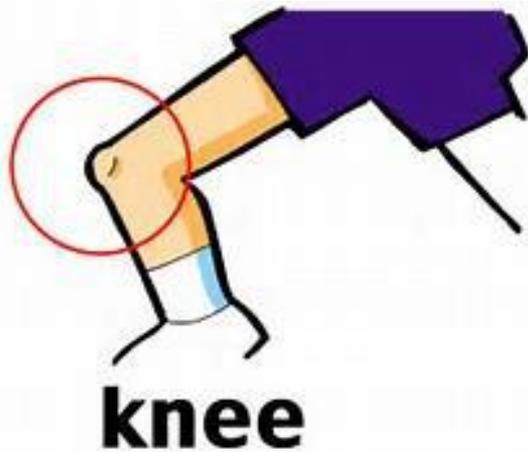


Management of the Early Degenerate Knee



Kieran Barnard
Hip and Knee Pathway Lead

Sussex **MSK** Partnership

Central

This history...



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A CONTROLLED TRIAL OF ARTHROSCOPIC SURGERY FOR OSTEOARTHRITIS OF THE KNEE

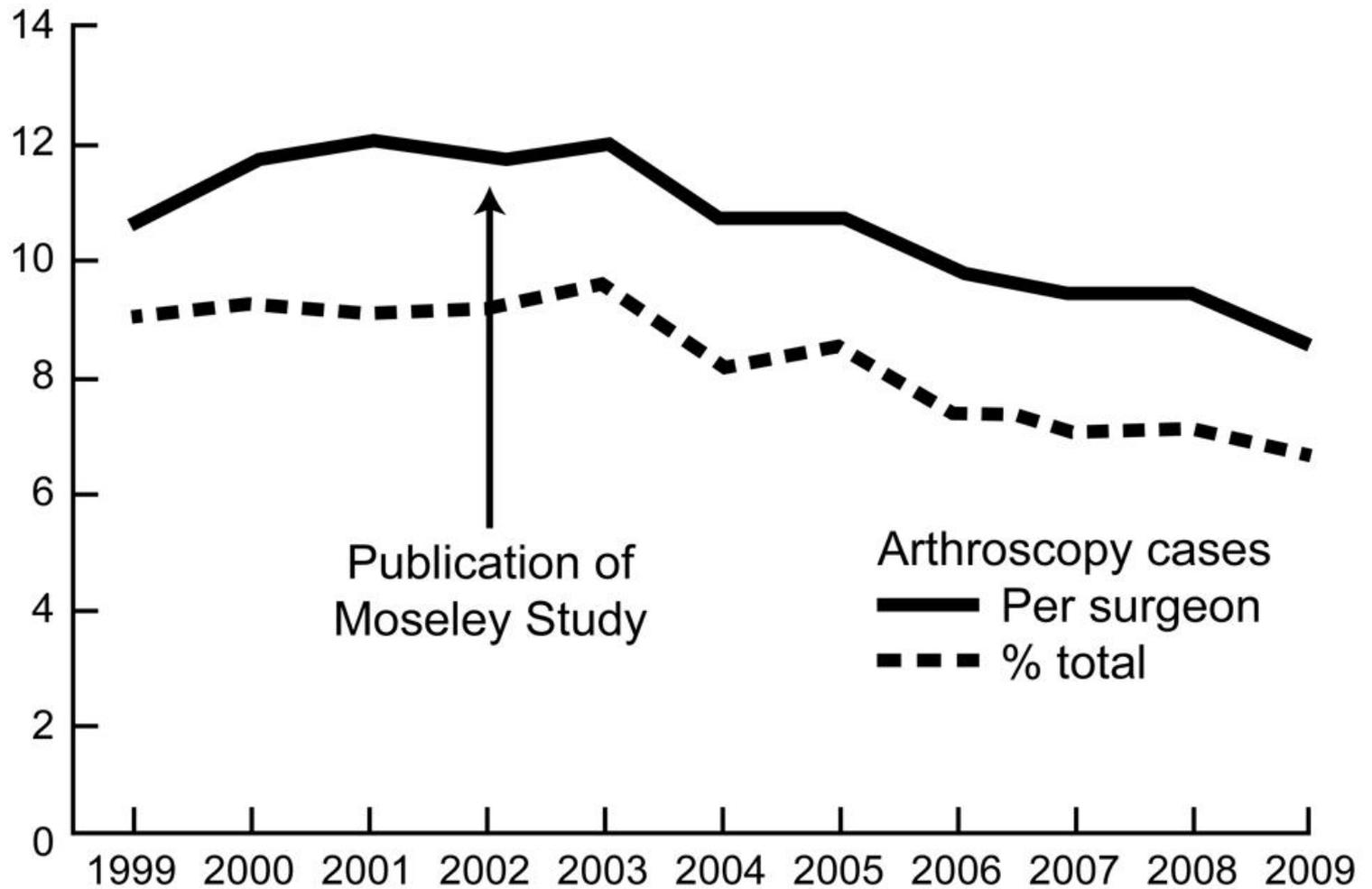
J. BRUCE MOSELEY, M.D., KIMBERLY O'MALLEY, PH.D., NANCY J. PETERSEN, PH.D., TERRI J. MENKE, PH.D.,
BARUCH A. BRODY, PH.D., DAVID H. KUYKENDALL, PH.D., JOHN C. HOLLINGSWORTH, DR.P.H.,
CAROL M. ASHTON, M.D., M.P.H., AND NELDA P. WRAY, M.D., M.P.H.

Moseley et al (2002)

- Randomised placebo controlled trial.
- A total of 180 patients with osteoarthritis of the knee were randomly assigned to receive arthroscopic débridement, arthroscopic lavage, or placebo surgery.
- Patients in the placebo group received skin incisions and underwent a simulated débridement without insertion of the arthroscope.
- Outcomes were assessed at multiple points over a 24-month period with the use of five self-reported scores — three on scales for pain and two on scales for function — and one objective test of walking and stair climbing. A total of 165 patients completed the trial.

