

CONSIDER
THE EVIDENCE
CONSIDER
CARTIGROW®.

For the repair of articular
cartilage damage in the knee

CARTIGROW®

Autologous Adult Live
Cultured Chondrocytes

From



INTRODUCTION

Seeing is believing. This quote implies that you believe something to exist and true, if you see it yourself, even though it is extremely unusual or unexpected.

For joint surgeons, there is nothing more convincing than a relook arthroscopy. It is a procedure performed to 'see' and visualize the outcome of a surgical treatment in a defective joint.

Articular cartilage lesions are present in more than 60% of knee arthroscopic procedures^{1, 2}. Autologous Chondrocyte Implantation (ACI) is a cell therapy technique used for the repair and regeneration of articular cartilage for several decades^{3,4,5}. Many studies have reported the long-term clinical benefits of ACI for cartilage defects. A study reported that treatment with ACI for large, symptomatic, full-thickness lesions of the distal femur can result in early improvement that is sustained at longer follow-up (up to 10 years) in most patients^{6,7}. A US study reported that ACI provided satisfactory survival rates and significant clinical improvements over a 20-year follow-up⁸ ACI can be performed through arthroscopy in the joint and many studies have reported the use of MRI to evaluate the clinical follow-up results after the implantation procedure.

In this compendium, we highlight the use of relook arthroscopy as a procedure to determine the repair of the osteochondral lesion and regeneration of cartilage after CARTIGROW® ACI. The true success of ACI lies in the presence of new, regenerated hyaline like cartilage tissue and this can be visualized through relook arthroscopy. Relook arthroscopy reveals tissue regeneration with apparent preservation of the joint surfaces based on visual observations. Several factors such as degree of defect repair, integration of regenerated cartilage with the border zone of the defect, hypertrophy and, quality of the repaired tissue surface were evaluated with relook arthroscopy⁹. This procedure is the ultimate litmus test to 'see' the outcome and determine efficacy of ACI at a long-term follow-up. We present case reports of patients who underwent CARTIGROW® ACI and the efficacy of the procedure through arthroscopy before the treatment and relook arthroscopy to confirm the repair and presence of hyaline like cartilage after CARTIGROW® ACI.

