MBS to facilitate *Orthopaedic* Procedures

IFSO Congress 2024
4-9-2024

Assoc Prof Andrew Hardidge
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Orthopaedic Research Centre @
Austin Health

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MBS to facilitate Orthopaedic Procedures

Andrew Hardidge, Orthopaedic Surgeonm, Austin Health, Victoria

✓ I have no potential conflict of interest to report

Why an Orthopod?

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Why we should work together...

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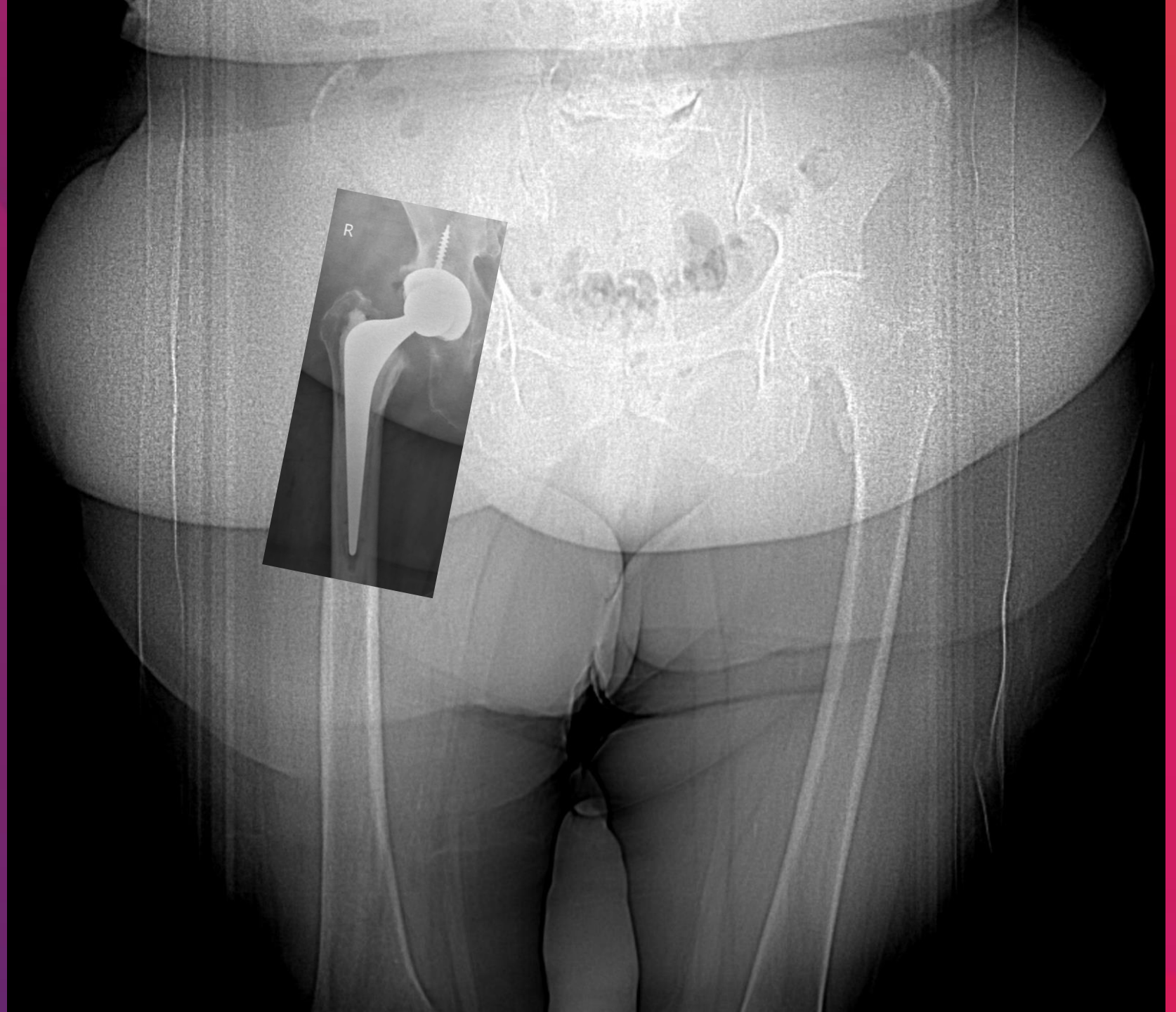

