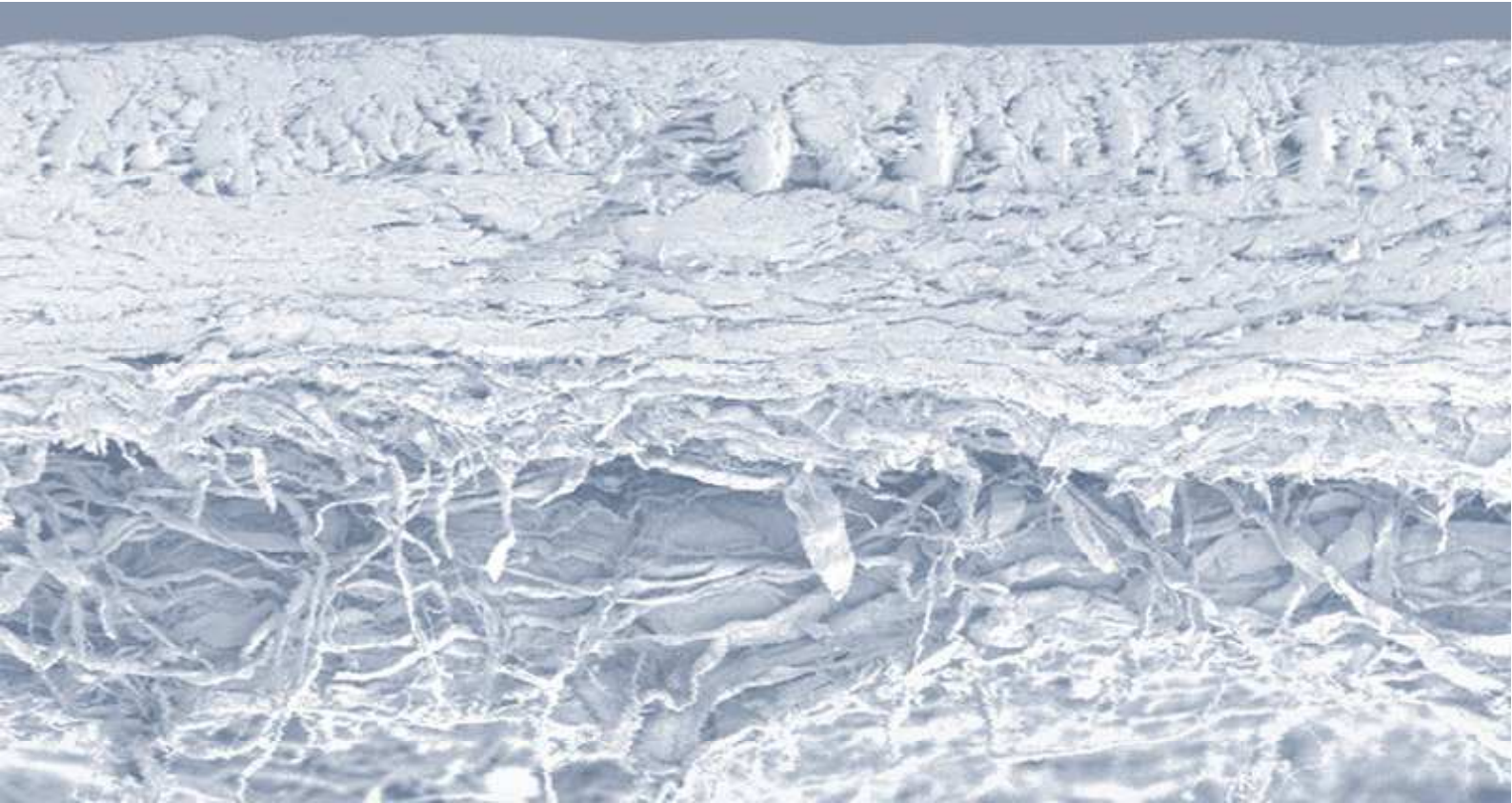


Cartilage Regeneration

Newsletter 1/2007



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Introduction

The Bone and Joint Decade 2000–2010

The Bone and Joint Decade 2000–2010 aims to improve the health-related quality of life for people with musculo-skeletal disorders by working in partnership with all stakeholders to raise awareness, identify needs, empower patients, promote cost-effective prevention and treatment and advance understanding through research. Bone and joint diseases affect hundreds of millions of patients throughout the world, and are the leading cause of pain and disability, having a huge impact on individuals, families, societies and economies.