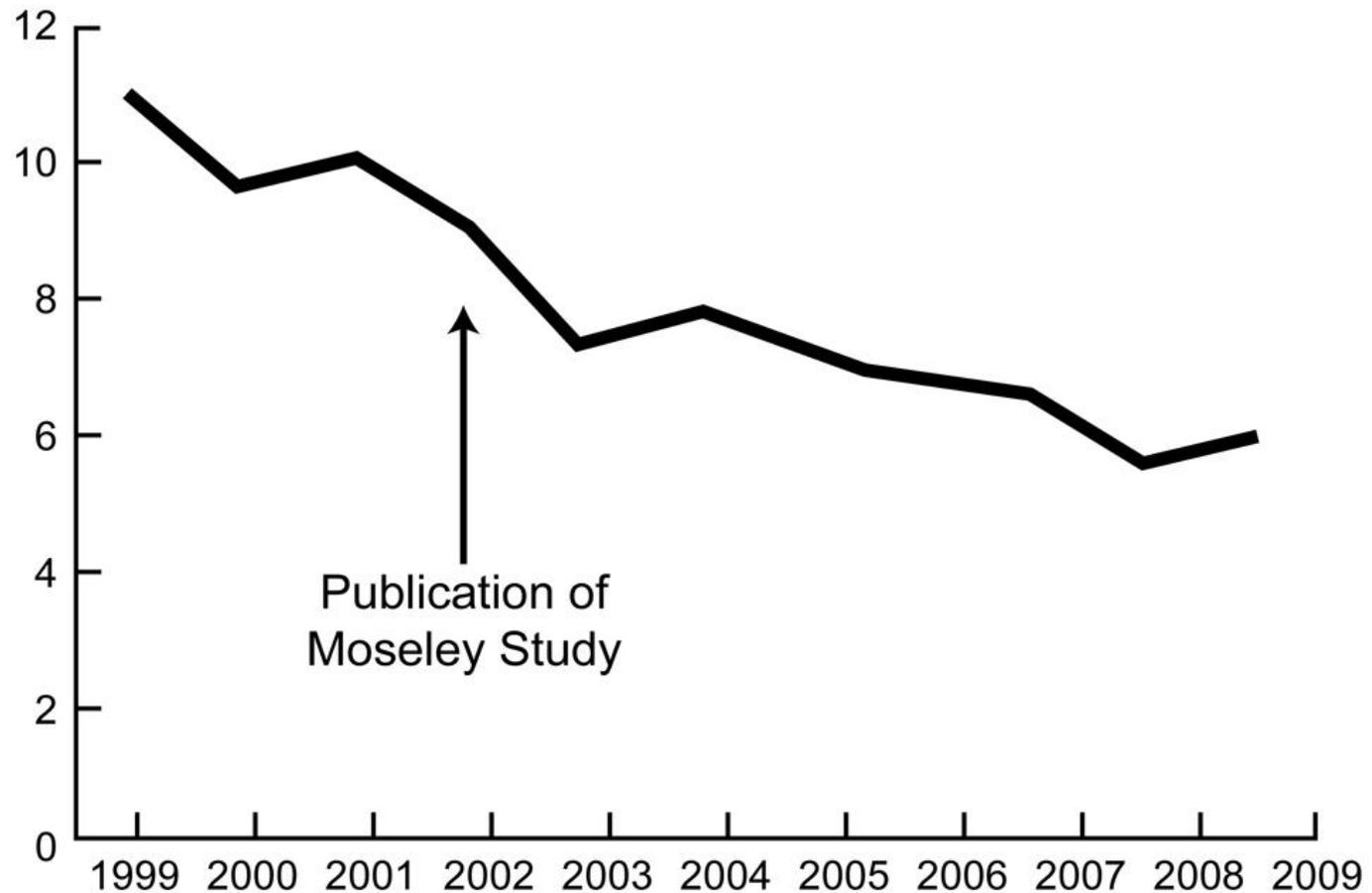
Moseley et al (2002)

“In this controlled trial involving patients with osteoarthritis of the knee, the outcomes after arthroscopic lavage or arthroscopic débridement were no better than those after a placebo procedure.”



Trend in knee arthroscopy cases per surgeon, 1999-2009.

Potts et al (2012)



Chondroplasty as percentage of knee arthroscopy cases, 1999-2009, Potts et al (2012)

Cost effectiveness

Open Access

Research

BMJ Open Cost-effectiveness analysis of arthroscopic surgery compared with non-operative management for osteoarthritis of the knee

Jacquelyn D Marsh,¹ Trevor B Birmingham,² J Robert Giffin,³ Wanrudee Isaranuwachai,⁴ Jeffrey S Hoch,⁵ Brian G Feagan,⁶ Robert Litchfield,³ Kevin Willits,³ Peter Fowler³

Conclusions: “Arthroscopic debridement of degenerative articular cartilage and resection of degenerative meniscal tears in addition to non-operative treatments for knee OA is not an economically attractive treatment option compared with non-operative treatment only.”

Exercise therapy for OA

- Exercise therapy vs scope
 - Kirkley et al 2008 – single centred RCT
 - Moderate to severe OA – 96 scope vs 86 physical therapy
 - No sig difference in WOMAC scores at 2 years
 - Katz et al 2013 – Multicentred RCT
 - 351 patients with a meniscal tear and mild to mod OA
 - No sig difference in WOMAC scores at 6 month
 - However, 30% of physical therapy group underwent surgery within 6 months

Long-Term Outcomes and Costs of an Integrated Rehabilitation Program for Chronic Knee Pain: A Pragmatic, Cluster Randomized, Controlled Trial

M. V. HURLEY,¹ N. E. WALSH,² H. MITCHELL,³ J. NICHOLAS,⁴ AND A. PATEL⁴

Conclusion. Clinical and cost benefits of ESCAPE-knee pain were still evident 30 months after completing the program. ESCAPE-knee pain is a more effective and efficient model of care that could substantially improve the health, well-being, and independence of many people, while reducing health care costs.