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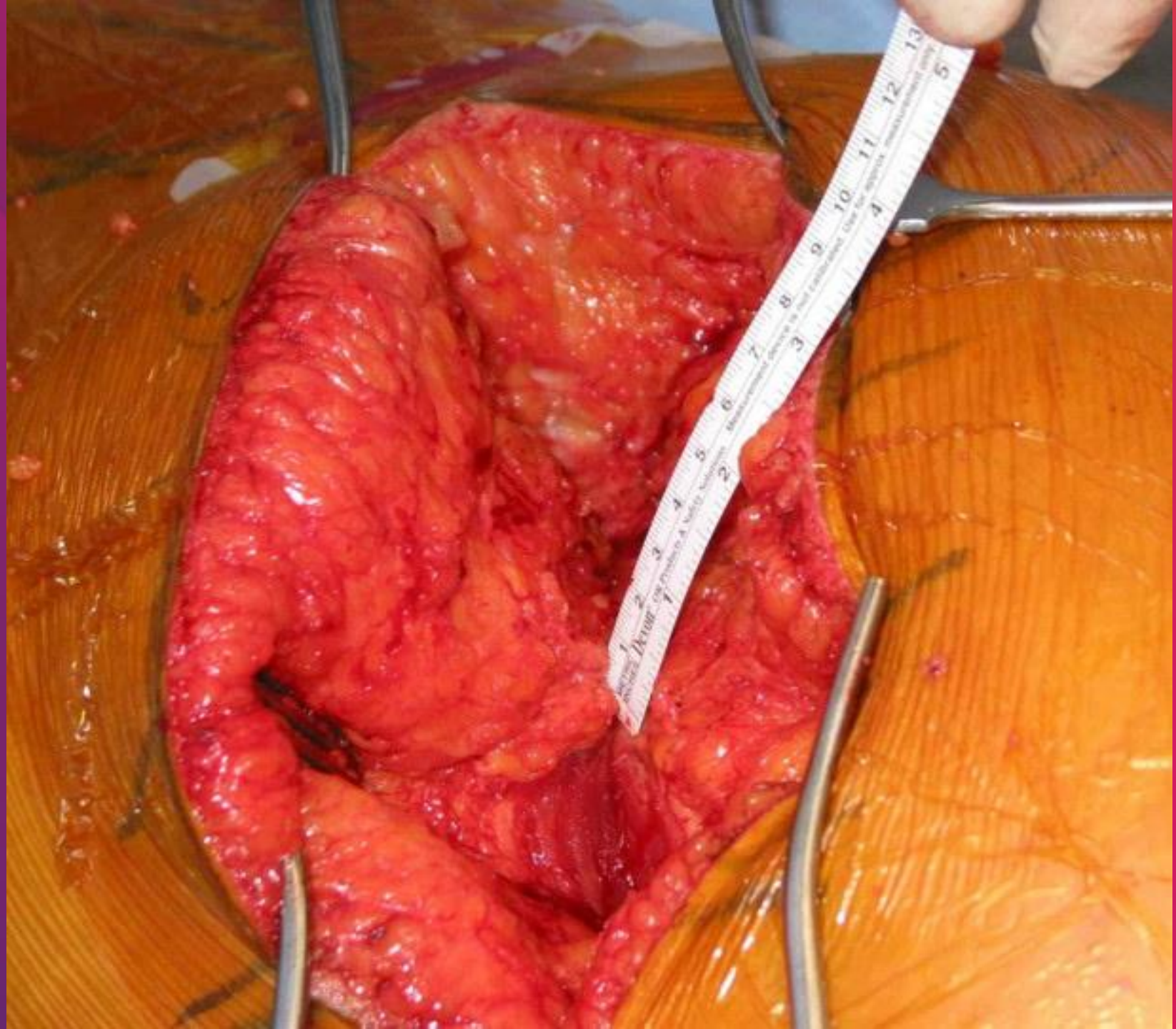

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But it’s much more than this

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Obesity has an effect on *every* part of ***Orthopaedic Surgery***:

- ***Requirement***
- ***Timing***
- ***Access***
- ***Performing***
- ***Recovery***
- ***Complications***
- ***Outcomes***

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But can bariatric surgery *facilitate* all of these?