Bone and joint diseases account for half of all chronic conditions in people over 50 years of age in developed countries. This number is set to increase sharply due to a predicted doubling in the world population aged over 50 years of age by 2020.

In developing countries 10 to 15 million people are injured or disabled every year from road accidents, many of whom are young.

The medical and patient community has formed an international initiative, **the Bone and Joint Decade**, committed to reducing the burden of the leading, severe, long-term conditions around the world.

Aims of the Bone and Joint Decade:

- To reduce the social and financial burden of musculo-skeletal conditions to society
- To improve prevention, diagnosis and treatment for all patients
- To advance research on prevention and treatment
- To empower patients to make decisions about their care

The international Cartilage Repair Society is one of the specialist societies associated with the Bone and Joint Decade. The ICRS is celebrating its **10th anniversary** this year. Interest in cartilage repair and tissue engineering has been growing enormously since that time, not only in musculoskeletal repair but for all types of tissue and organs. ICRS is the main forum for all types of cartilaginous tissues.

Geistlich Biomaterials is a silver sponsor of the upcoming ICRC Meeting in Warsaw, Poland. Geistlich recognises the trends in tissue engineering and cartilage repair and has responded to them by becoming a specialist in regenerative medicine.

Geistlich is currently the worldwide market leader in regenerative dentistry with more than 2 Million patients treated over the last 20 years.

Our proven Orthopaedic products include biological matrices for the regeneration of bone and cartilage. They reliably provide a scaffold function to stimulate and guide new tissue to regenerate and repair the bodies damaged structures.

*Geistlich Biomaterials
March 2007*

Posters/Abstracts Cartilage Regeneration

E-Learning in Cartilage Regeneration

Treatment of Chondral Lesions in the Knee

by Prof Mats Brittberg - published in BJDonline, 2006-10-02

This exclusive eLecture is presented by Dr Mats Brittberg, Associate Professor and a member of the Cartilage Research Unit, Department of Orthopaedic Surgery, at Gothenburg University in Sweden. Dr Brittberg is also President of the International Cartilage Repair Society. Dr Brittberg's research has been focused on cartilage repair, with the unique focus on cartilage regeneration using in vitro expanded autologous chondrocytes. Today his main interest is the recently established European Connective Tissue Engineering centre (ECTEC), a research collaboration between Gothenburg Medical University and the institution of Polymer Technology, Chalmers Technical University.

His online lecture can be found by following the following link:

<http://www.boneandjointdecade.org/eLecture/1717/BJD-talks.3.Brittberg.html>

Periosteum covered ACT versus Collagen type I/III covered ACT

A prospective, randomised study comparing two techniques of autologous chondrocyte implantation for osteochondral defects in the knee: Periosteum covered versus type I/III collagen covered.

Gooding CR, Bartlett W, Bentley G, Skinner JA, Carrington R, Flanagan A.

Institute of Orthopaedics, Royal National Orthopaedic Hospital, Brockley Hill, Stanmore, Middlesex HA7 4LP, UK.

Source: The Knee. 2006; Vol 13(3):203-10.

Introduction: The results for autologous chondrocyte implantation (ACI) in the treatment of full thickness chondral defects in the knee are encouraging. At present, two techniques have been described to retain the chondrocyte suspension within the defect. The first involves using a periosteal cover (ACI-P) and the second involves using a type I/III collagen membrane (ACI-C). To the authors knowledge there are no comparative studies of these two techniques in the current literature. We have therefore undertaken such a study to establish if there is a difference between the 2 techniques based on a clinical and arthroscopic assessment.

Methods: A total of 68 patients with a mean age of 30.52 years with symptomatic articular cartilage defects were randomised to have either ACI-P (33 patients) or ACI-C (35 patients). The mean defect size was 4.54 cm². All patients were followed up at 24 months.

Results: A clinical and functional assessment showed that 74% of patients had a good or excellent result following the ACI-C compared with 67% after the ACI-P at 2 years. Arthroscopy at 1 year also demonstrated similar results for both techniques. However, 36.4% of the ACI-P grafts required shaving for hypertrophy compared with none for the ACI-C grafts at 1 year.

Discussion: This study has shown no statistical difference between the clinical outcomes of ACI-C versus ACI-P at 2 years. A significant number of patients who had the ACI-P required shaving of a hypertrophied graft. We conclude that there is no advantage in using periosteum as a cover for retaining chondrocytes within an osteochondral defect; as a result we advocate the use of an alternative cover such as a manufactured type I/III collagen membrane.

