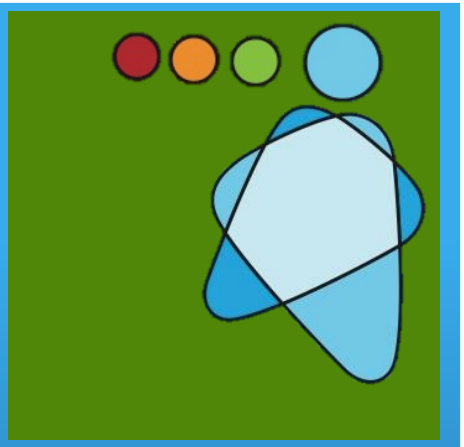

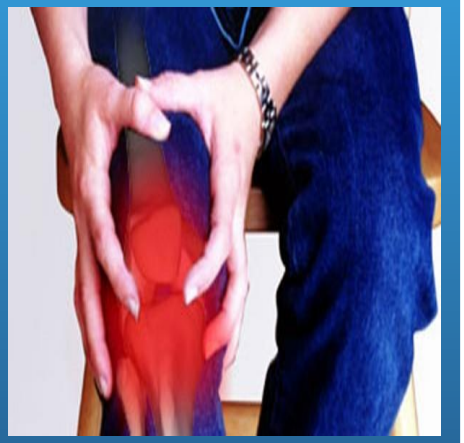

Terapêutica invasiva não cirúrgica na gonartrose com gonalgia

Unidade de Dor do Hospital Prof. Dr. Fernando da Fonseca, E.P.E.

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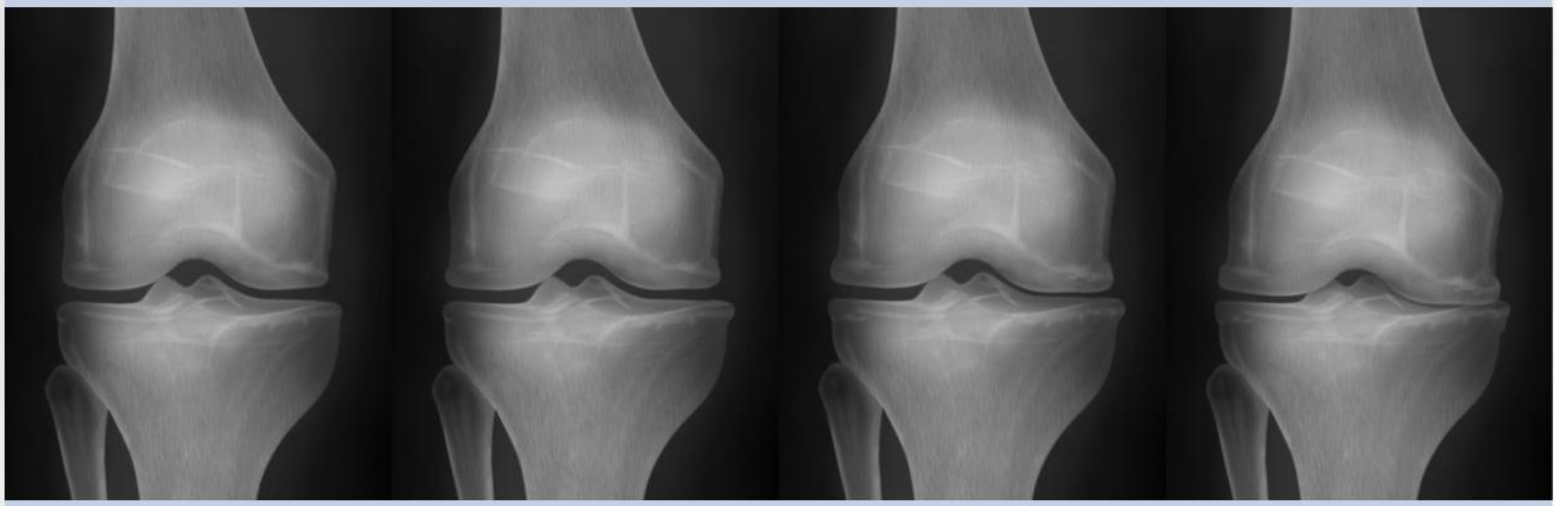
Gonartrose com gonalgia

- > 60 anos
  - 13% mulheres
  - 10% homens
- Perda da forma e função da articulação
- Alterações estruturais
  - Diminuição da altura da articulação, normalmente assimétrica
  - Formação de osteófitos marginais
  - Esclerose óssea subcondral

Como avaliar a gravidade?

Imaging – Radiography (X-ray)

Kellgren-Lawrence (KL) grading scale



Grade 1 | Grade 2 | Grade 3 | Grade 4

CLASSIFICATION	Normal	Doubtful	Mild	Moderate	Severe
DESCRIPTION	No features of OA	Minute osteophyte: doubtful significance	Definite osteophyte: normal joint space	Moderate joint space reduction	Joint space greatly reduced: subchondral sclerosis

The grading system focuses on osteophyte formation, joint-space narrowing, and bone sclerosis.

Kellgren-Lawrence Grading System

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Total Score: _____ / 96 = _____%

Comments / Interpretation (to be completed by therapist only):

O que podemos oferecer ao doente com osteoartrite?