Arthroscopy for the Deg Meniscus

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Arthroscopic Partial Meniscectomy versus Sham Surgery for a Degenerative Meniscal Tear

Raine Sihvonen, M.D., Mika Paavola, M.D., Ph.D., Antti Malmivaara, M.D., Ph.D.,
Ari Itälä, M.D., Ph.D., Antti Joukainen, M.D., Ph.D., Heikki Nurmi, M.D.,
Juha Kalske, M.D., and Teppo L.N. Järvinen, M.D., Ph.D.,
for the Finnish Degenerative Meniscal Lesion Study (FIDELITY) Group

Sihvonen et al 2013

- A multicenter, randomized, double-blind, sham-controlled trial in 146 patients 35 to 65 years of age who had knee symptoms consistent with a degenerative medial meniscus tear and no knee osteoarthritis.
- the outcomes after arthroscopic partial meniscectomy were no better than those after a sham surgical procedure (Lysholm and WOMET Score)
- “increasing evidence suggests that a degenerative meniscal tear may be an early sign of knee osteoarthritis rather than a separate clinical problem requiring meniscal intervention”

Sihvonen et al 2017

- In this 2-year follow-up of patients without knee osteoarthritis but with symptoms of a degenerative medial meniscus tear, the outcomes after APM were no better than those after placebo surgery. No evidence could be found to support the prevailing ideas that patients with presence of mechanical symptoms or certain meniscus tear characteristics or those who have failed initial conservative treatment are more likely to benefit from APM.

Reviews

- Khan et al 2014 meta-analysis
 - “There is moderate evidence to suggest that there is no benefit to arthroscopic meniscal débridement for degenerative meniscal tears in comparison with nonoperative or sham treatments in middle-aged patients with mild or no concomitant osteoarthritis.”
- Thorlund et al 2015 systematic review and meta-analysis
 - “The small inconsequential benefit seen from interventions that include arthroscopy for the degenerative knee is limited in time and absent at one to two years after surgery. Knee arthroscopy is associated with harms. Taken together, these findings do not support the practise of arthroscopic surgery for middle aged or older patients with knee pain with or without signs of osteoarthritis.”
- Monk et al 2016 Systematic review
 - “Given the current widespread use of arthroscopic meniscal surgeries, more research is urgently needed to support evidence-based practice in meniscal surgery in order to reduce the numbers of ineffective interventions and support potentially beneficial surgery.”
- Brignardello-Petersen et al 2017 Systematic review
 - “Over the long term, patients who undergo knee arthroscopy versus those who receive conservative management strategies do not have important benefits in pain or function.”

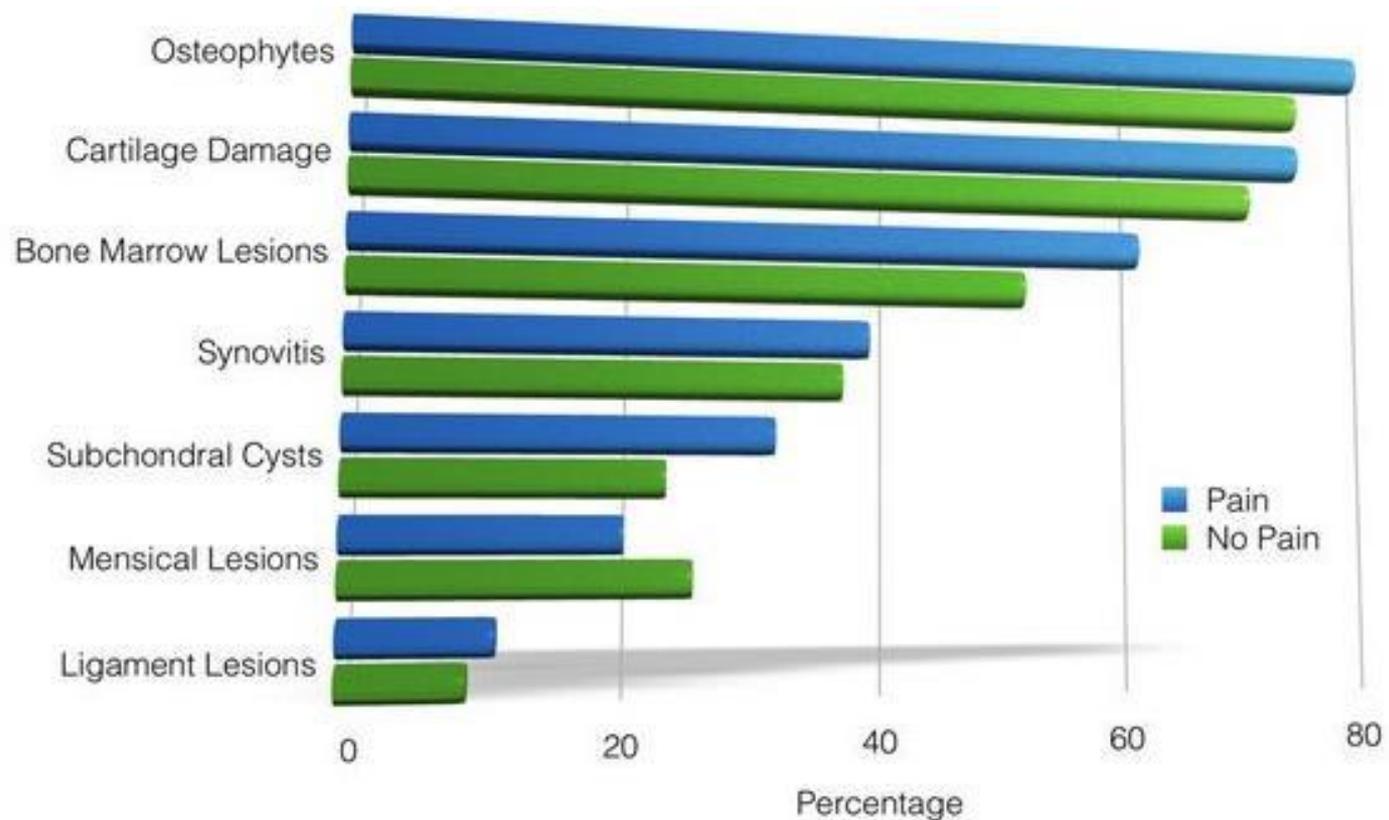
Prevalence of abnormalities in knees detected by MRI in adults without knee osteoarthritis: population based observational study (Framingham Osteoarthritis Study)