Comments: ACI using a periosteal patch to cover the defect has now been with us in clinical practise since 1994 and has become the gold standard for the treatment of full-thickness chondral defects. There have always been differing views on the incidence of graft hypertrophy amongst the various centres performing this technique regularly, but since the introduction of Chondro-Gide® all centres have noticed that the use of Chondro-Gide® is associated with substantially less cases requiring re-operation for this problem. It is then reassuring to see this article reiterates the findings of Haddo et. al. from the same centre in 2004. Reduced incidence of graft hypertrophy is not the only advantage to using Chondro-Gide®. Smaller incision, faster operative time, easier handling properties and less post-operative pain from the periosteal harvest site are all factors making Chondro-Gide® the logical choice for ACI.

Are outcomes of microfracture for isolated chondral defects in the knee related to location?

Stephen Austin Hunt¹, David Noble², Karen Briggs³, Richard Steadman³

Bedminster, NJ¹; Indianapolis, IN²; Vail, CO³

Source: AAOS Annual meeting, 14-18 February 2007, San Diego

Introduction: To determine if location of lesion affects outcomes following microfracture of isolated full-thickness chondral injuries in the knee.

Methods: A retrospective review of prospectively collected data was performed for this cohort of 95 patients (44 female, 51 male: 47 left, 48 right knees) with a mean age of 36 years (range 12 – 69). Inclusion criteria were full-thickness chondral defects treated by microfracture; traumatic aetiology; no ligamentous pathology at the time of microfracture; no meniscal pathology requiring treatment and no multiple chondral defects.

Results: Incidence of lesion at each of these locations were 10 lateral femoral condyle (LFC), 33 trochlear groove (TG), 28 medial femoral condyle (MFC), 18 patellar (Pat), 5 lateral tibial plateau (LTP) and 1 medial tibial plateau (MTP). The average size of lesion was 175mm². Outcome measures included Lysholm, Tegner and patient satisfaction scores with a mean follow-up of 4 years (range 2 – 10.3). There was no significant difference in size between compartments ($p>0.05$). Lysholm was not associated with age, lesion size or time of follow-up, however; post-op Tegner was associated with age ($r=0.39$, $p=0.003$). Males had higher pre-op Lysholm ($p=0.001$) and higher post-op Tegner ($p=0.007$). A significant difference was found between lesions of femoral condyles and patello-femoral surfaces in terms of Lysholm score and patient satisfaction ($p<0.05$).

Discussion: An analysis of different locations of full-thickness chondral lesions showed femoral condyle lesions respond better to microfracture than patello-femoral surfaces. Location of isolated chondral defects treated with microfracture may be an important predictor of success; however, high patient satisfaction was seen in all areas.

Comments: As we become more confident in treating chondral lesions, we begin to acknowledge the presence of defects in areas other than the condyles. These locations have typically been excluded from earlier clinical studies precisely because their outcomes have been less satisfying than those located on the femoral condyles.

We cannot continue to ignore these areas that do not do well with our current treatment modalities. We need to look at why our techniques are not working and adapt them to better serve our patients needs.

The AMIC[®] technique is the result of such focused problem-solving. By ensuring the stability of the 'super-clot' rich in MSC's, a biological chamber is formed using the Chondro-Gide[®] matrix, which allows the stem cells to differentiate and form a healthy repair cartilage.

Influence of Matrix based Microfracture for the therapy of chondral defects in a sheep model

Peter Muller¹, Bernd Wegener¹, Stefan Milz², Philip Bergschmidt², Volkmar Jansson²
Weisendorf, Germany¹, Munchen, Germany²

Source: AAOS Annual meeting, 14-18 February 2007, San Diego

Introduction: Hyaline cartilage defects generally progress to osteoarthritis. Knutsen et. al. demonstrated that there is no benefit of ACT compared to microfracture for smaller defects. According to the hypothesis of the 'Kausale Histogenese' of Pauwels mesenchymal stem cells have the potential to differentiate under mechanical stress to several tissues including hyaline cartilage. Aim of the present study was to improve cartilage defect repair by differentiation of adult mesenchymal stem cells with matrix based microfracture.

Methods: Two chondral defects (8mm diameter) were created in the weight-bearing area of the femoral condyle of 12 sheep. The defects were either left untreated as control group, filled with matrix or were treated by microfracture or the combination of matrix and microfracturing. The animals were allowed full weight-bearing after the operation. After 12 weeks the animals were sacrificed.