- Tx. Cirúrgico *vs* **Não Cirúrgico**
  - Estadios inicias de osteoartrite
  - Doentes mais novos
  - Doentes com comorbilidades
  - Dor mantida pós ATJ

  - **Invasivo** *VS* não invasivo

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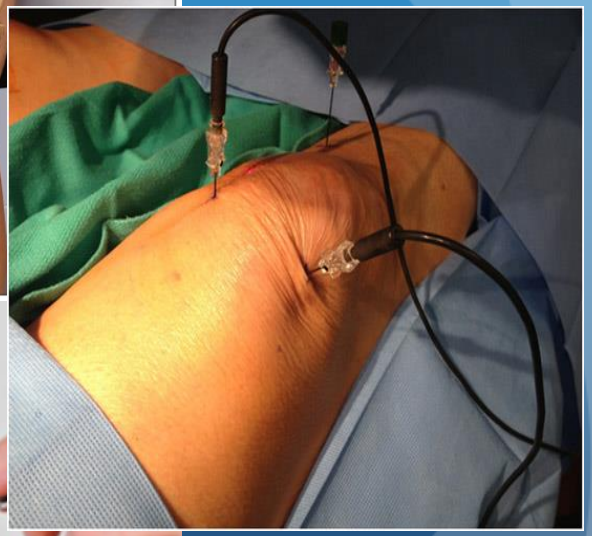
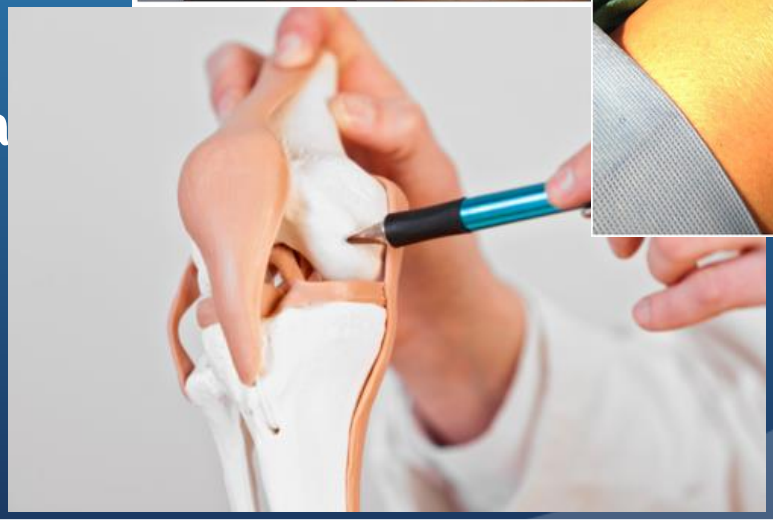
Tratamento invasivo não cirúrgico

- Injeção intrarticular
  - Ozonoterapia
- Radiofrequência





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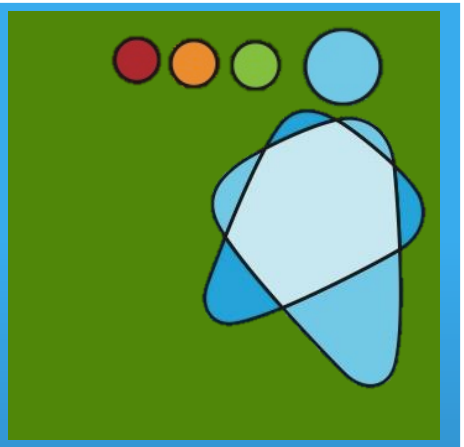
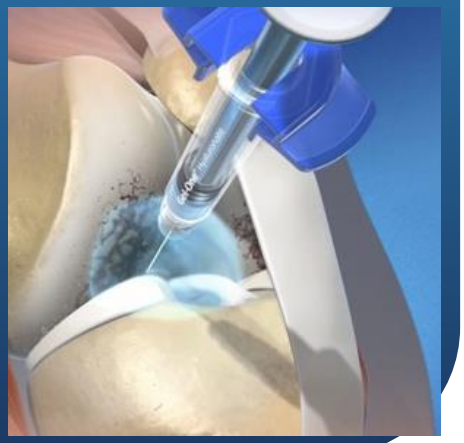
Injeção intrarticular





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Core tip: Intraarticular (IA) corticosteroid injections can be considered as an adjunct to core treatment for short term reduction of moderate to severe pain in people with osteoarthritis (OA). IA hyaluronic acid (HA) injections might have efficacy and might provide pain reduction in mild OA of knee up to 24 wk. But for HA injections, the cost-effectiveness is an important concern that patients must be informed. Although more high-quality evidence is needed, recent studies indicate that IA platelet rich plasma injections are promising for relieving pain, improving knee function and quality of life, especially in younger patients, and in mild OA cases.

Ayhan E, Kesmezacar H, Akgun I. Intraarticular injections (corticosteroid, hyaluronic acid, platelet rich plasma) for the knee osteoarthritis. *World J Orthop* 2014; 5(3): 351-361 Available from: URL: http://www.wjgnet.com/2218-5836/full/v5/i3/351.htm DOI: http://dx.doi.org/10.5312/wjo.v5.i3.351

- Corticoide
- Ácido hialurónico (viscosuplementação)
- Plasma Rico em Plaquetas

Format: Abstract

J Biol Regul Homeost Agents. 2016 Apr-Jun;30(2):621-5.

Comparison between intrarticular injection of hyaluronic acid, oxygen ozone, and the combination of both in the treatment of knee osteoarthrosis.

Giombini A[1], Menotti F[1], Di Cesare A[2], Giovannangeli F[3], Rizzo M[3], Moffa F[4], Martinelli F[3].

FULL-TEXT ARTICLE

Musculoskelet Surg. 2016 Sep 28. [Epub ahead of print]

Clinical comparison of oral administration and viscosupplementation of hyaluronic acid (HA) in early knee osteoarthritis.

Ricci M[1], Micheloni GM[2], Berti M[1], Perusi F[3], Sambugaro E[1], Vecchini E[1], Magnan B[1].

BioResearch Open Access
Volume 5.1, 2016
DOI: 10.1089/biores.2016.0024

BioResearch OPEN ACCESS
Mary Ann Liebert, Inc. publishers

ORIGINAL RESEARCH ARTICLE Open Access

Regeneration of Cartilage in Human Knee Osteoarthritis with Autologous Adipose Tissue-Derived Stem Cells and Autologous Extracellular Matrix

Hun Lee[1,4,†] Kwang Seung Park[4] Byeong Chul Jeong[4] and Sang Hee Lee[4,*]

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Procedural Treatments: Recommendation 8-11

RECOMMENDATION 8

We are unable to recommend for or against the use of intraarticular (IA) corticosteroids for patients with symptomatic osteoarthritis of the knee.