References

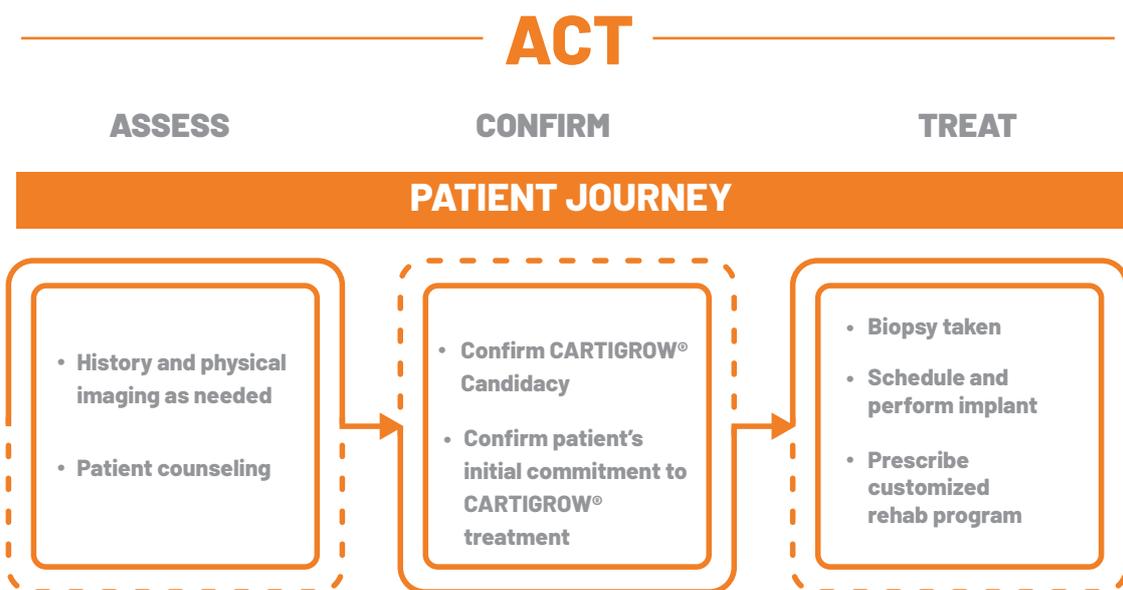
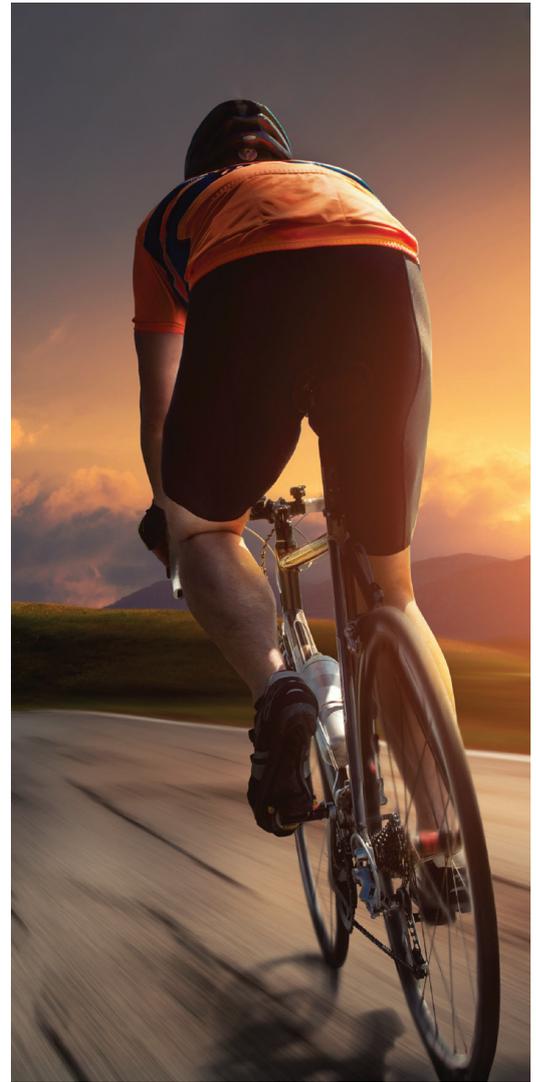
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THE CARTIGROW® TREATMENT PROTOCOL

ASSESS, CONFIRM, TREAT (ACT)

CARTIGROW® has a long and established legacy, being used since 2009, and is the first and only cartilage repair product to have a *cell therapy (biological drug) license approved by DCGI* in India. It has provided orthopedic surgeons with a versatile option for relieving knee pain and improving function for up to **10 years** in patients with **moderate-to-large articular cartilage defects** that may have had an inadequate response to a prior procedure.

The ACT protocol is designed to offer orthopedic surgeons a clear understanding of the CARTIGROW® treatment process.



CARTIGROW® ACI

What makes CARTIGROW® ACI an Easy and Highly Effective option?

Over the last 20 years, ACI has evolved in significant ways. The 1G initial technology started with a few million cells combined with a periosteum membrane. Moving to 2G, cells were cultured on a 2D collagen scaffold. CARTIGROW® ACI is the latest 3G technology combining the use of >48 million chondrocyte cells with Gel based delivery system (GACI).



KEY HIGHLIGHTS

- Cartigrow® ACI enables LARGE DEFECT coverage ranging upto 15 - 20cm².
- Regenerates HYALINE like cartilage.
- Recreates the CONTOUR of the articular surface.
- Ankle, Shoulder and select Knee cases can be performed ARTHROSCOPICALLY.