Requirement for the Orthopaedic Surgery

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Requirement for the Orthopaedic Surgery

The *easiest* operation is *no operation*

So, *can joint surgery be avoided altogether* with bariatric surgery?

We know the rate of Osteoarthritis is higher with obesity [1, 2]

But it's *not just the mechanical loading* [2]

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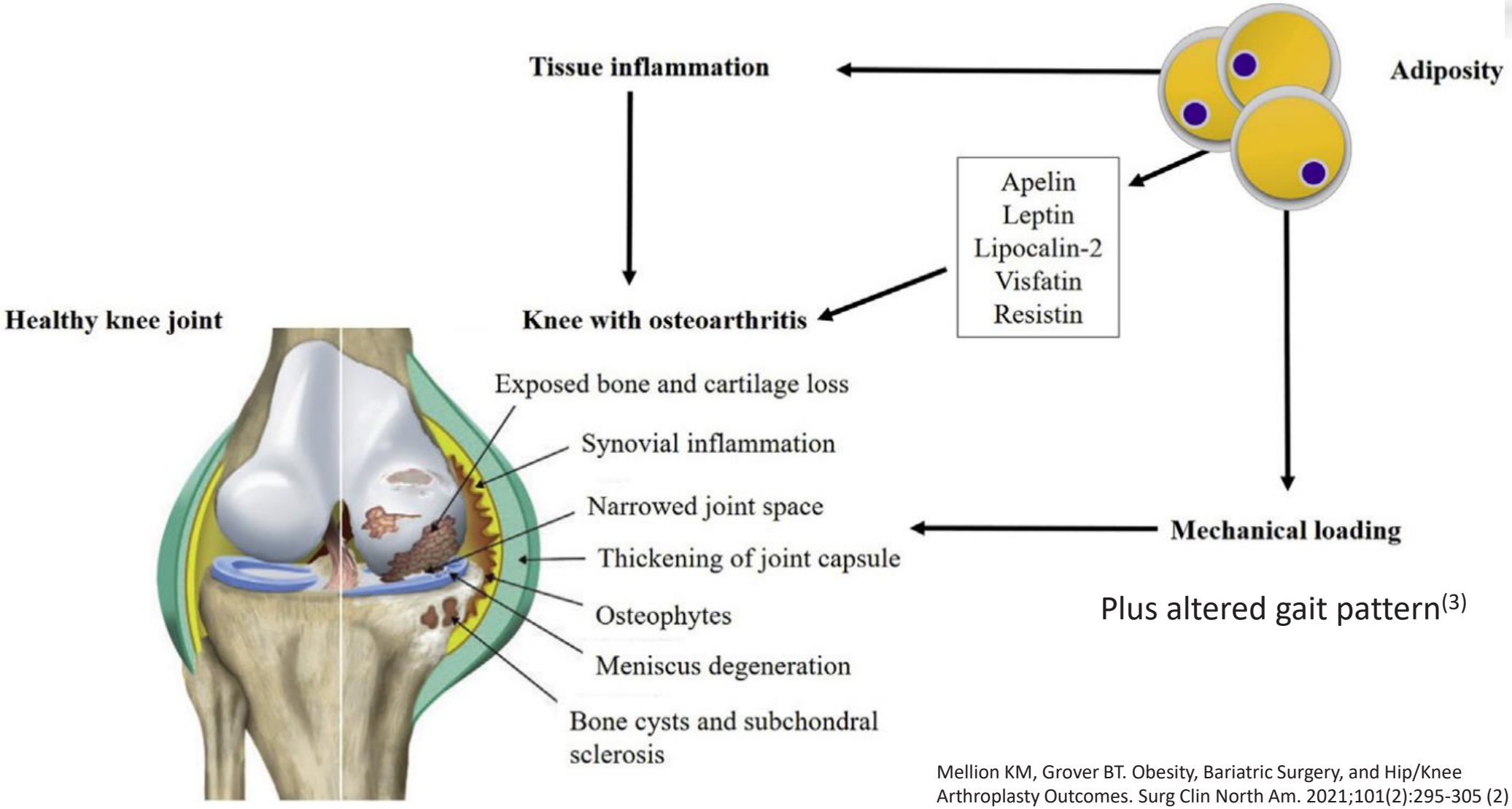
Requirement for the Orthopaedic Surgery