Strength of Recommendation: Inconclusive

RECOMMENDATION 9

We cannot recommend using hyaluronic acid for patients with symptomatic osteoarthritis of the knee.

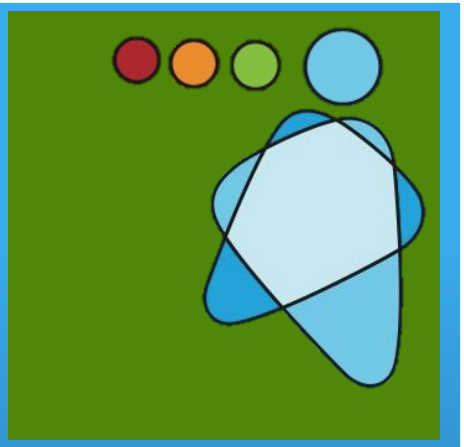
Strength of Recommendation: Strong

RECOMMENDATION 10

We are unable to recommend for or against growth factor injections and/or platelet rich plasma for patients with symptomatic osteoarthritis of the knee.

Strength of Recommendation: Inconclusive

Ozonoterapia



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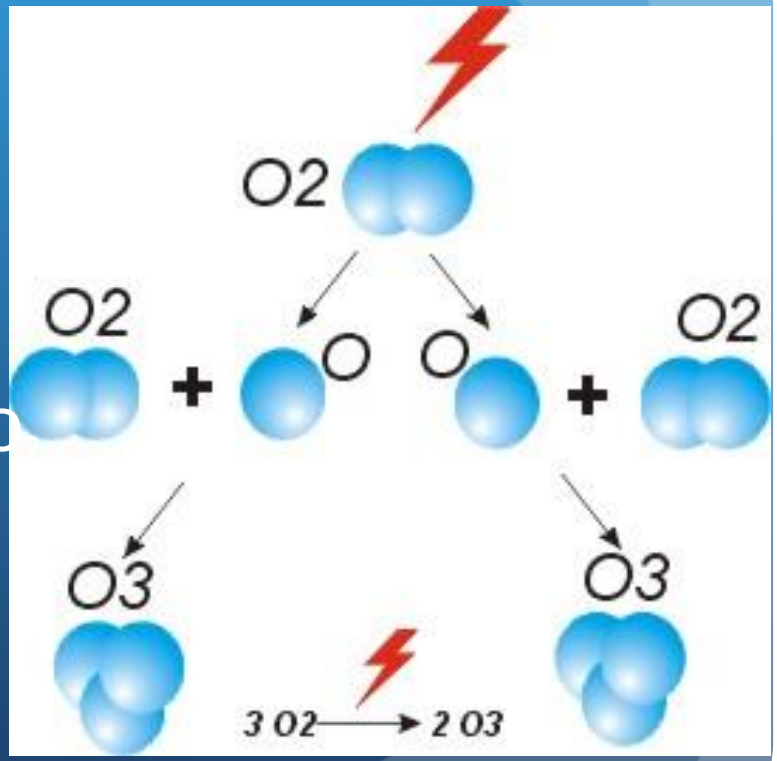
O Que é o Ozono?

- Molécula gasosa
- Agente oxidante potente
- Natureza instável
  - Não pode ser armazenado
  - Sv 40m a 20ºC
- 10x mais solúvel em água que o O



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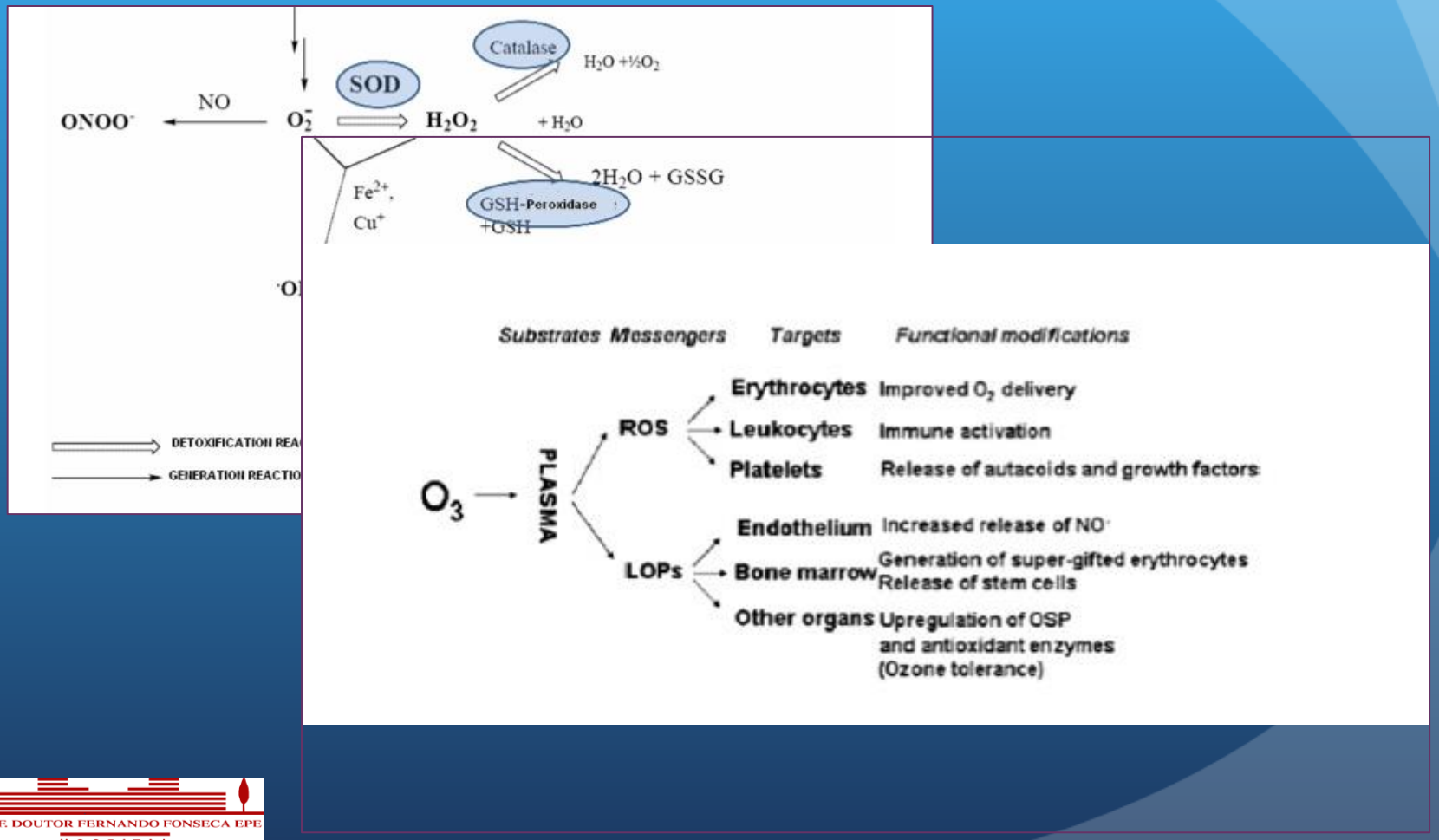
Metabolismo Aeróbio e Stress Oxidativo