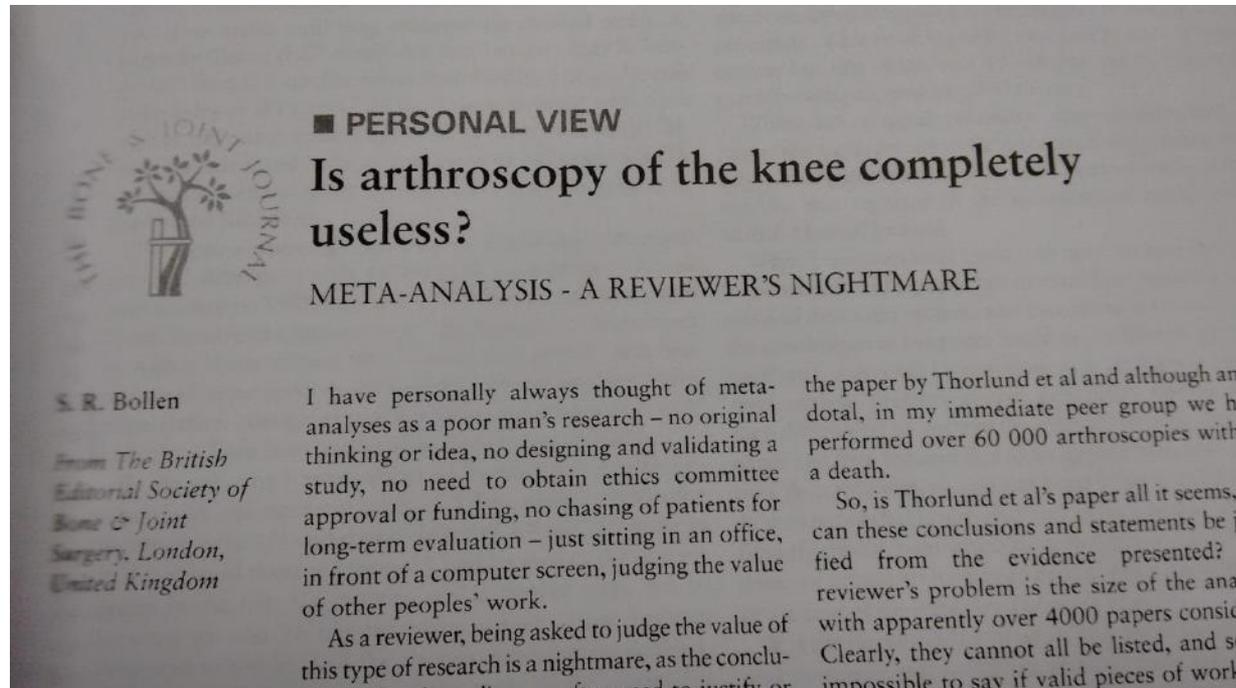
 OPEN ACCESS

Ali Guermazi professor of radiology¹, Jingbo Niu research assistant professor of medicine², Daichi Hayashi research assistant professor of radiology¹, Frank W Roemer associate professor of radiology¹³, Martin Englund associate professor, epidemiologist²⁴, Tuhina Neogi associate professor of medicine and epidemiology², Piran Aliabadi professor of radiology⁵, Christine E McLennan project manager⁶, David T Felson professor of medicine and epidemiology²

Participants 710 people aged >50 who had no radiographic evidence of knee osteoarthritis (Kellgren-Lawrence grade 0) and who underwent MRI of the knee.

Prevalence of 'abnormal' findings with and without pain





- Meta-analysis – “poor man’s research”
- Thorlund paper - Only 9 out of 1789 papers were analysed
- Findings in support of arthroscopic intervention were excluded., including Herrlin et al 2013 which showed the 1/3 of patients still experiencing disabling pain had a good response to scope
- Sihvonen paper, 70% of patients had OA at scope