Plus altered gait pattern[3]

Mellion KM, Grover BT. Obesity, Bariatric Surgery, and Hip/Knee Arthroplasty Outcomes. Surg Clin North Am. 2021;101(2):295-305 (2)

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Requirement for the Orthopaedic Surgery

As a result:

Obesity leads to 5-8 x RR of needing Total Hip Replacement [4]

And risk of knee OA increases about 10% for every 1 increase in BMI [5]

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Requirement for the Orthopaedic Surgery

Thankfully, in setting of OA, *bariatric surgery* shown to *improve:*

- Radiological changes [6]
- Frequency and Intensity of pain [7] [8] [9]
- Function [7]
- Range of Motion [7]

Requirement for the Orthopaedic Surgery

In fact, many patients *delay or cancel*

their orthopaedic surgery after having bariatric surgery [10] [11]

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Requirement for the Orthopaedic Surgery

In fact, many patients *delay or cancel*

their orthopaedic surgery after having bariatric surgery [10] [11]

But the remainder who do not… what about them??

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Timing of the Orthopaedic Surgery

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Timing of the Orthopaedic Surgery

Presentation for orthopaedic surgery is *earlier in obese* [12] [13]

Longevity of joint replacements is about area under the curve

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Use

100
90
80
70
60
50
40
30
20
10
0

30 40 50 60 70 80 90 100

Age

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Use

100
90
80
70
60
50
40
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20
10
0

30 40 50 60 70 80 90 100

Age

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Use

100
90
80
70
60
50
40
30
20
10
0

Bariatric Surgery delays joint surgery

30 40 50 60 70 80 90 100

Age

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Timing of the Orthopaedic Surgery

If we can push the patient further along the curve (later), then:

Later technology when they do have surgery

(Think robotic surgery, and now AI)

Lower risk of needing a *revision*

(Complication rates 2-4 x primary (14)

Lower risk of *multiple revisions*

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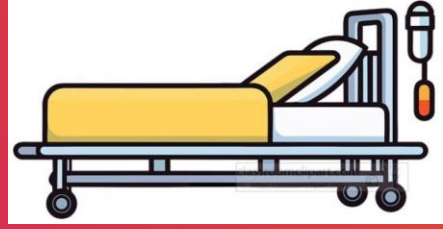

Access to the Orthopaedic Surgery

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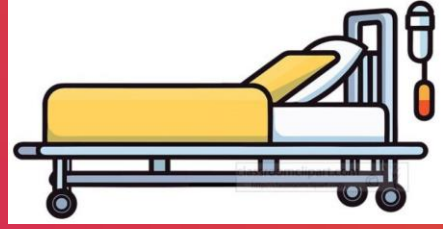
Access to the Orthopaedic Surgery



For the obese *patient*:

May require a campus/ hospital with *greater supportive services*
HDU, ICU, CPAP

Access to these services is usually more limited

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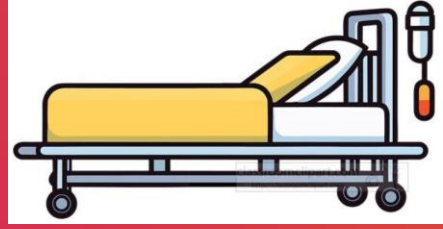
Access to the Orthopaedic Surgery