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Estado de Stress Oxidativo

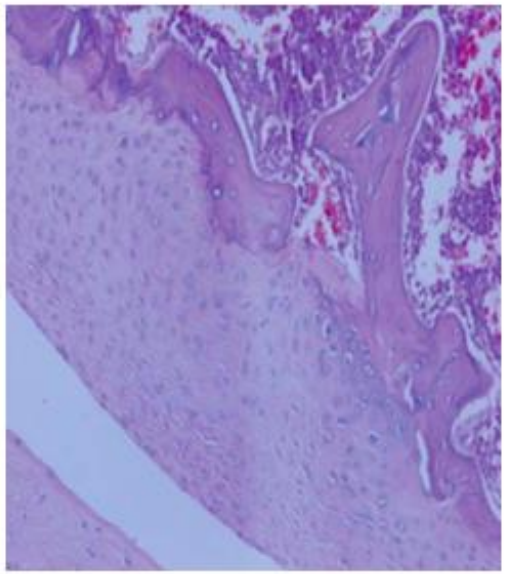

Figure 3: Histology of the articular cartilage of the guinea pig after administrati
of ozone 7 days after the injection of MIA (group1). Marked reduction of t
inflammatory reaction. (From Dr. Emmanouil Iliakis, 2011, personal files).

Borrelli et al., J Arthritis 2015, 4:3
http://dx.doi.org/10.4172/2167-7921.1000161

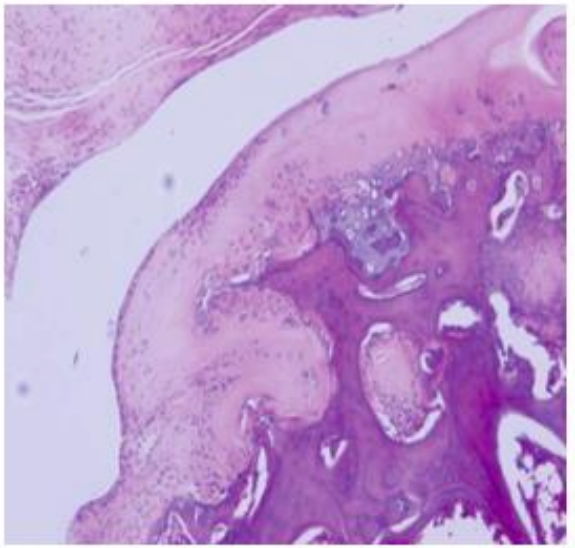

Figure 4: Histology of the knee of the guinea pig after the administration of ozone 14 days after the injection of MIA (group 3). We observe an advanced osteoarthritis with marked signs of inflammation. (From Dr. Emmanouil Iliakis, 2011, personal files).