Results: Investigated parameters were: quantity and the quality of the regenerative tissue, evaluated by the score according to O'Driscoll and immunohistochemistry for Aggrecan, Collagen I and II. The results of all treated groups showed significant higher tissue regeneration compared to the untreated controls. Only the matrix based microfracture showed a significant improved result in the score according to O'Driscoll. (void: 8,3 points, microfracture 8,8 points, matrix 12,5 points, matrix based microfracture 20,8 points)

Discussion: This tissue shows hyaline like orientation. In our present animal model, the combination of matrix with microfracture appears to be superior to clinically established microfracture.

Comments: In mirroring previous animal work by Behrens et al, this study has confirmed the improved outcome of the AMIC® technique over simple microfracture. These findings are carried through to the clinic where the first cohort of patients have reached the 3-4 years post-op stage and are doing extremely well. (One year results presented by Barrow et al at ICRS 2006) There is now also an ongoing RCT comparing AMIC to microfracture in Germany. We eagerly await the outcome of this trial in the near future.

Microfracture for the treatment of chondral defects of the knee in professional Basketball players

Doug Cerynik, Gabriel Edward Lewullis¹, Michael Palmer, James A Tom²

Philadelphia, PA¹; Moorestown, NJ²

Source: AAOS Annual meeting, 14-18 February 2007, San Diego

Introduction: This study evaluated the outcomes of microfracture for isolated full thickness chondral defects of the knee in professional basketball players in the National Basketball Association (NBA).

Methods: Data from 23 basketball players over a nine-year period (1997-2006) was obtained and analysed from NBA summaries, injury reports and player profiles. Variables included age, player position, location and size of chondral defect and games missed. Individual season statistics were obtained and NBA player efficiency ratings were calculated for 3 seasons before and after injury.

Results: Average age at time of injury was 28.7 years. 3 Players never returned to play an NBA game, 4 players returned to play less than 3 seasons and 16 players returned to play more than 3 seasons. Players who returned missed an average of 41.5 games. Average decrease in minutes per game during the first and third seasons after injury were 5.8 and 4.0 minutes, respectively. NBA player efficiency ratings for players who returned to play demonstrated an average reduction of 3.1 during the first season after injury ($p < 0.03$) and an average reduction of 1.4 by the third season after injury ($p < 0.34$).

Discussion: Professional basketball players who returned to play after undergoing microfracture for isolated full-thickness chondral defects of the knee showed a significant decrease in their playing time and performance during the first season after injury but returned to their pre-injury baseline by the third season after injury. 30.4% of players never returned to play or returned to play for less than 3 seasons.

Comments: The elite athlete presents a unique clinical challenge for the orthopaedic surgeon. He or she is under huge pressure to return to work as fast as possible at an extremely high activity rate. This is somewhat at odds with what we understand about the maturation of immature cartilage tissue. The results presented here confirm those seen by other authors treating high level athletes, especially in the US. Whilst the surgical procedure utilised is extremely important in creating the most favourable milieu for the regenerating cartilage, the rehabilitation of the patient is critical and often underemphasized. Rehabilitation of the chondral patient is just beginning to receive the attention it deserves. To this end the ICRS is presenting a rehabilitation consensus meeting in Zurich on June 29 and 30, 2007. We would strongly urge you to support this meeting as it will hopefully lay the groundwork for future research and guidelines.

Topographical Glycosaminoglycan variation in human articular cartilage

Benedict Rogers¹, Chris Murphy¹, Steve Cannon², Tim Briggs²
Woking, United Kingdom¹; Stanmore, Middlesex, United Kingdom²
Source: AAOS Annual meeting, 14-18 February 2007, San Diego

Introduction: The load bearing status of articular cartilage has been shown to affect its biochemical composition. This study investigates the topographical variation of Glycosaminoglycan (GAG) relative to DNA content in human distal femoral articular cartilage.

Methods: 26-Paired specimens of distal femoral articular cartilage, from weight bearing and non-weight bearing regions, were obtained from thirteen patients undergoing amputation. Following papain enzyme digestion, spectrophotometric (GAG) and fluorometric (DNA) assays assessed the biochemical composition of the explants. Data was analysed using a paired t-test.

Results: Despite no significant differences in absolute DNA concentrations, weight-bearing regions of articular cartilage showed a significantly higher concentration of GAG relative to DNA compared with non-weight bearing areas ($p=0.021$).

Discussion: This study suggests that chondrocytes in weight bearing regions of human articular cartilage produce a greater quantity of GAG than those located in non-weight bearing areas. We conclude that mechanical loading is essential in maintaining the biochemical composition of human articular cartilage.