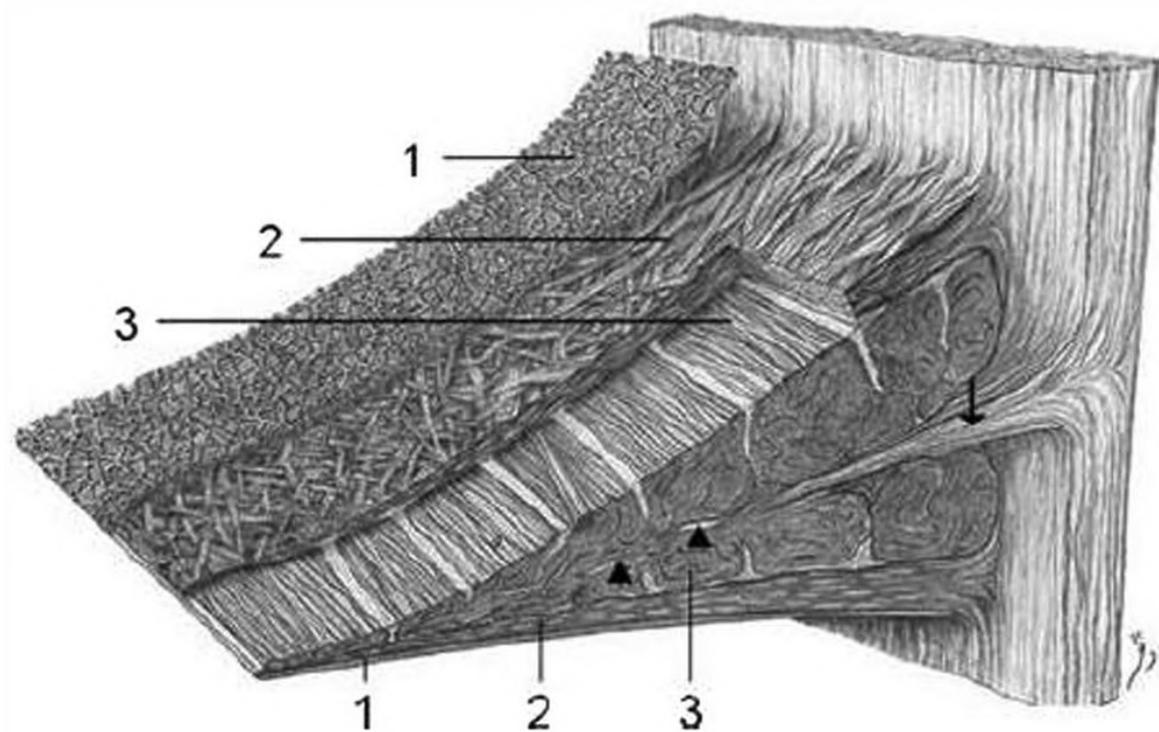
BOA Response

- WB xray should be first Investigation in the middle aged.
 - If shows OA – MRI should not be done
 - If MRI is performed too early then over diagnosis of meniscal lesions predominate
 - Often with OA an often irrelevant meniscal tear is present.

BOA Response continued

- A knee with no arthritis and an acute meniscus tear causing pain for more than six weeks (often without locking or giving way) **will not settle with watchful waiting, pain killers, exercise or physiotherapy.** It would be correct to offer knee arthroscopy to this group of patients regardless of their age;
- Patients with advanced bone on bone arthritis should not generally be treated with arthroscopy. They need conservative treatment and when that is no longer efficacious, joint replacement is often appropriately advised;
- The grey area is the patient with some degree of arthritis but with acute on chronic pain and evidence of mechanical symptoms due to a meniscus tear. The decision on whether to operate in that circumstance is a finely balanced clinical decision. Some patients benefit and some do not.