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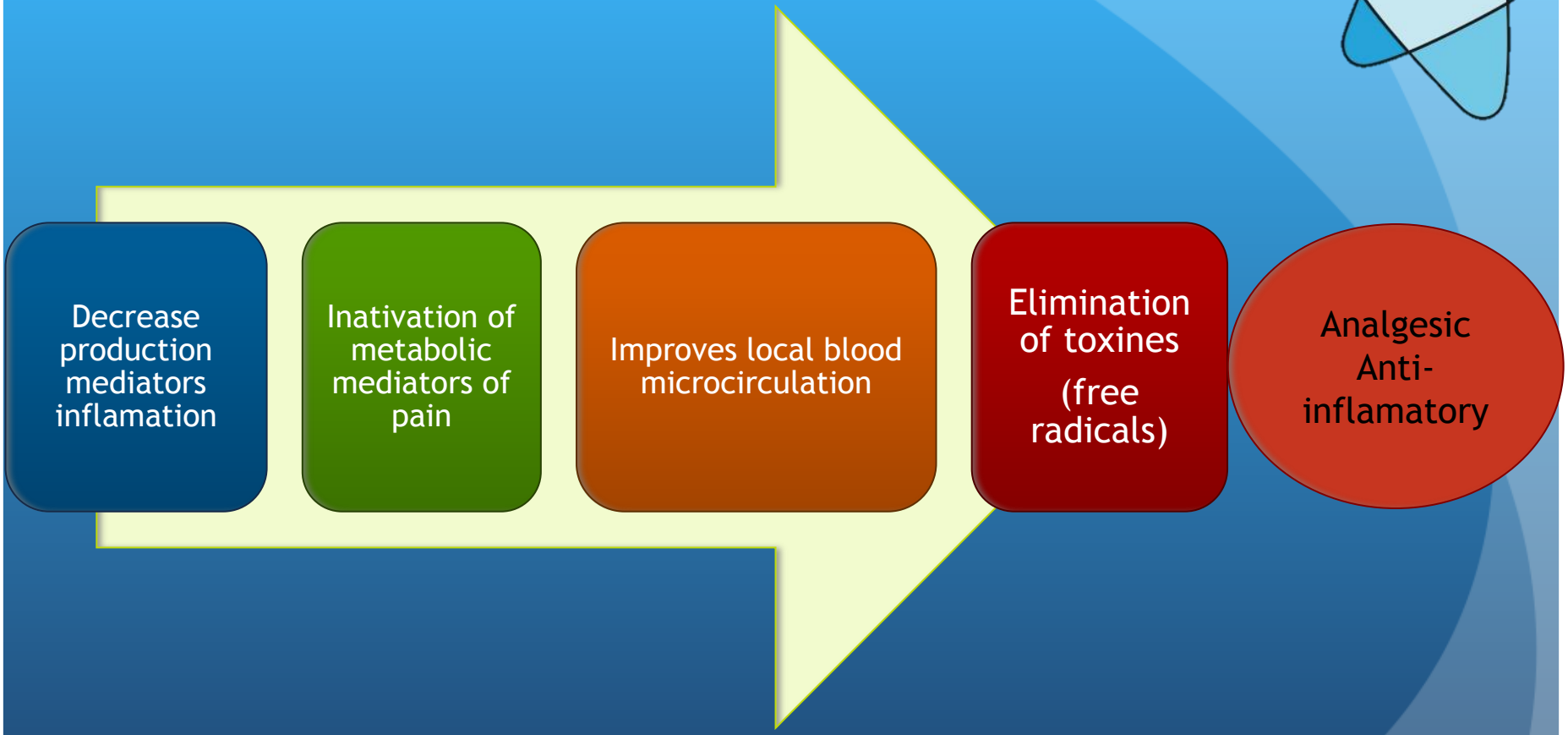
Body Fluid And Tissues	Antioxidant Capacity	Ozone Concentration (mcg/ml)	Volume (ml)	Response
Total Blood	Very High	15-80	100 -225	Therapeutic
BALF	Very low	None	0	Toxic
Subcutis	Moderate	2-20	1-100	Therapeutic
Intraforaminal Fluid	Moderate	30	15 -20	Therapeutic
Epidural Space	Low	10-20	20	Therapeutic
Muscular fluid	Moderate	10-30	15-30	Therapeutic
Synovial fluid	Moderate	10-30	1-20	Therapeutic

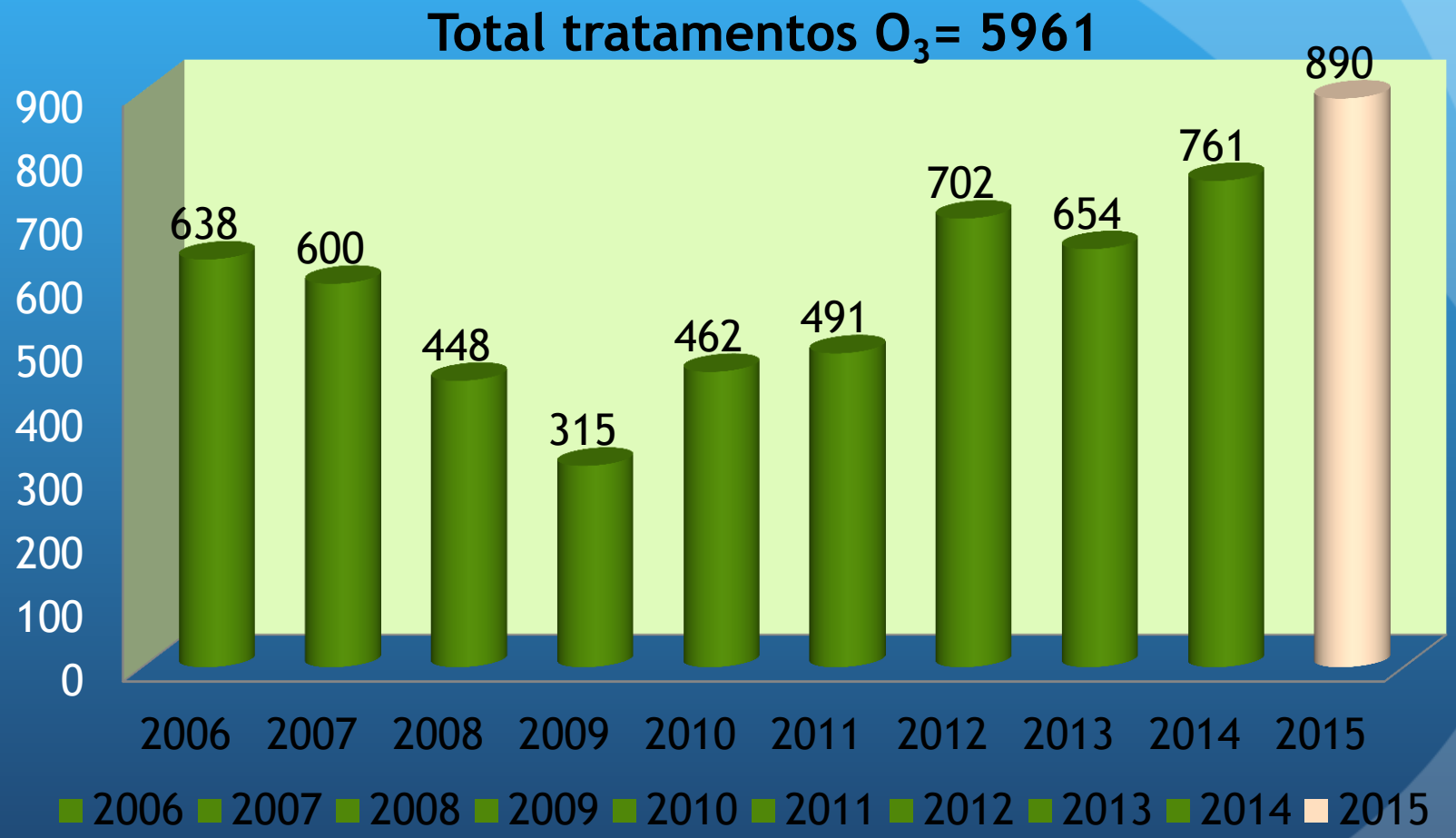
BALF – Bronquial Associated lining fluid