Comments: This study elegantly and clearly demonstrates the biochemical differences between weight-bearing and non-weight bearing cartilage. This then raises the question of the ability of the chondrocytes to change their biochemical output in response to their location as has been assumed and in what time-frame. Much research is concentrating now on discovering the triggers to initiate and guide the re-differentiation of chondrocytes in monolayer culture and the differentiation of MSC's from the underlying bone marrow. Once we more fully understand these mechanisms, we will hopefully be able to better heal cartilage! If you have an interest in the culture side of cartilage repair and regeneration, please support the ICRS Laboratory Skills workshop to be held in Cardiff on April 19-21, 2007.

Highlight from the Geistlich Research Group

Geistlich is known for its scientific knowledge and approach. The poster below was presented at the ORS 2007 and shows the latest result from our extensive research work.

SYNOVIAL MEMBRANE AND COLLAGEN SCAFFOLD ENHANCE MENISCAL REPAIR IN A SUBCUTANEOUS NUDE MOUSE MODEL

++ Nestic, D; **Schäfer, B; *Jülke, H; *Watanabe T; *Winkelmann, V; Giovannini, S; *Maimil-Varlet, P.
 +* Osteoarticular Research Group, Institute of Pathology, University of Bern, Bern, Switzerland.
 ** Geistlich Pharma AG, Wollhusen, Switzerland
 dobrila.nestic@pathology.unibe.ch

ABSTRACT INTRODUCTION.

The long term repair of menisc lesions in the avascular, white-white zone remains a challenge in orthopedics. We hypothesized that the presence of synovial membrane as an external source of cells, namely synovial fibroblasts, and growth factors combined with protective collagen scaffolds would enhance the healing process. The repair of the incisions created in pig menisci was assessed combining synovial membrane with two different collagen membranes – ChondroGide (CGide), and a more stable, crosslinked collagen membrane (VN) in the subcutaneous nude mouse ex-vivo model.

METHODS.

A bucket handle incision of 4mm in length was created in a 4x8mm size menisci chip from the white-white zone (porcine origin, 32 donors). Six sets of implants were prepared: chips with incision alone, chips with incision wrapped with pig synovial membrane, chips with incision wrapped in collagen scaffolds (group a - CGide; group b - VN-membrane), chips with incision wrapped with synovial membrane and CGide or VN membrane. Implants were placed subcutaneously inside four pouches in NMRI- made Foxn1nu mice (Ethical permission Kanton Bern, Switzerland 05/2005). One mouse group (16 mice) received CGide and the other (16 mice) VN membrane as a scaffold. The explantation was performed after 8 weeks. Histology sections were stained with H&E and Masson Trichrome and the healing process was evaluated and graded visually.

RESULTS SECTION.

Macroscopical appearance 8 weeks post implantation indicated no inflammatory response from the host. The implants changed in appearance in the following way: menisci chips alone shrank in size, chips wrapped with CGide or/and synovial membrane in many cases partially lost their wrappings and shrank in size, while chips wrapped with VN membrane with and without synovial membrane appeared intact and retained their initial size. The nature of the tissue occupying the defect zone was analysed on six serial cuts per meniscal chip. The neoformation of fibrocartilage was defined as: non healed (Gap), filled with a very unorganized, loose, granulation tissue (Granulation Tissue) or filled with a fibrocartilagenous tissue with abundant, gap-crossing collagen fibres (Healing).

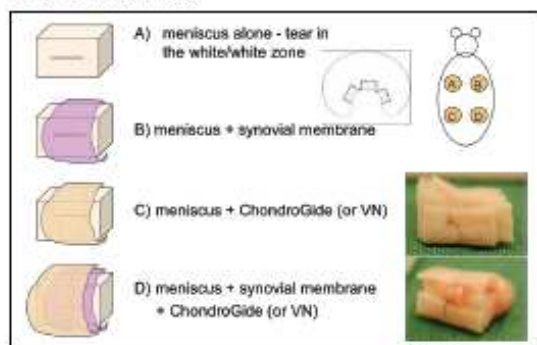


Figure 1. Experimental outline of implant preparation.