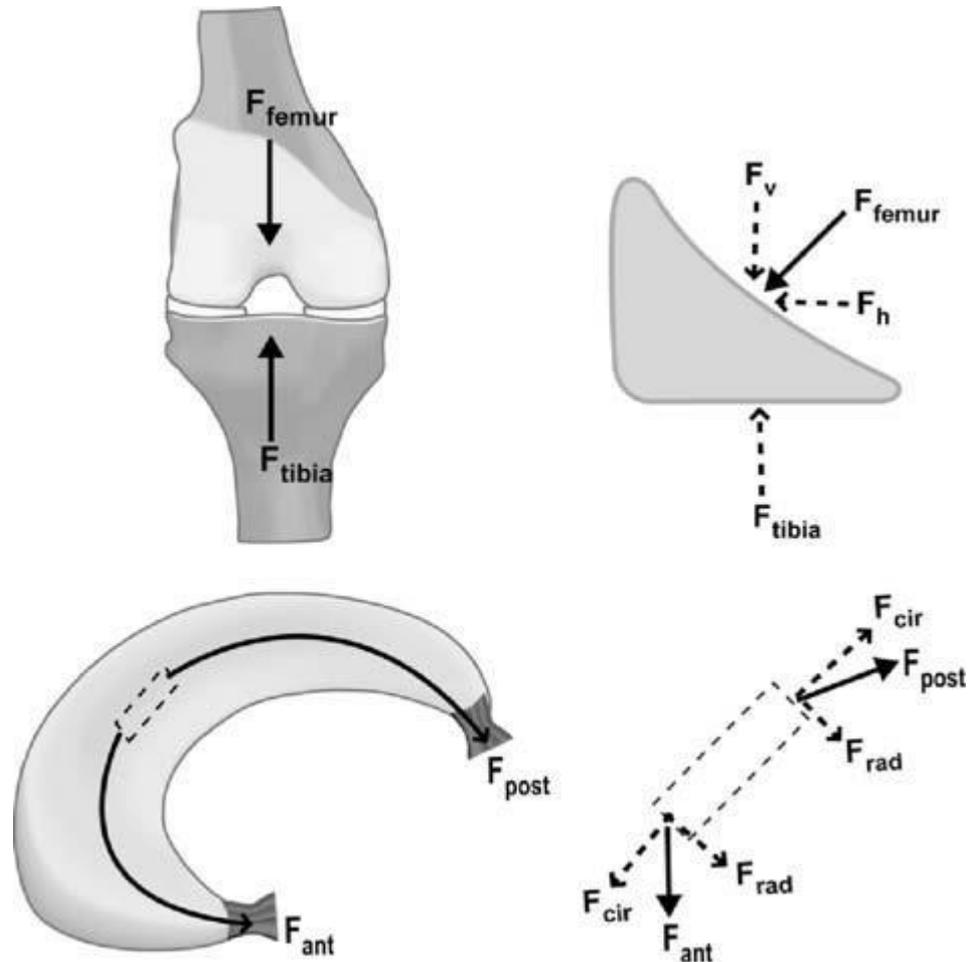
Meniscal Structure



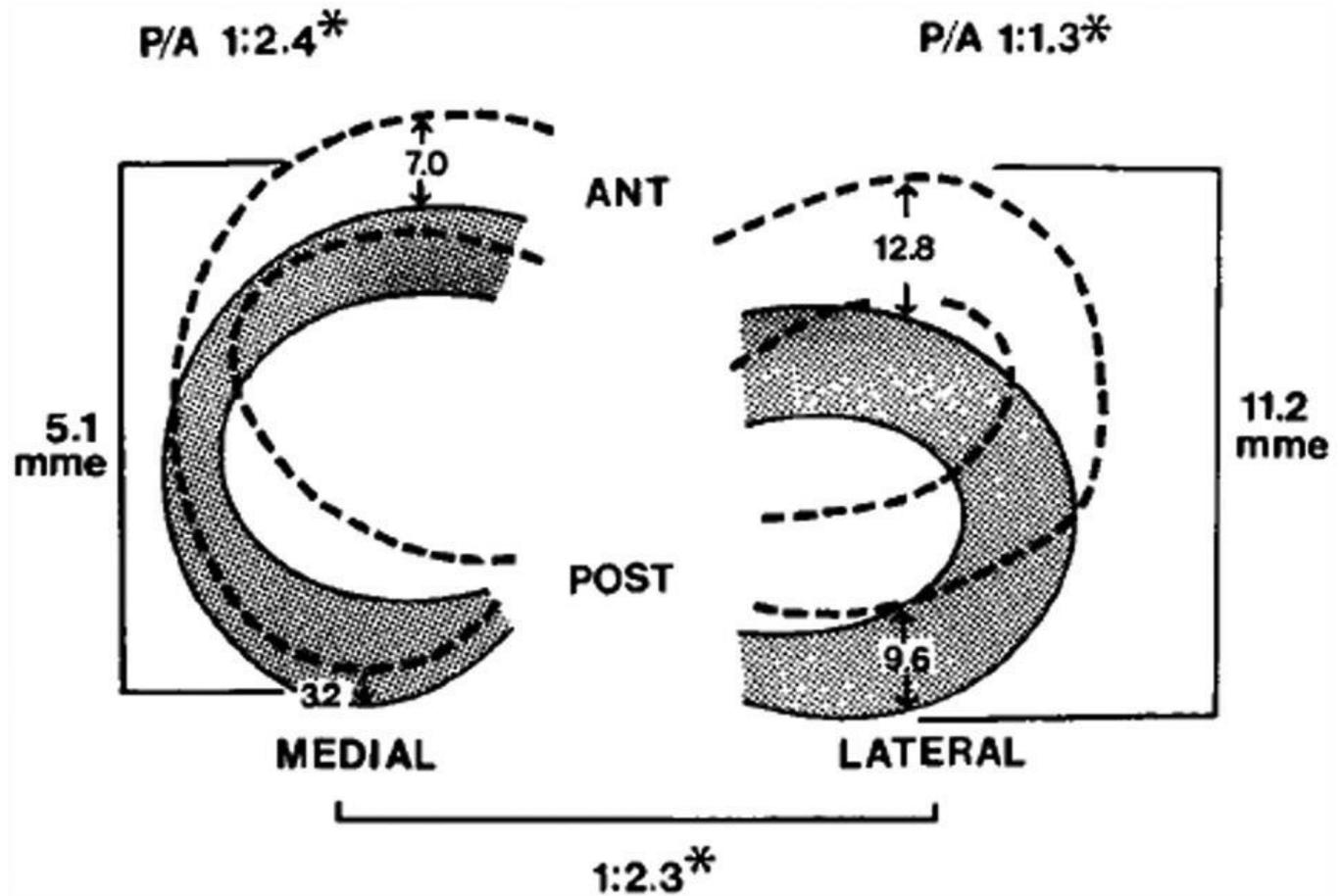
1. Superficial network, 2. Lamellar layer, 3.
Central main layer (radial interwoven fibres)

Fox et al 2012

Hoop Stresses

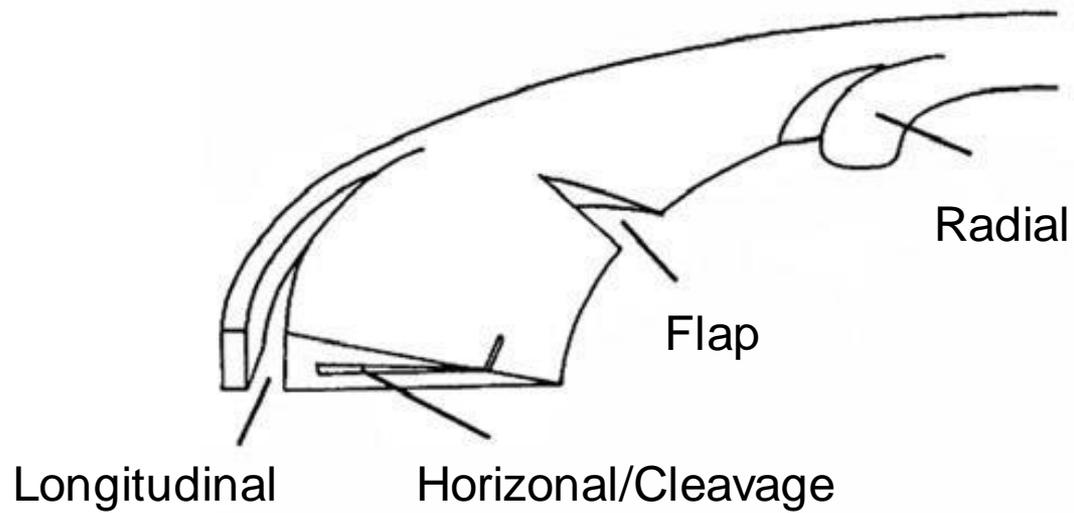


Movement of the meniscus



Fox et al (2012)

Common tear types



Etiology of tears

- Traumatic tears:
 - longitudinal/circumferential,
 - Radial (more common laterally)
 - oblique
 - Ramp lesions
 - Root
- Atraumatic/degenerative
 - Horizontal cleavage
 - Complex
 - Oblique/flap
 - Root

Types of tear

- Radial tears, meniscal root tears and flap tears can have a devastating effect on meniscal function (Bhatia et al 2014, McDermott and Amis 2006)
- Degenerate tears, particularly in the middle aged or older person, appear to be an entirely normal finding in asymptomatic knees (Guermazi et al 2012).

Consequence of meniscectomy

0363-5465/86/1404-0270\$02.00/0

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Meniscal tears: The effect of meniscectomy and of repair on intraarticular contact areas and stress in the human knee

A preliminary report*

MARK E. BARATZ,† MD, FREDDIE H. FU, MD, AND RICHARD MENGATO, MD

From the Department of Orthopaedic Surgery, University of Pittsburgh, Pittsburgh, Pennsylvania

“Contact stresses increased in proportion to the amount of meniscus removed and the degree to which the structure of the meniscus was disrupted.”