WFOT's review on Evidence Based Ozone Therapy – WFOT Scientific Advisory Committee, 2015



Shwartz, A; Martinez-Sánchez, G. (2012). Ozono therapy and its Scientific Foundations. Revista Espanola de Ozonoterapia. Vol. 2, nº1, pp.199-232

A nossa experiência



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Tratamentos com Ozono	
Interfalângicas	44
Túnel cárpico	**561**
Cotovelo	11
Ombro	**562**
Condro-costal	19
Paravertebrais cervicais	37
Paravertebrais dorsais	55
Paravertebrais Lombares	**411**
Sacro-coccígeo	22
Coxo-femural	18
Joelho	3086
Tibio-társica	26
Hemoperfusão	**795**
Bolsoterapia	314
TOTAL	**5961**

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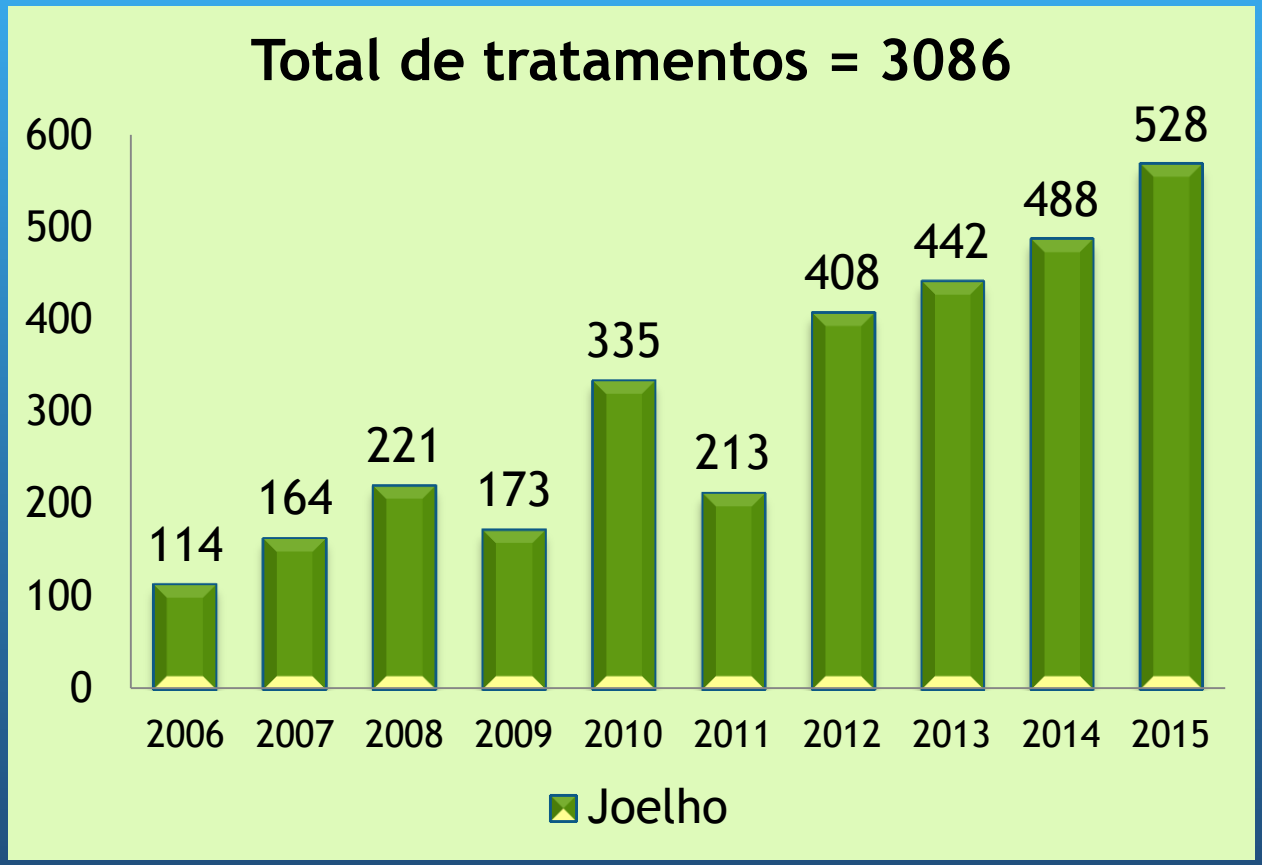

- Osteoartrose
- Doenças inflamatórias sistémicas
- Doenças Auto-imunes
- Pós traumática

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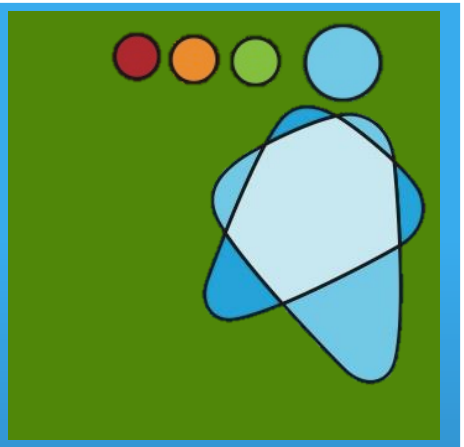
Radiofrequência



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Radiofrequência

- Aplicação de uma corrente alterna, contínua ou pulsada, que modula a transmissão da informação somatosensorial
- Contínua
  - Neuroablação
  - Temp. 80-90ºC
  - Irreversível
- Pulsada
  - Neuromodulação
  - Temp. 67ºC (temp. tecido <42ºC)
  - Reversível

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Willett, Alex, "Pulsed Radiofrequency Neuromodulation of Peripheral Nerve Injury" (2011). *Honors Projects.* Paper 145. http://digitalcommons.iwu.edu/psych_honproj/145

Onde?

