Procedure

biomechanical and biological

in the protection of the hip cartilage

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HIP OSTEOARTHRITIS 19-20 APRIL 2018r, KATOWICE
Why ?
For what ?
Complications THA and TKA

Knee endoprosthesis
8,380 results (0.29 s)

Hip endoprosthesis
7,840 results (0.38 s)
According to the literature and own observations the reason for the growing interest protection of joint cartilage there is a high numerical dissatisfaction with endoprosthesis.
Epidemiology of overload biomechanical hip joint
Biomechanics of joint overload in children

2 790 results (0,31 s)
Biomechanics of joint overload in adults

4200 results (0.47 s)
Hip joint overload

23 400 results (0.42 s)
Biomechanics of overloading hip joint

Number of publications in 2014-2018
80 position
The aim of the presentation is to analyze biomechanics of hip joint overloading and biological possibilities of articular cartilage protection.
Post-traumatic overload
hip joint
Disjonction sacro-iliaque
cisaillement vertical

ILIAC ASYMMETRY
= ROTATION PELVIS
BAD BIOMECHANICS
Of the HIPS
Orthopedic overload
hip joint
Quadrilateral support a overloading band triangles; pelvic and shoulder rotational (secondary) triangles of destabilization hip overload
RO שלד

OVERLOAD

��оD​

JOINT

HIP

OVERLOAD HIPS

Pelvic superiority

Rotation inside

Flat-crooked foot = pronation of the foot - it generates
Reliable degree diagnostics
cartilage damage
hip joint
Evidence based orthopaedics

Hip-joint
Is it really a hip disease?
Or is it a consequence of the foot flat-crooked, uneven limb length, limb axis abnormalities?

What is the degree of damage cartilage of the hip joint; irreversible? reversible?
Biomechanical possibilities of cartilage protection of the hip joint
Correction of knee joint disorder

Knee Varus

Knee Valgus
Biomechanical protection

One-compartment unloading knees and hips

Osteotomy below the knee

Knee Varus
One-compartment unloading knees and hips

Knee Valgus

Osteotomy above the knee
Biomechanical protection is the basis for the effectiveness of biological methods of protection of joint cartilage of the hip joint.
Biological possibilities
cartilage protection
hip joint
Biological protection of cartilage
hip joint - an attempt to an algorithm

- humoral
- cellular
- tribological
- substitution
- regenerative
Humoral protection
Platelet rich plasma (PRP) growth factors
Plate-like growth factors are two elements of the repair backbone of the skeleton according to Lynch, have chondroprotective and osteoinductive properties.
PRPs are only an element of the treatment of cartilage defects, and are not its main course.
No positive reaction after the first administration is an indication to verification of the diagnosis biological (EBM) and the legitimacy of the indications.
Cell protection

Stem cells;
- stromal bone marrow, - fat derivatives

Set to download After centrifugation
cont. Cell protection

Chondrocytes - cultures

The method of implantation:

- intraarticular
Internet interest

Chondrocyte transplants

3,830 results (0.54 s)
Cell protection is stimulated by humoral protection - growth factors.
Tribological protection

Viscosupplementation.

Application of hyaluronic acid:

- natural or
- synthetic

An attempt to improve the tribological index
Internet interest

Viskosuplementation
3 160 results (0.44 s)

Hyaluronic acid intraarticular

Knee joint       20,000 results (0.49 s)
Shoulder joint   5,660 results (0.49 s)
Hip joint         4 180 results (0.55 s)
Viscosupplementation acts as temporal reduction of the coefficient of friction striving for a physiological 0.02.

It is an additional element, and never basic protection of joint cartilage.
The methods mentioned for the protection of joint cartilage are an indication for implementation of substitutional-pharmacological proceedings as a condition of success for comprehensive treatment and the basis of biological effectiveness.
The pharmacological element of the procedure is the possibility of improving the biology of the joint cartilage structure by diffusion of synovial fluid containing drugs that are components of the matrix.
Protection substitution and regeneration

Chondroprotective preparations

Chondroitin sulphate

Glucosamine sulphate
Performance studies of chondroitin sulphate and glucosamine.

**McAlindon’s meta-analysis**
- 1700 patients
- 15 randomized trials

**Dreiser’s research**
- 120 subjects
- 5 months

**Uebelhart study**
- 162 patients
- 6 months
The effectiveness of drugs with chondroitin sulphate and glucosamine was assessed on the basis of two criteria:

1. Quantities of NSAIDs (calculated as diclofenac) in the daily dose - objective evaluation

2. Level of pain assessed on the basis of VAS (Visual Analog Scale) - subjective assessment
EULAR (European Anti-Rheumatic League) recommendations for the treatment of degenerative disease
EULAR classifies chondroitin in the recommendations for the treatment of joint cartilage defects very high, in accordance with the data on data reliability and strength of recommendations provided.
Pharmacological protection is a slow process

- administration of an oral preparation
- blood concentration over time
- filtration in the synovial joint
- concentration in the synovial fluid
- penetration into the cartilage
- "pin-eating" mechanism of nutrition
- penetration into the cartilage matrix
- Pharmacological protection is a slow process
A condition for protection cartilage of the hip is visible articular gap in x-ray image with a load.
The basis of the so-called comprehensive procedure is:

- a credible clinical diagnosis based on the principles of evidence-based medicine (Evident Based Medicine)
- definition of individual pathologies that destroy joint cartilage
Contemporary, comprehensive protection of the hip cartilage results from optimization:

- biological methods
- biomechanical methods
- stimulation of regenerative processes
- combination therapy
Weight-bearing asymmetries during Sit-To-Stand in patients with mild-to-moderate hip osteoarthritis.
Eitzen I\textsuperscript{1}, Fernandes L\textsuperscript{2}, Nordsletten L\textsuperscript{3}, Snyder-Mackler L\textsuperscript{4}, Risberg MA\textsuperscript{5}

Hip joint motion and gluteal muscle activation differences between healthy controls and those with varying degrees of hip osteoarthritis during walking.
Rutherford DJ\textsuperscript{1}, Moreside J\textsuperscript{2}, Wong I\textsuperscript{3}.

Hip joint mechanics during walking in individuals with mild-to-moderate hip osteoarthritis.
Constantinou M\textsuperscript{1}, Loureiro A\textsuperscript{2}, Carty C\textsuperscript{3}, Mills P\textsuperscript{4}, Barrett R\textsuperscript{5}.
2017 year
- 10,972 patients
- 8,148 surgery
- 61,329 out-patients

450 orthopedics beds

12 operating theaters

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THANK YOU FOR YOUR ATTENTION
Centrum Medycznego Kształcenia Podyplomowego
Samodzielny Publiczny Szpital Kliniczny
im. Prof. Adama Grucy w Otwocku

450 łóżek ortopedycznych

2017 rok

- 13 072 hospitalizowanych+ rehabilitacyjnych
- 1 377 dzieci (10,5%)
- 8 643 operowanych
- 67 296 ambulatoryjnych

DZIĘKUJĘ ZA UWAGĘ
Dziękuję za uwagę