Rogen et al 2016:

Conclusion

In patients with, or at risk for, symptomatic knee osteoarthritis arthroscopic knee surgery with meniscectomy is associated with a 3 fold increase in the risk (hazard ratio 3.0, 95%CI 1.7 to 5.3) for knee replacement surgery.

These results therefore underpin the do-not do recommendation of NICE which recommends not to refer patients with osteoarthritis for arthroscopic surgery.

Structural pathology and mechanical symptoms

- Two principle problems:
 1. Structural pathology does not appear related to patient reported pain and function (Tombjerg et al 2016)
 2. “resection of a torn meniscus has no added benefit over sham surgery to relieve catching or occasional locking” (Sihvonen et al 2016).

Exercise therapy for the degenerative meniscus?

- For the degenerative tear, arthroscopy does not appear superior to exercise therapy (Yim et al 2013, Herrlin et al 2007 and 2013, Kise et al 2016).
- But exercise therapy has the added benefit of improving thigh muscle strength, at least in the short term (Kise et al 2016).

Spectrum of OA?

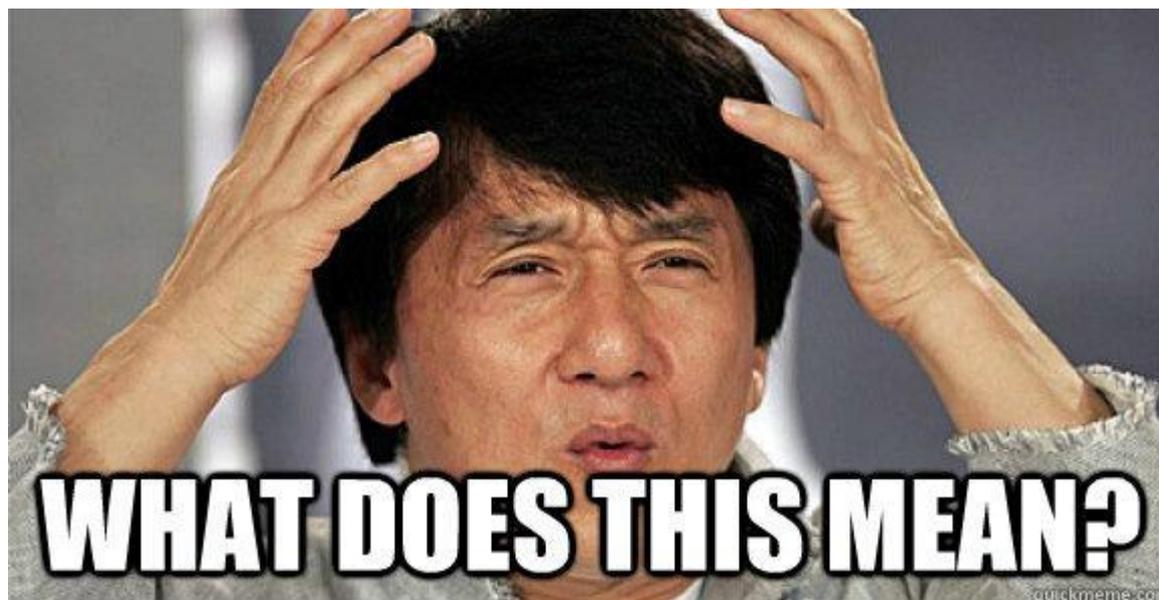
‘Increasing evidence suggests that a degenerative meniscal tear may be an early sign of knee osteoarthritis rather than a separate clinical problem requiring meniscal intervention’

If So... What is the most appropriate Rx regime?

- Should we be treating as an early OA knee?
 - ? Employing an ESCAPE plus type rehab programme?
 - Exact regime?
 - Rehab time?
 - Kise et al (2016) regime? 2-3 sessions/week over 12 weeks (24-36 sessions!)

Even so – Some Pts may not respond

- Herrlin et al 2013... 30% end up needing surgery
- Katz et al 2013, 30% of physical therapy group underwent surgery within 6 months



- How do we find these people?
- Can we identify pre physio or do we simply attempt rehab with each patient?