Opportunity costs for *other patients*:

Theatre access

Surgery takes longer [15] [16]

Fewer cases per list

Ward and Bed access

Increased Length of stay [16]

Poorer access to beds to patients of all craft groups

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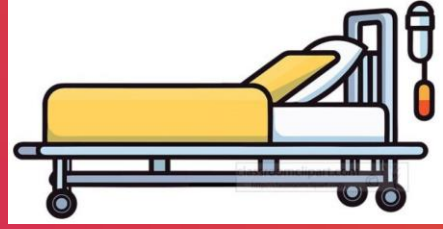
Access to the Orthopaedic Surgery



BMI Thresholds:

Survey of American surgeons

- Only 13 % did NOT have a cut-off to refuse surgery [17]
- Most surgeons choosing 40 BMI or above as their cut-off

But not (officially) common in Australia

Also some of this group would have improved

- See later[16]

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Performing the Orthopaedic Surgery

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Performing the Orthopaedic Surgery

Total Knee Replacement

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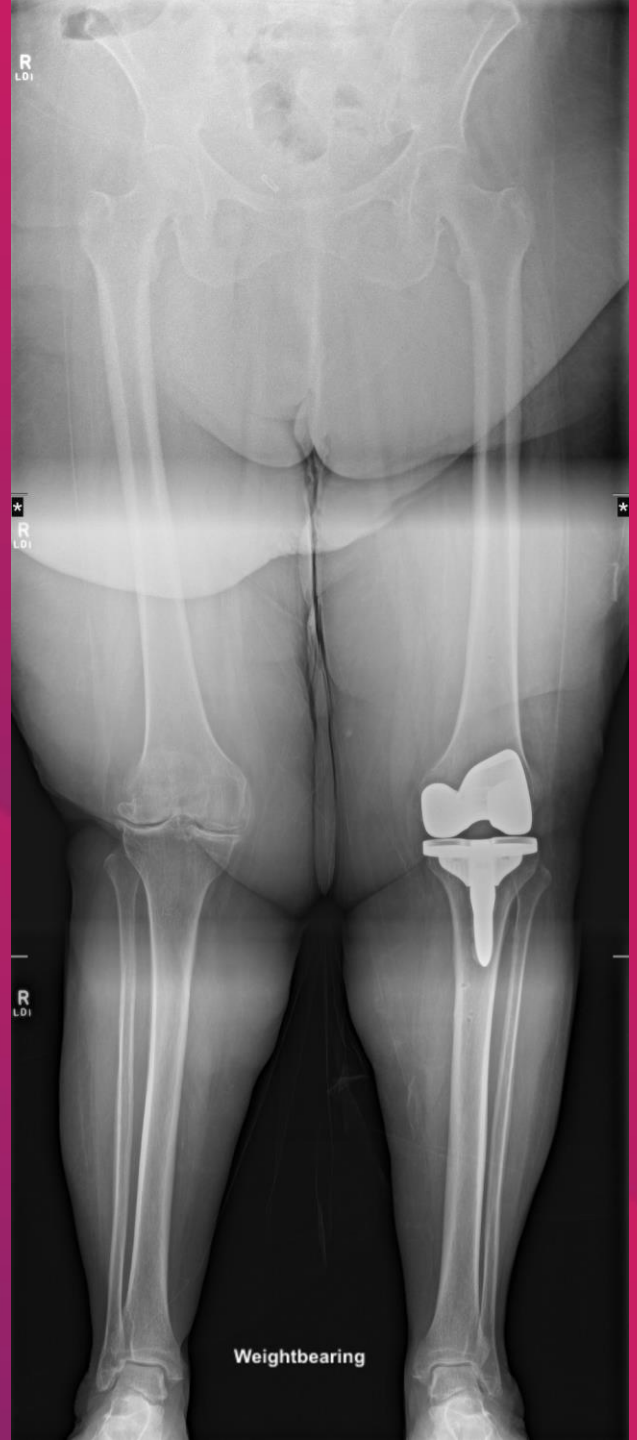