Histology evaluation indicated that menisci chips alone got heavily invaded by host cells. The incision in most of the cases was no more visible. In the cases where incisions could be observed, they were filled with granulation tissue (Fig. 2A). In contrast, with synovial membrane wrapping the incision in the chips remained visible, with more healing-like tissue, indicating the somewhat protective effect of the membrane (Fig. 2B). CGide demonstrated even more protective abilities as the

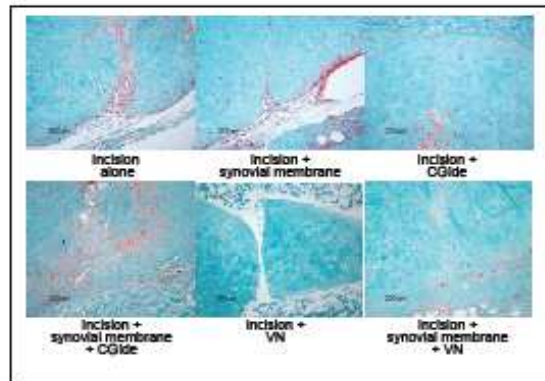


Figure 2. Masson Trichrome staining showing collagen fibre distribution in menisci white-white zone chips.

amount of healing tissue increased and incisions were rarely detected (Fig 2C). The presence of synovial membrane between the incision and the CGide in most cases resulted in the production of granulation tissue (Fig 2D). The VN membrane offered most protection from host cells with still visible incisions in many cases, low level of granulation tissue and some healing (Fig 2E). The presence of synovial membrane between the incision and the VN membrane proved beneficial with the highest amount of healing tissue. These observations are summarized in Table 1. In conclusion, the combination of the stable, crosslinked VN membrane for a protective environment and synovial membrane as a cell and growth factor source allows for the enhanced healing process of the white-white zone of the menisc.

	Incision alone	Incision + synovial membrane	Incision + CGide + VN	Incision + synovial membrane + CGide	Incision + VN	Incision + synovial membrane + VN
HEALING	11.7±4.4	18.5±5.5	34.2±8.2	7.5±7.5	27.1±8.7	57.2±12
GRANULATION TISSUE	77.8±4.9	46.9±9.6	62.5±8.1	85±15	16.7±7.5	14.4±5.3
GAP	10.5±4.3	34.6±10	3.3±3.3	7.5±7.5	56.2±12.8	28.3±13.4
N=	9	13	6	4	12	9

Table 1. Percent of different degree of healing was evaluated and graded visually. N indicates the number of samples analyzed.

DISCUSSION.

The aim of this study was to evaluate the role of collagen scaffolds and synovial membrane in the neoformation of fibrocartilage in a meniscal injury model, i.e. tissue guided regeneration. The obtained results indicate that regeneration of the avascular zone of meniscus benefits from protection of host cell invasion via collagen membranes and moreover from an external cell and/or growth factor source. Given the high level of host invasion, our current aim is to distinguish between cells of mouse and pig origin implicated in the reparative processes. In summary, these data hold promise for a novel yet rather simple clinical approach for the treatment of menisc defects where synovial membrane would provide the source of cells and growth factors/signalling molecules, and VN membrane a longlasting protective environment for the healing process.

Acknowledgements. This work was supported by the Swiss Commission for Technology and Innovation (CTI 7630.1).

TiGenix presents results of their multi centre study comparing ChondroCelect to current standard of care

The following Press statement was released on February 19th 2007.

In 2002, TiGenix initiated a multi-centre prospective randomised controlled trial to assess the efficacy of ChondroCelect, applied through ACL-procedure, as a first-line treatment for symptomatic cartilage defects of the knee, by comparison with the current standard of care, microfracture. 118 patients were treated in 13 orthopaedic centres (Belgium, The Netherlands, Germany and Croatia). The Company designed the study to assess structural superiority (i.e. better quality of repair tissue at 12 months) as a precursor for long-term clinical benefit for the patients.

The primary endpoints of the study were to assess if:

- a) structural repair at 12 months with ChondroCelect is superior to the repair tissue following microfracture with debridement, assessed by independent histopathologists blinded to the treatment using (i) computerized histomorphometry and (ii) evaluation of overall histology of biopsies taken 12 months after treatment
- b) improvement of clinical outcome (symptom relief and improvement of functional outcome and quality of life) at 12 and 18 months with ChondroCelect is as good as improvement of clinical outcome with microfracture, measured by the KOOS (Knee Injury and Osteoarthritis Outcome Score)

The ChondroCelect trial results at 12 and 18 months demonstrate that the structural and clinical primary endpoints of the study have been achieved:

- a) ChondroCelect formed a tissue regenerate superior to the repair tissue formed following microfracture, as assessed by histomorphometry ($p=0.003$) and overall histology ($p=0.012$) of biopsies taken 12 months after treatment. The repair tissue in patients treated with ChondroCelect was found to be less fibrous and to display features indicative of more durable hyaline-like cartilage.
- b) Clinical outcome was similar for both treatment groups with an advantage for ChondroCelect. A comparison of the rates of improvement on clinical outcome parameters, such as pain and function, at 12 and 18 months demonstrated a slight advantage in improvement from baseline in patients treated with ChondroCelect. In addition, a sub-group of patients treated within two years from the onset of symptoms showed a statistically significant superior clinical outcome in patients treated with ChondroCelect.