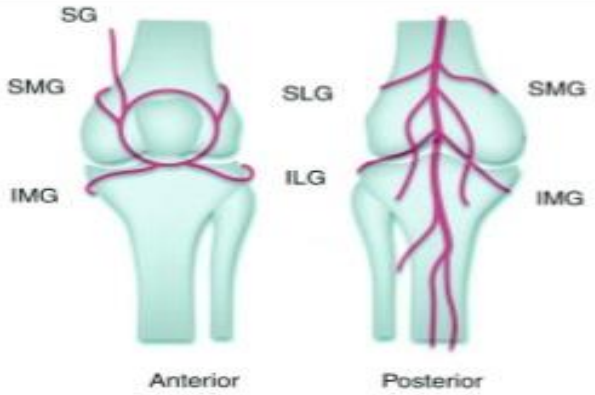
Nerve Supply Of Knee Joint

1) **Femoral Nerve**: gives branches from the nerves to the three vasti

2) **Tibial Nerve Branches**
- *a) Superior medial genicular*
- *b) Inferior medial genicular*
- *c) Middle genicular nerve*

3) **Common Peroneal Nerve Branches**
- *a) Superior lateral genicular*
- *b) Inferior lateral genicular*
- *c) Recurrent genicular nerve*

4) **Obturator Nerve**: gives genicular branch from its posterior division



Wolters Kluwer

Reg Anesth Pain Med. 2015 Jul-Aug;40(4):363-8. doi: 10.1097/AAP.0000000000000269.

Innervation of the Anterior Capsule of the Human Knee: Implications for Radiofrequency Ablation.

Franco CD[1], Buvanendran A, Petersohn JD, Menzies RD, Menzies LP.

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É seguro?

Pain Physician 2016; 19:E697-E705 • ISSN 2150-1149

Comprehensive Review

Is Genicular Nerve Radiofrequency Ablation Safe? A Literature Review and Anatomical Study

Soo Yeon Kim, MD[1,2], Phuong Uyen Le, DO[1,2], Boleslav Kosharskyy, MD[1,2], Alan D. Kaye, MD, PhD[3], Naum Shaparin, MD[1,2], and Sherry A. Downie, PhD[2]

RFA. These adverse vascular events are documented in the literature as case reports. Of the 27 cases analyzed, 25.9% (7/27) involved the lateral superior genicular artery, 40.7% (11/27) involved the medial superior genicular artery, and 33.3% (9/27) involved the medial inferior genicular artery. Most often, these vascular injuries result in the formation of pseudoaneurysm, arteriovenous fistula (AVF), hemarthrosis, and/or osteonecrosis of the patella. Although rare, these complications carry significant morbidities. Based on the detailed dissections and review of the literature, our

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Como se identi

- Fluroscopia

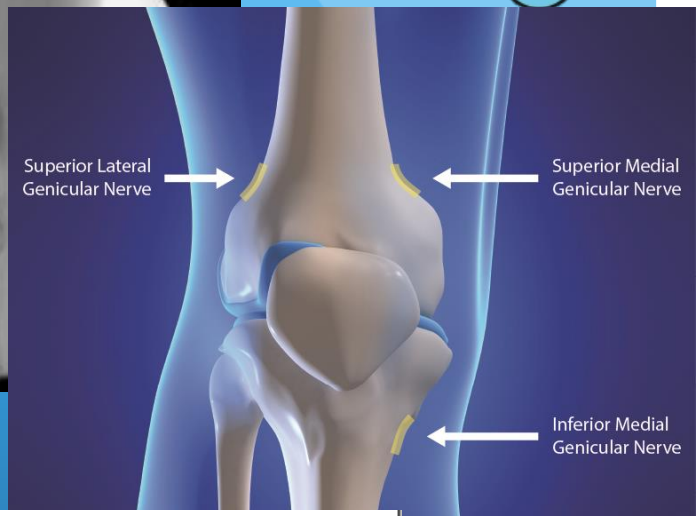

Fig. 1. *(a) Transverse ultrasound image of the kn*
nerve (thick arrow) and the corresponding artery
cortex 1 cm anterior to the peak of the adductor tu

Serdar Kesikburun
and Bilge Yilmaz,

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Fig. 2. *(a) Longitudinal ultrasound image of the knee at the level of the tibial medial epicondyle. Inferior medial genicular nerve (thick arrow) and the corresponding artery (thin arrow) were visualized using power doppler. (b) The needle (arrows) was placed to the bony cortex at the midpoint between the peak of the tibial medial epicondyle (square) and the initial fibers inserting in the tibia of the medial collateral ligament (star) for inferior medial genicular nerve.*

Dor crónica pós artroplastia

Abstract

According to studies and literature reviews, the prevalence of chronic pain after total knee replacement (TKR) ranges from 24 to 44 %, with a prevalence of neuropathic-type pain varying from 6 to 20 %. The frequency and intensity of chronic postsurgical pain (CPSP) is higher after a total prosthesis than after a unicompartmental prosthesis. The risk factors for CPSP after TKR are female sex, the severity of preoperative pain, inadequate management of postoperative pain, repeated surgery on the knee, anxious or depressed states either preoperatively or postoperatively, and a high level of catastrophising preoperatively or postoperatively. CPSP after TKR is associated with significant impairments of quality of life and functional capacity, even if the orthopaedic result is satisfactory. There is a significant correlation between long-term changes in affective-emotional state and the severity of CPSP.