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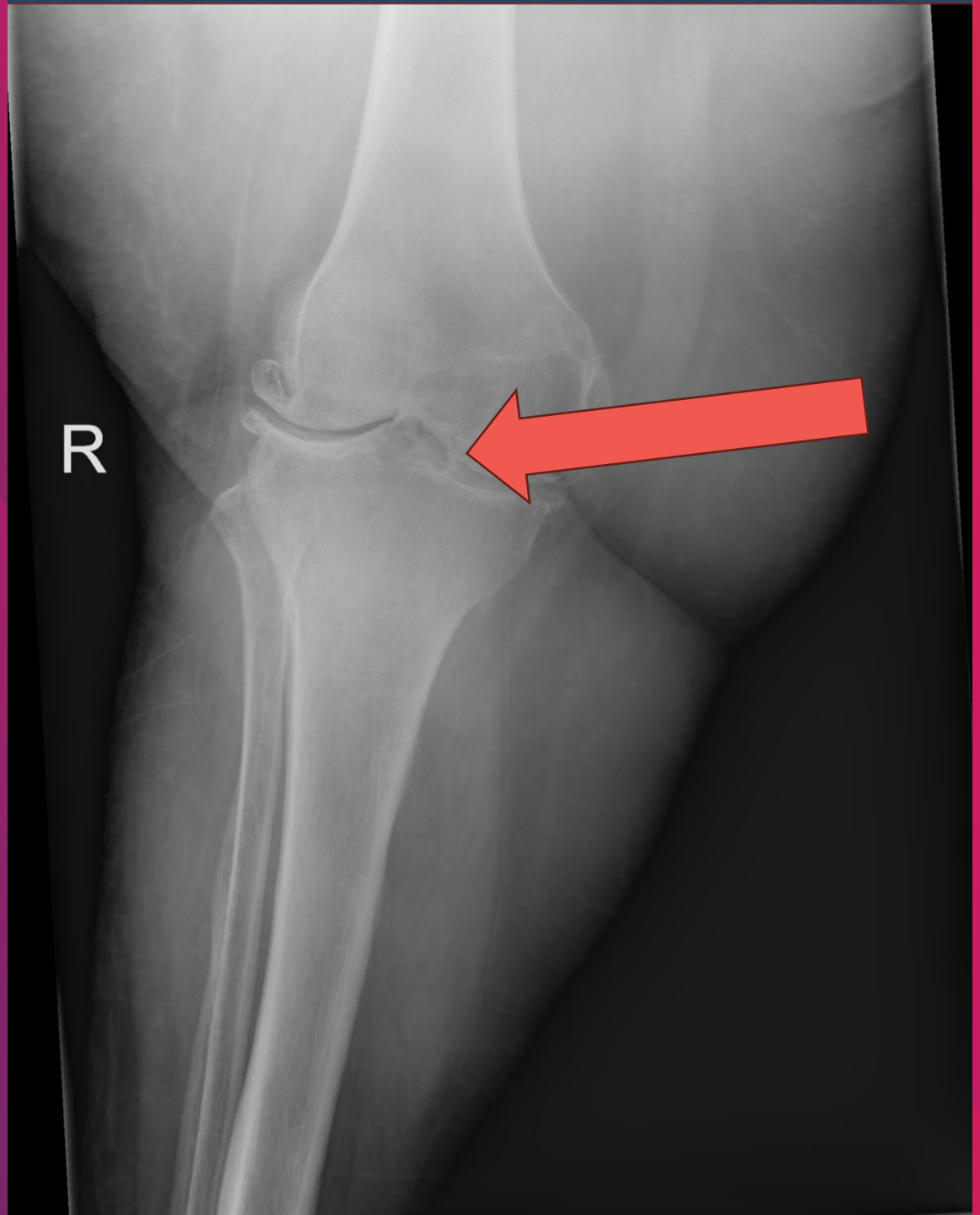