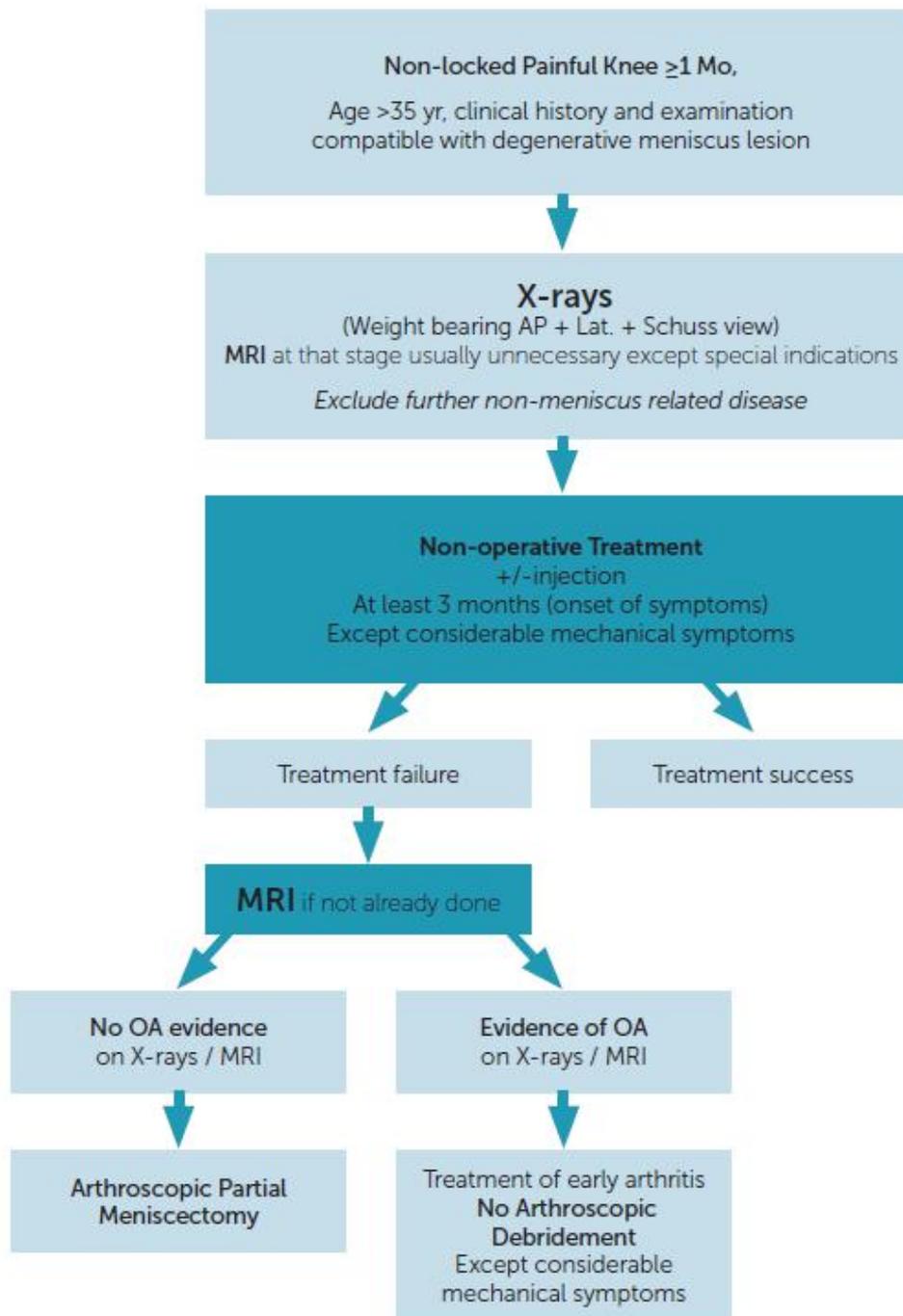
“High quality evidence from multiple randomised trials indicates that arthroscopic meniscectomy is no more effective than placebo or non-operative alternatives for most patients with degenerative meniscal tears. Whether it has a role in those in whom conservative treatment is unsuccessful or for selected subgroups is currently unknown.”

Buchbinder et al 2015

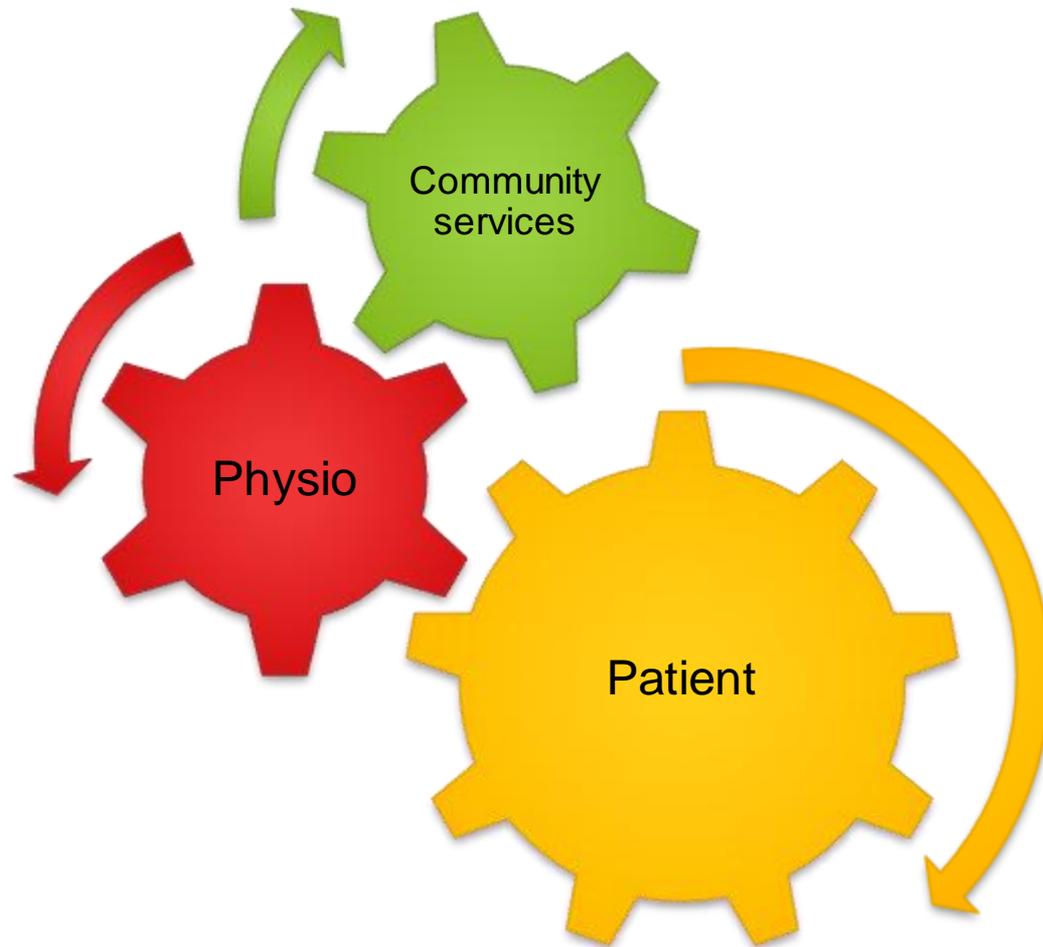
Conclusions from literature - the management of the early degenerative knee...

- If it's truly locking then a scope may be beneficial
- Although... even 'mechanical' locking and catching symptoms may not get better with a scope compared with sham surgery
- If it's not locking then scope not indicated until failed **'appropriate'** rehab.... But...
- There is some evidence that scope may be helpful to patients who have failed conservative management





Integrated



Individualised

Exercise Referral

Gym



Home based

Physio



Thank you!

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Sussex **MSK** Partnership

Central