Open Access Research

BMJ open

What proportion of patients report long-term pain after total hip or knee replacement for osteoarthritis? A systematic review of prospective studies in unselected patients

Andrew David Beswick,[1] Vikki Wylde,[1] Rachael Gooberman-Hill,[1] Ashley Blom,[1] Paul Dieppe[2]

Results: Searches identified 1308 articles of which 115 reported patient-centred pain outcomes. Fourteen articles describing 17 cohorts (6 with hip and 11 with knee replacement) presented appropriate data on pain intensity. The proportion of people with an unfavourable long-term pain outcome in studies ranged from about 7% to 23% after hip and 10% to 34% after knee replacement. In the best quality studies, an unfavourable pain outcome was reported in 9% or more of patients after hip and about 20% of patients after knee replacement.

RF pós Artroplastia do Joelho

Case Presentation

Examining the Feasibility of Radiofrequency Treatment for Chronic Knee Pa

Nicole M. Protzman, MS, Jennif

Recently, investigators began using radi
patients at high risk who cannot unde
study has investigated the use of radiofre
chronic knee pain after total knee repla
genicular nerve ablation successfully imp
these preliminary results could be used
studies and randomized controlled trials
treat persistent knee pain after total kne

Cooled radiofrequency system relieves chronic knee osteoarthritis pain: the first case-series

Martina Bellini, Massimo Barbieri

Pain Management Unit, San Carlo Clinic, Paderno Dugnano (MI), Italy

Abstract

Background: Knee osteoarthritis is a frequent cause of chronic knee pain. Therapeutic solutions include intra-articular injections with short-term pain relief and surgical therapy. Radiofrequency (RF) of genicular nerves has been previously reported with varying success. Cooling tissue adjacent to the electrode (cooled RF) increases the radius of lesion. We present here the first retrospective data on pain relief and changes in function after such cooled RF denervation.
Methods: We reviewed the records of nine patients with chronic knee pain who underwent cooled RF of genicular nerves. Visual analogue scale (VAS) and Western Ontario McMaster Universities OA index (WOMAC) were analysed.
Results: We observed an improvement in VAS pain scores 2 ± 0.5 at one month, 2.3 ± 0.7 at three months, 2.1 ± 0.5 at six months, and 2.2 ± 0.2 at 12 months after the procedure, and WOMAC score 20 ± 2, at one month, 22 ± 0.5 at three months, 21 ± 1.7 at six months, and 20 ± 1.0 at 12 months.
Conclusion: The majority of patients with chronic knee pain experienced a clinically relevant degree of pain relief and improved function following cooled RF of genicular nerves at one, three, six and 12 months follow-up.

Key words: cooled radiofrequency, chronic pain, knee, osteoarthritis

Anaesthesiology Intensive Therapy 2015, vol. 47, no 1, 30–33

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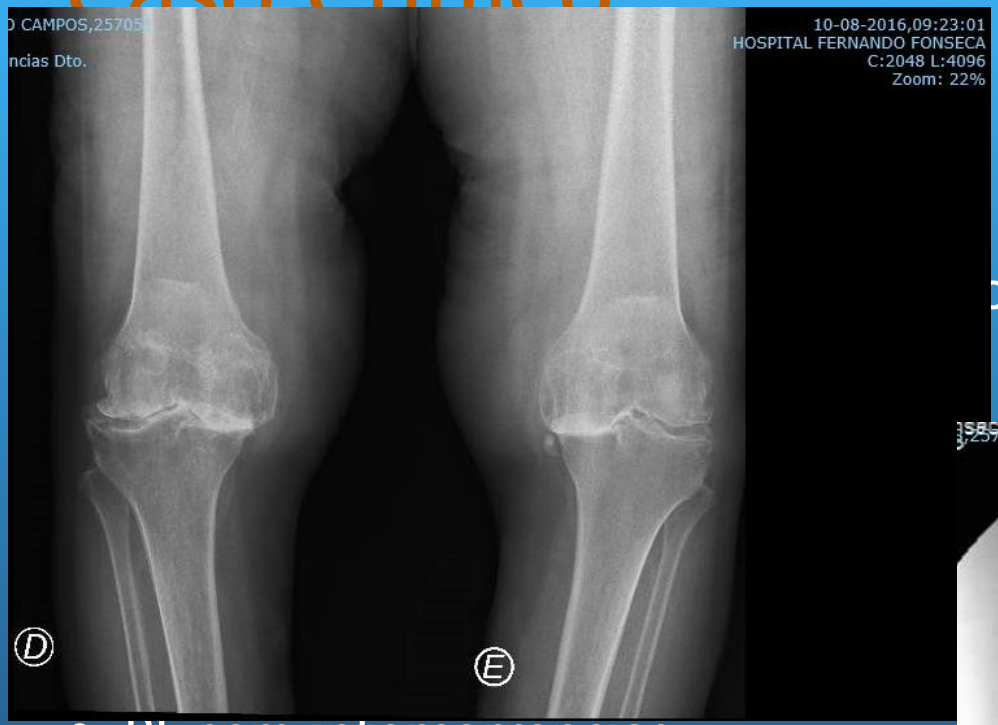
Caso Clínico



bidismo iatrogénico

- RF sem intercorrências
- > 50% melhoria na END
- Agendado o joelho contralateral

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A nossa experiência

- 13 doentes;
- Sexo feminino, média de 67,1 anos de idade;
- 6 doentes: melhoria > 50% na END
  - 2 doentes agendados para tratamento contralateral
  - 1 doente sem terapêutica analgésica
- 1 sem efeito analgésico
- 2 perdas de follow up
- Sem intercorrências

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Obrigado pela atenção!

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Top 10 Things NOT to Say to Someone Living with Chronic Pain

ourcpc.com

10) You look great!
9) I know exactly how you feel!
8) It could be a lot worse.
7) At least you don't have cancer.
6) God won't give you more than you can handle.
5) It's good to see you here; you must be doing better.
4) Don't say "my" illness.
3) At least you can.
2) You don't look sick.
1) The sunshine and fresh air will do you good.