





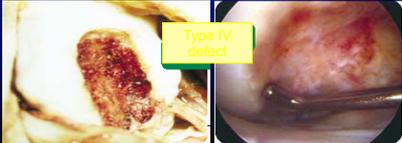
OSTEOCHONDRAL DEFECTS OF THE KNEE

Nicola Maffulli



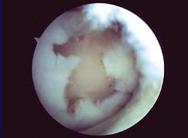

Hunter 1743

“From Hippocrates to present age, it is universally allowed that ulcerated cartilage is a trouble something, and that, once destroyed, is not repaired”

Cartilage

- ✦ Cartilage is marvellous: tough, elastic, durable.
- ✦ If normal, it will last lifetime.
- ✦ ... if damaged, even normal activity will lead to erosion of joint surface.



Causes of Cartilage injuries

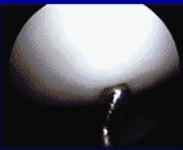
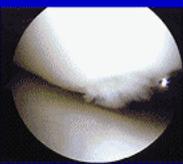
- ✦ Sports
 - involving torsional forces, high speed sports.
- ✦ Trauma
 - RTA, Bike injuries
- ✦ ? idiopathic
 - OCD
- ✦ Associated with other IA lesions
 - Neglected
 - Missed
 - Ignored



ICRS Arthroscopic Classification

Lesion Thickness

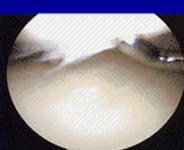
- ✦ **Grade 0:** Normal
- ✦ **Grade I:** Superficial fissures
- ✦ **Grade II:** <1/2 depth

ICRS Arthroscopic Classification

Lesion Thickness

- ✦ **Grade III:** >50% depth but not through subchondral plate.
- ✦ **Grade IV:** lesion through subchondral plate
 - OCD lesions
 - AVN lesions




Treatment options



- ✦ Some light at the end of 'centuries old dark tunnel'?
- Benign neglect
- Debridement
- Pridie's perforations
- Abrasion Arthroplasty
- Morselized osteochondral mixture
- Steadmann's Microfracture
- Periosteal Grafting
- Perichondrial Grafting
- Osteochondral Allograft
- Osteochondral Autograft
- Mosaicplasty
- ACL and its derivatives
- Biomaterials

Treatment goals



- ✦ Permanent restoration of cartilage surface.
- ✦ Hyaline or Hyaline like regeneration.
 - Ideal.
- ✦ If not possible, fibrocartilage regeneration.
 - Poor biomechanical properties.
 - Tends to wear off relatively fast.
 - Does not stand high demand activities.

Benign Neglect & close monitoring

- ✦ < 1 cm lesions
- ✦ Debridement
- ✦ Only available to support.

Natural History
Type of cartilage:
??Fibrocartilage

Life:
???????



Shelbourne et al. American Academy of Orthopedic Surgeons. Annual meeting, 2002.

Debridement and Lavage

- ✦ Temporary relief from target

Natural History
Type of cartilage:
??Fibrocartilage

Life:
Temporary



Moseley et al. N Engl J Med. 2002; 347:81-88
Kirkley et al. N Engl J Med. 2008;359:1097-107.

Pridie's Perforations



- ✦ Multiple drilling of subchondral bone.
- ✦ To
- ✦ 15
- ✦ Approach.
- ✦ Drilling

Natural History
Type of cartilage:
Fibrocartilage

Life:
Not available

Pridie KH. A method of resurfacing osteoarthritic knee joints. JBJS. 1959; 41: 618-619.

Johnson's Abrasion Arthroplasty

- ✦ Abrasion of superficial subchondral bone.
- ✦ Ex
- ✦ Fibrous
- ✦ s
- ✦ Thermal necrosis

Natural History
Type of cartilage:
Fibrocartilage

Life:
???????



Johnson LO. Arthroscopic abrasion arthroplasty, historical and pathological perspective, present status. Arthroscopy. 1986; 2: 54.

Platelet-rich plasma for managing pain and inflammation in osteoarthritis

Isabel Andia and Nicola Maffulli

NATURE REVIEWS RHEUMATOLOGY VOLUME 9 | DECEMBER 2013 | 721

Chemokines/cytokines	Adhesive proteins	Growth factors	Small molecules
<ul style="list-style-type: none"> IL-1β PPF PF4 CCL5 SCF-3a CCL2 	<ul style="list-style-type: none"> Vitamin D-binding protein Fibrinogen FBI TSP Fibrinogen Fibronectin Vitronectin and α2-macroglobulin 	<ul style="list-style-type: none"> CTGF TGF-β IGF PDGF VEGF TGF-β FGF-2 	<ul style="list-style-type: none"> ADP Serotonin Epinephrine Histamine

PRP

Cartilage/bone: Chondrocyte, Osteoblast

Vascular: Endothelial cell, Circulating mesenchymal cell

Synovium: Monocyte, Macrophage, Synoviocyte

Stem Cells International
Volume 2012, Article ID 168385, 9 pages
doi:10.1155/2012/168385

Review Article

Stem Cells and Gene Therapy for Cartilage Repair

Umile Giuseppe Longo,^{1,2} Stefano Petrillo,^{1,2} Edoardo Franceschetti,^{1,2}
Alessandra Berton,^{1,2} Nicola Maffulli,³ and Vincenzo Denaro^{1,2}

... in
the
end ...

... still a
mountain
to climb...

... but progress
is being made

EFOST

metabolic diseases and tendinopathies: the missing link

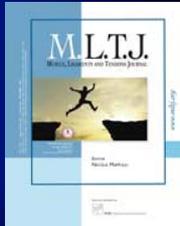
25 August 2014 30 September 2014

2nd EFOST - FEAT 11 SUMMER COURSE

WWW.MLTJ.ORG

JOURNAL OF ORTHOPAEDIC SURGERY AND RESEARCH

<http://www.josr-online.com/>

The image shows the cover of the Journal of Orthopaedic Surgery and Research (MLTJ). The cover features the journal's title in large letters, a subtitle 'Muscles, Ligaments and Tendon Injuries', and a central image of a person jumping over a hurdle. The MLTJ logo is also present.

Thank you
Thank you

n.maffulli@qmul.ac.uk
nmaffulli@unisa.it

The image displays several book covers related to orthopaedics and sports medicine. The covers include: 'Rotator Cuff Disorders: Diagnosis and Medical Treatment', 'Sports Injuries: Prevention, Diagnosis and Treatment', 'Sports Medicine for Young Athletes and Adults', 'Tendon Injuries', 'The Achilles Tendon', 'Minimally Invasive Surgery of the Foot and Ankle', and 'Postgraduate Orthopaedics'. The books are published by Springer.