CARTIGROW® ACI

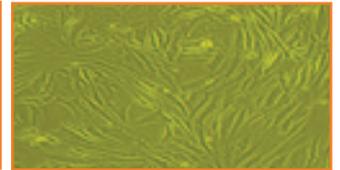
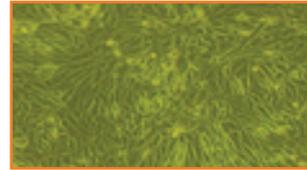
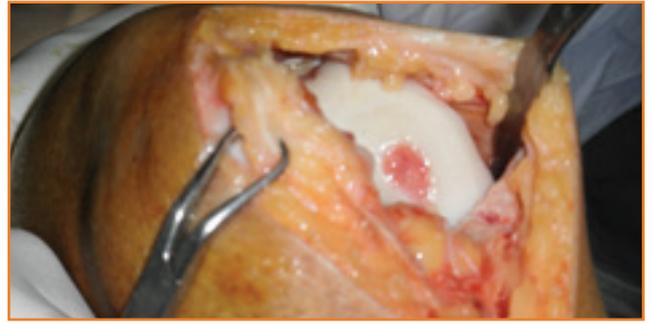
CARTIGROW® ACI TECHNICAL FEATURES

- > 48 million chondrocytes
- Endotoxin, Mycoplasma, Fungal and Bacteria sterility testing cleared
- Characterized with CD 44⁺ & CD 151⁺ cell surface markers expressing Collagen Type 2 chondrocytes
- Cell Viability over 80%

CASE 1

Pre - Operative

- Age & Gender : 41 yr / Female
- Profession : Homemaker
- Defect Location: Osteochondral Defect on Medial Femoral Condyle & Trochlea of Right Knee
- Defect Size: 2.4 x 1.5cm and 0.8 x 0.8cm
- Implant Date: November 2011
- Pre-operative Lysholm Score : 53
- Pre-operative Pain Score : 85



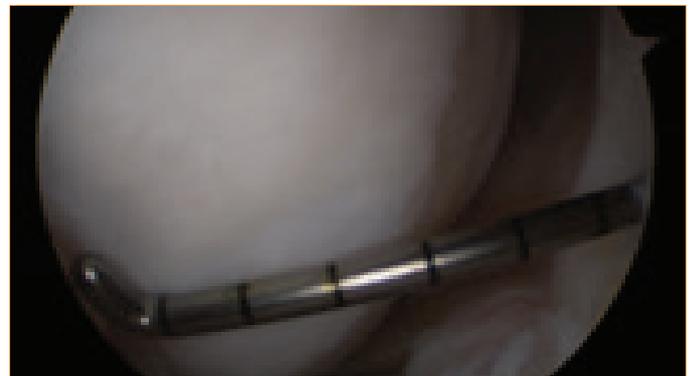
Cell Culture: P1 Stage

Cell Culture: P2 Stage

Post - Operative

- Relook arthroscopy was performed after 24 months of treatment and the cartilage implant area was observed. New healthy articular cartilage was probed and found to be healthy and stable, integrated with the surrounding cartilage.
- Post-operative Lysholm Score : 80
- Post-operative Pain Score : 0

Arthroscopic View



New Hyaline like Cartilage Formation Was Observed During Relook Arthroscopy

Patient was under care of Dr. Sachin Tapasvi.

We thank Dr. Sachin Tapasvi and his team for sharing this case report.



Dr. Sachin Tapasvi

MS (Ortho - Gold Medalist), DNB (Ortho), MNAMS, AFAOA, FRCS (Glasgow).



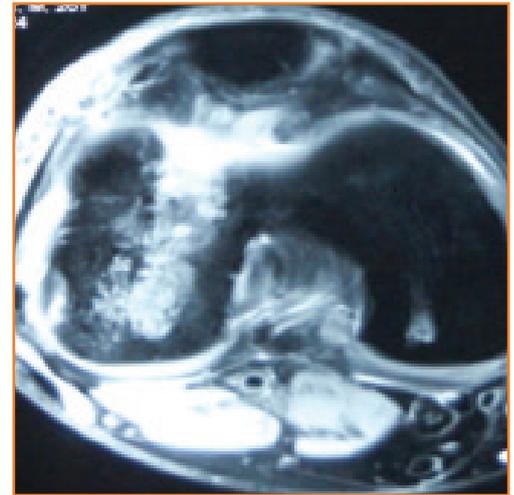
DR. SACHIN TAPASVI
Orthopaedic Specialist

The Orthopedic Speciality Clinic, Pune, India.