Access

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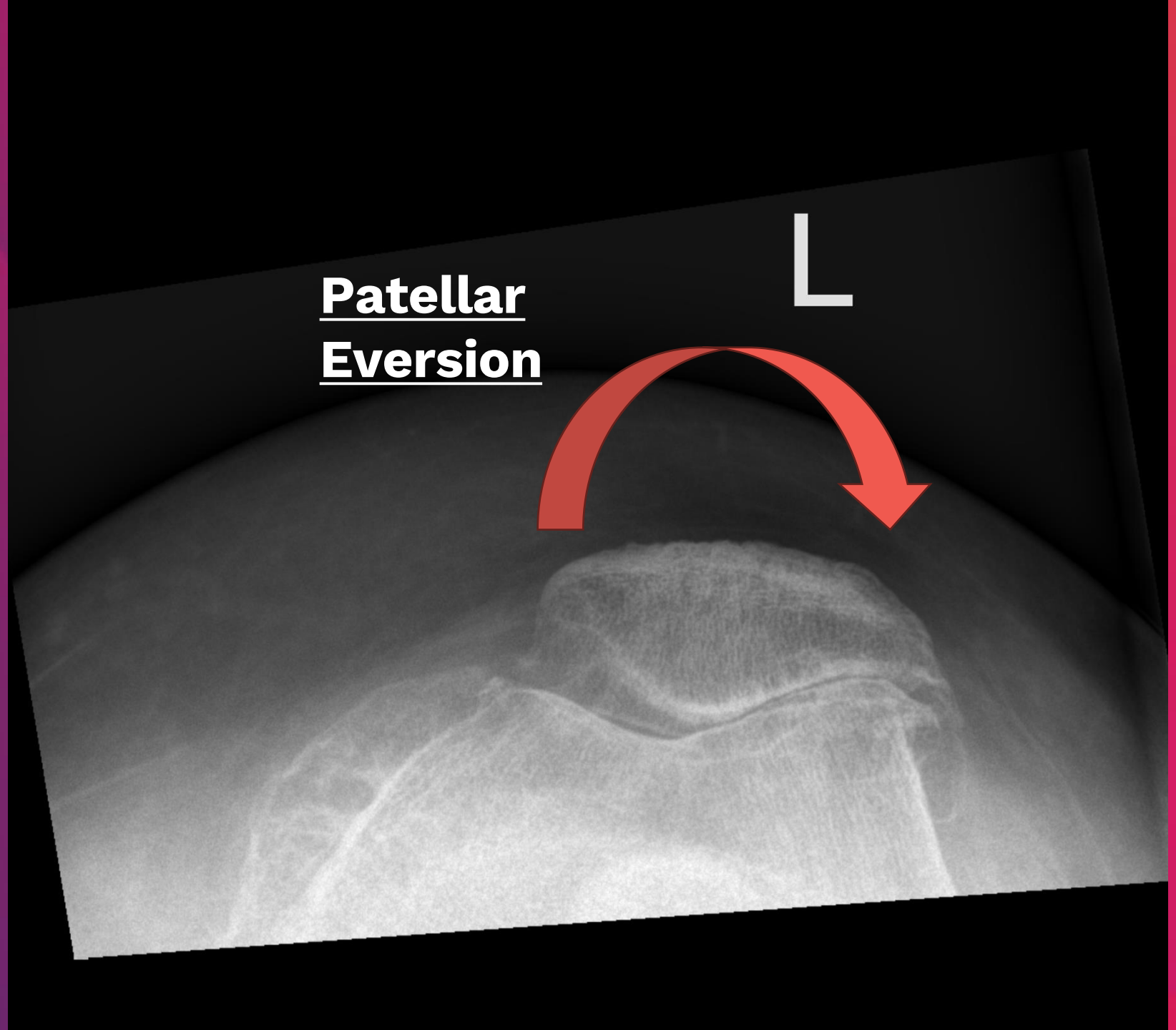