In conclusion, the use of characterized chondrocytes in autologous cartilage repair represents a new class of treatment which is associated with superior structural repair of cartilage tissue, compared to microfracture. In the short-term, the risk-benefit profile for ChondroCelect and microfracture appears to be similar, and supporting a first-line use. Long-term data should confirm the durability of repair and further strengthen the outcome of this sub-analysis. Patients in the study will be followed up to 5 years.

The improved structural repair recorded in patients receiving ChondroCelect during the Phase III clinical trial confirms the results obtained in preclinical experiments and validates the Company's development strategy. Based on these data, TiGenix believes that ChondroCelect has the potential to significantly increase the success rate of cartilage regeneration procedures.

As far as the Company is aware, TiGenix is currently the only company to have successfully completed a GCP-controlled, prospective, randomised multi-centre clinical trial for a cell based therapy product intended for cartilage repair. The Company believes that a trial of this level of stringency is necessary for cell- and tissue-based products, in order to obtain marketing authorisation in Europe and the United States.

Geistlich Chondro-Gide® – A success Story

"A reason to celebrate and rejoice". Radiant among the 180 invited guests were members of the Geistlich family and Dr. Michael Peetz, Managing Director, Geistlich Biomaterials Division, and "driver behind the company's success". The reason for the celebration was Chondro-Gide®, the collagen matrix for cartilage regeneration. Developed in close collaboration with leading orthopaedic surgeons in Europe, this collagen matrix from Geistlich Biomaterials is the first and only one to be approved by the EU health authority for use in patients for cartilage repair. The Central Switzerland Chamber of Commerce, which bestows this public recognition upon "particularly innovative or outstanding products", voted unanimously in choosing Geistlich Biomaterials for its Chondro-Gide® matrix.

In his congratulatory speech, Prof. Jakob, Head of Orthopaedics at the Kantonsspital in Fribourg emphasized the concern for integrity nurtured by Geistlich in a fiercely competitive market, and the company's collaboration based on trust "in the knowledge that the company is seriously interested in further developing the innovative product."

Geistlich Biomaterials accepted a cheque in the amount of 10,000 CHF to be donated to the Osteology Foundation. The foundation fosters independent research projects in regenerative medicine.

"For success to materialise in the long term, it takes the sum of many components," noted Peetz in a powerful address. On several occasions he also referred to his team: "All of Geistlich's staff members driven each day to achieve, can look upon this award with pride."

Chondro-Gide® – A collagen matrix for the treatment of cartilage lesions

The collagen matrix Chondro-Gide®, consisting of porcine-derived collagen types I and III, was developed as a periosteum substitute for autologous chondrocyte transplantation (ACT). For the newly developed AMIC® (Autologous Matrix Induced Chondrogenesis) Chondro-Gide® acts as a matrix to adhere the mesenchymal stem cells thus allowing them to differentiate into hyaline-like cartilage tissue.

The bilayer structure of Chondro-Gide®, with one compact, cell occlusive layer preventing the cells from diffusing into the joint space and one loosely woven arrangement that favors cell invasion and attachment=stimulates the cells to differentiate into the chondrocytic phenotype and to produce collagen II and glycosaminoglycans.

An important criterion for assessing the properties of a biomaterial is the assessment of its antigenic potential. Collagen, which shows a high degree of similarity between different species, is only weakly immunogenic. The telopeptides (the non-helical, unstructured ends of the protein) are the most relevant antigenic potential. These telopeptides are cleaved during the production process of Chondro-Gide® and the membrane therefore has a low immunogenic potential.

Chondro-Gide® is naturally degraded into oligopeptides and eventually single amino acids.

To date, more than 4000 patients have successfully been treated with Chondro-Gide®.



