8. Transfer of the CaReS-1S® to the defect zone
9. *Application of fibrin glue for the fixation of CaReS-1S®*
10. Placing of the prepared CaReS-1S® implant
11. Careful modeling of the CaReS-1S® implant
12. Capsule suture and wound closure
13. Do not use suction drainage

Modeling: A safe and easy insertion of the CaReS-1S® implant, to the level of the surrounding cartilage, achieves the best possible result.
✓ Homogeneous cell distribution
✓ Visco-elastic properties comparable to those of hyaline cartilage

Rehabilitation (Femur condyles/Talus role)

- **Day of Surgery**
- **Day 2 postoperative**
  - Mobilisation after removal of the drainage
  - Only ground contact of the operated leg for 6 weeks
  - Limitation of the movement to 0°
  - Limitation of the movement for 3 weeks to 0°
- **Week 3 postoperative**
  - At least 2-times daily for 1 hour: continuous passive motion (CPM)
- **Week 6 postoperative**
  - From the 7th week post-surgery load progression
- **Week 12 postoperative**
  - From a bending of 90°: cycling, walking, running allowed; muscle building
- **Week 52 postoperative**
  - Risk sports are allowed after 1 year
Indications of CaReS-1S®

Indications

• Focal, full-layer cartilage defects with cartilage shoulder
• ICRS classification 3 and 4
• Defects without and with involvement of the subchondral bone (for osteochondral lesions the bone has to be reconstructed, e.g. with NanoBone®)
• Defect size up to 8 cm²
• Age: 18 – 60 years, depending on the biological age of the joint
• BMI < 35
• Osteochondritis dissecans

Requirements

• Resection of the meniscus: a maximum of 1/3 may be resected
• Stable joint (no untreated ligament injuries; a cruciate ligament plastic can be done together with the CaReS®-1S implantation in one surgery)
• Leg deformity < 5°

Contra Indicationen

• Generalized osteoarthritis
• Inflammatory diseases (rheumatism, articular gout,...)
• Chronic infection diseases
Intraoperative view of the CaReS-1S® implant
3.5 years AFTER implantation (star)
Schüttler et al. BMC Surgery 2013, 13:11
http://www.biomedcentral.com/1471-2482/13/11

<table>
<thead>
<tr>
<th>Defect size</th>
<th>Advantages of CaReS®-1S</th>
<th>Previous treatments</th>
<th>Disadvantage of previous treatments</th>
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<tbody>
<tr>
<td>regardless of the defect size</td>
<td>Stable implant; complete filling of the defect and formation of hyaline-like cartilage; long lasting effect</td>
<td>Chondroprotectives, e.g. hyaluronic acid injections</td>
<td>Rapid degradation of hyaluronic acid; only short-term relief of symptoms; cartilage damage remains</td>
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<tr>
<td>0cm² – 2cm²</td>
<td>No formation of scar-like cartilage but regeneration of the tissue; no damage to the healthy bone; formation of hyaline-like cartilage; long lasting effect</td>
<td>Microfracture</td>
<td>Formation of scar-like cartilage inferior quality; only suitable for small defects</td>
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<td>1.5cm² – 3cm²</td>
<td>No damage to healthy cartilage and bone necessary; complete filling of the defect; Preparation of the congruence of the cartilage surface</td>
<td>Osteochondral Transplantation (OCT), mosaicplasty; osteochondral autologous graft system (OATS)</td>
<td>Damage of the bone and cartilage at the donor site; no complete filling of the defect possible; restoration of the cartilage surface difficult</td>
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<td>3cm² – 12cm²</td>
<td>Only one operation; costs are covered by health insurance; formation of hyaline-like cartilage; long lasting effect</td>
<td>ACI/MACI, (matrix-coupled) autologous chondrocyte implantation</td>
<td>Two operations; very expensive and complex method; high administrative expenses (registration required); pharmaceutical</td>
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<tr>
<td>0cm² – 8cm²</td>
<td>All the advantages described above</td>
<td>This size range is not covered by a single, previous described method</td>
<td></td>
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Excerpt from the bibliography

<table>
<thead>
<tr>
<th>Titel</th>
<th>Autor</th>
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<tbody>
<tr>
<td>Cell-free repair of small cartilage defects in the Goettinger minipig: which defect size is possible?</td>
<td>Gavenis et al., Knee Surg Sports Traumatol Arthrosc DOI 10.1007/s00167-011-1847-8</td>
</tr>
<tr>
<td>A Cell-Free Collagen Type I Device for the Treatment of Focal Cartilage Defects</td>
<td>Gavenis et al., Artif Organs, Vol. 34, No. 1, 2010</td>
</tr>
<tr>
<td>Short-term follow up after implantation of a cell-free collagen type I matrix for the treatment of large cartilage defects of the knee</td>
<td>Roessler et al., International Orthopaedics (SICOT) DOI 10.1007/s00264-015-2695-9</td>
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Bei Fragen zur Anwendung, zum Produkt und / oder zur Bestellung von CaReS-1S® nehmen Sie gern Kontakt mit uns auf!

Manufacturer

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Product list   CaReS-1S®

<table>
<thead>
<tr>
<th>product number</th>
<th>Description</th>
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<tbody>
<tr>
<td>C-1S 114</td>
<td>CaReS-1S® 11 x 4 mm</td>
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<td>C-1S 116</td>
<td>CaReS-1S® 11 x 6 mm</td>
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<tr>
<td>C-1S 224</td>
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