CASE 2

Pre - Operative

- Age & Gender : 28yr / Male
- Profession : Electrician
- Defect Location: Osteochondral Defect on Lateral Femoral Condyle of Right Knee
- Defect Size: 6 x 1.5 x 0.7cm
- Implant Date: December 2008
- *Pre-operative Lysholm Score : 31*
- *Pre-operative Pain Score : 80*



Arthroscopic View



Biopsy



Defect Preparation



CARTIGROW® ACI Implantation

Post - Operative

- Relook arthroscopy was performed after 24 months of treatment and the cartilage implant area was observed. New healthy articular cartilage was probed and found to be healthy and stable, integrated with the surrounding cartilage.
- *Post-operative Lysholm Score : 95*
- *Post-operative Pain Score : 0*

Arthroscopic View



New Hyaline like Cartilage Formation Was Observed During Relook Arthroscopy

Patient was under care of Dr. Dinshaw Pardiwala.

We thank Dr. Dinshaw Pardiwala and his team for sharing this case report.



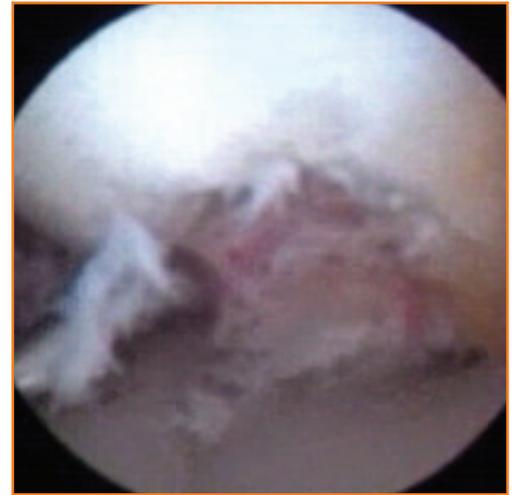
Dr. Dinshaw Pardiwala

Director, Arthroscopy, Sports Orthopaedics & Shoulder Service
and Head, Centre For Sports Medicine
MBBS, MS (Ortho), DNB (Ortho), FCPS
Kokilaben Dhirubhai Ambani Hospital, Mumbai, India.

CASE 3

Pre - Operative

- Age / Gender : 25yr / Male
- Profession : Farmer
- Defect Location: Osteochondral Defect on Medial Femoral Condyle of Right Knee
- Defect Size : 2.0 x 1.5cm
- Implant Date: December 2009
- Pre-operative Lysholm Score: 43
- Pre-operative Pain Score: 80



Cartigrow® ACI Implantation



Post - Operative

- Relook arthroscopy was performed after 24 months of treatment and the cartilage implant area was observed. New healthy articular cartilage was probed and found to be healthy and stable, integrated with the surrounding cartilage.
- Post-operative Lysholm Score: 90
- Post-operative Pain Score: 0

Arthroscopic View



New Hyaline like Cartilage Formation Was Observed During Relook Arthroscopy

Patient was under care of Dr. Raghuvveer Reddy.

We thank Dr. Raghuvveer Reddy and his team for sharing this case report.



Dr. Raghuvveer Reddy

MS(Ortho), DNB(Ortho), Fellowship in Arthroscopy and Sports Orthopaedics (Manipal, Australia, Germany, Dallas)
Sai Institute Of Sports Injury & Arthroscopy, Hyderabad, India.

GET CONNECTED WITH **CARTIGROW® CARE**

CARTIGROW® Care is a dedicated team you can turn to for answers for support and resources throughout CARTIGROW® knee cartilage treatment experience.

From biopsy to rehabilitation, a personal CARTIGROW® Care Coordinator is available to explain logistical, insurance, and administrative issues related to treatment. You can call CARTIGROW® Care personnel Monday through Saturday during normal business hours to address questions regarding:

- **Patient counselling and education about potential benefits**
- **Insurance eligibility verification and authorization assistance**
- **Surgery scheduling and coordination**
- **Helpful tips in preparing for surgery**

To learn more about CARTIGROW®,
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