Michael Peetz (right) receives the prize from Hans Jakob Graf (Chairman Executive Board ewl)

Congresses and Events 2007

Congress	Date	Venue
Süddeutscher Orthopäden-Kongress	April 26.-29.	Baden-Baden, Germany
EFORT Congress	May 11.-15.	Florence Italy
2007 Biennial ISAKOS Congress	May 27.-31.	Florence Italy
ICRS Meeting Rehabilitation	June 29.-30.	Zurich, Switzerland
15th Triennial Congress of the APOA	September 9.-13.	COEX Seoul Korea
SGO	September 19.-21.	Montreux
BOA	September 25.- 28.	Manchester, UK
AGA	September 27.-29.	Köln
ICRS Meeting 2007	September 29.-Oct. 2.	Warsaw, Poland
DGU/DG00C	October 24.-27	Berlin, Germany

Geistlich Biomaterials sponsored a symposium and workshop on Cartilage Regeneration in Fribourg, Switzerland on February 2nd, 2007. The Chairman was Prof. Roland P. Jakob. The faculty included international experts in cartilage repair, like Prof. Nehrer from Austria, Prof. Richardson from the UK and Prof. Behrens and Prof. Steinwachs from Germany. The participants received an update on the most recent clinical outcomes and also had the opportunity to learn new cartilage regeneration methods on cadavers at the SWISSENDOS facility in Fribourg.



The program offered large space for discussion: Prof. Jakob, Chairman and Prof. Richardson, Guest Speaker



More than 40 participants mainly from Switzerland, Austria, Germany and UK got an update on most recent developments in cartilage repair



Prof. Steinwachs demonstrated the ACT Technique



Prof. Behrens demonstrated the AMIC Technique

ICRS Congress 2007 in Warsaw, Poland

Welcome to the 7th World congress on cartilage repair, the ICRS meeting taking place in Warsaw from September 29 - October 2, 2007. It will be an extra-special celebration as it will be the 10 year jubilee of the ICRS, which was founded in October 1997 at the Fribourg cartilage meeting, Switzerland. Interest in tissue engineering has been growing enormously since that time, not only in musculoskeletal repair but for all types of tissue and organs. ICRS will still be the main forum for different types of cartilaginous tissues, best described with the motto from Gent meeting 2004: from the tip of the nose down to the toes. New for Warsaw is that the ICRS Meeting will be accredited by the European Accreditation Council for Continuing Medical Education EACCME an institution of the UEMS (Union of European Medical Specialists), which is recognised by the American Medical Association AMA.

I promise that you will find a Warsaw full of charm and warm, welcoming people. I look forward meeting you all in Warsaw to discuss what is very important for all of us; Cartilage!

Mats Brittberg, President

Warsaw will include some new ventures by the ICRS. You will see - the programme is exciting and several speakers will be new to you. Electronic poster presentations will allow many small discussion groups to focus on the researcher's work in parallel and so use everyone's time as efficiently as possible. You will see a new session on the intervertebral disc. In the talks Science and Clinical presentations will alternate where possible.

The group who developed this society wants to encourage new researchers and new ideas. Submit your work! Do not be inhibited if it does not fit into a proposed abstract category - just tick the 'other' box. There is also room for papers and posters that explore options and observations. Our ultimate goal is to improve treatments for the patient, and the path is through our unique combination of scientists and clinicians.

James Richardson, Chairman of the Scientific Programme Committee

We have the great pleasure of inviting you to the next meeting of our society, which will be held in Warsaw, Poland's capital. All of the arriving fellow-participants can be confident of finding a warm and cordial atmosphere consistent with the spirit of proverbial "Polish hospitality", and moreover of being welcomed by the picturesque, golden autumn.

Warsaw is a symbol of the transformation that has taken place in Poland and Eastern Europe in the past several years. This transformation was made possible by a change in political leadership that led to the unification of Europe, with no division between East and West. We are greatly honored that Warsaw is the first city of the old 'eastern' block that has the pleasure of hosting International Cartilage Repair Society. We are convinced that this cooperation will initiate further changes and technological advancements. We want this venue to arouse an interest among medical doctors and specialists from all over the World. An excellent location, which facilitates easy travel, affordable prices, a wide variety of hotels, as well as a full spectrum of cultural and tourist attractions, are the strong suits of our city.

We hope to see you soon in Warsaw!

Jaroslav Deszczyński, Congress Chairman

Jacek Kruczynski, Congress Chairman

Konrad Slynarski, Chairman of the Local Committee

Geistlich Biomaterials is a Silver Sponsor of the upcoming ICRS and has also sponsored the electronic poster exhibition. Geistlich Biomaterials is also a corporate member of ICRS.

For more information and to become a member please visit www.cartilage.org

Links:

www.aaos.org

www.cartilage.org

www.efort.org

www.isakos.com

www.aga2007.de

www.orthopaedie-unfallchirurgie.de

www.boneandjointdecade.org

www.swissendos.ch

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