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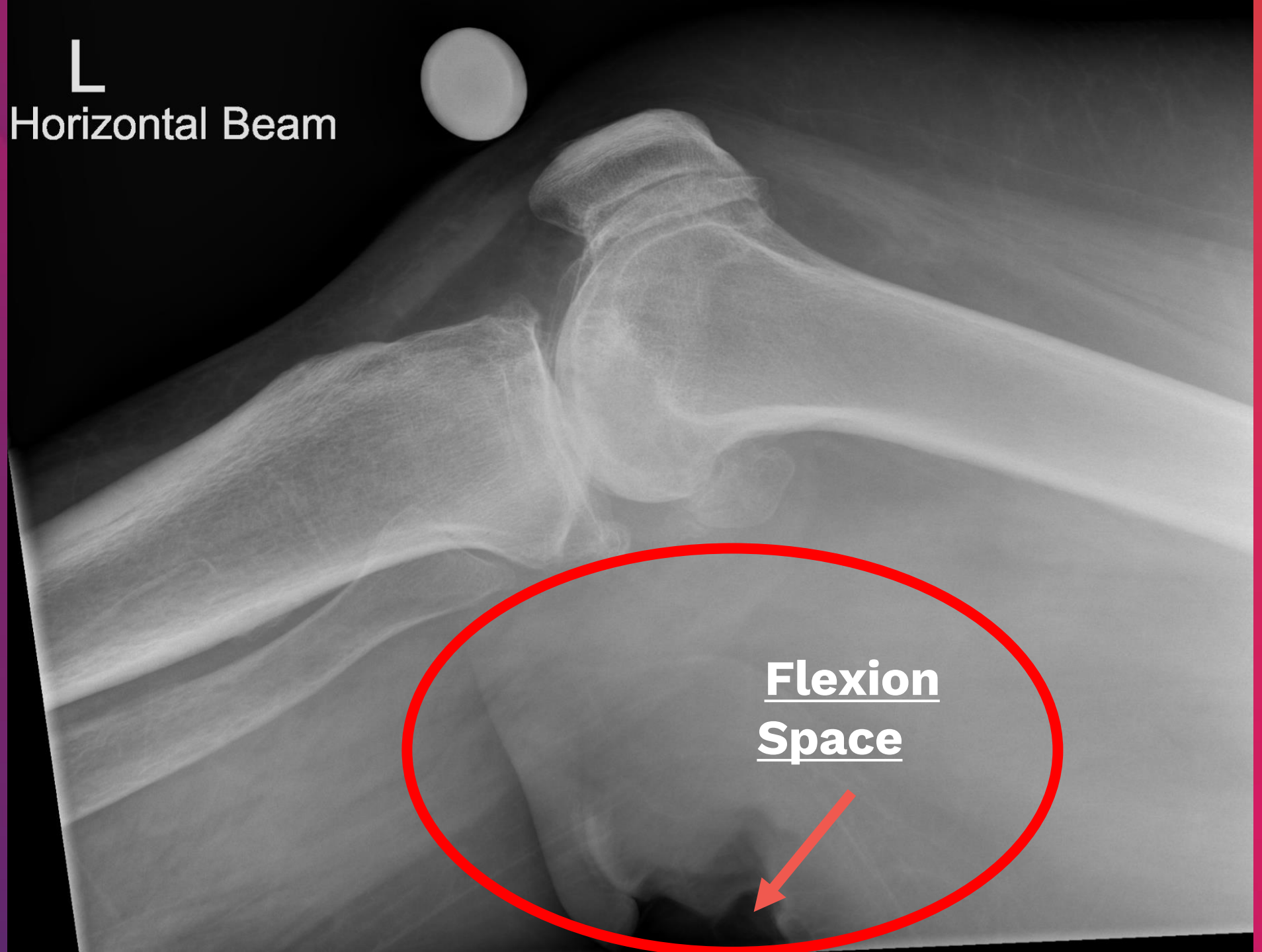
L
Horizontal Beam
Flexion
Space

Performing the Orthopaedic Surgery

Technical errors are higher [18,19]

Especially implant malposition

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Performing the Orthopaedic Surgery

Total Hip Replacement

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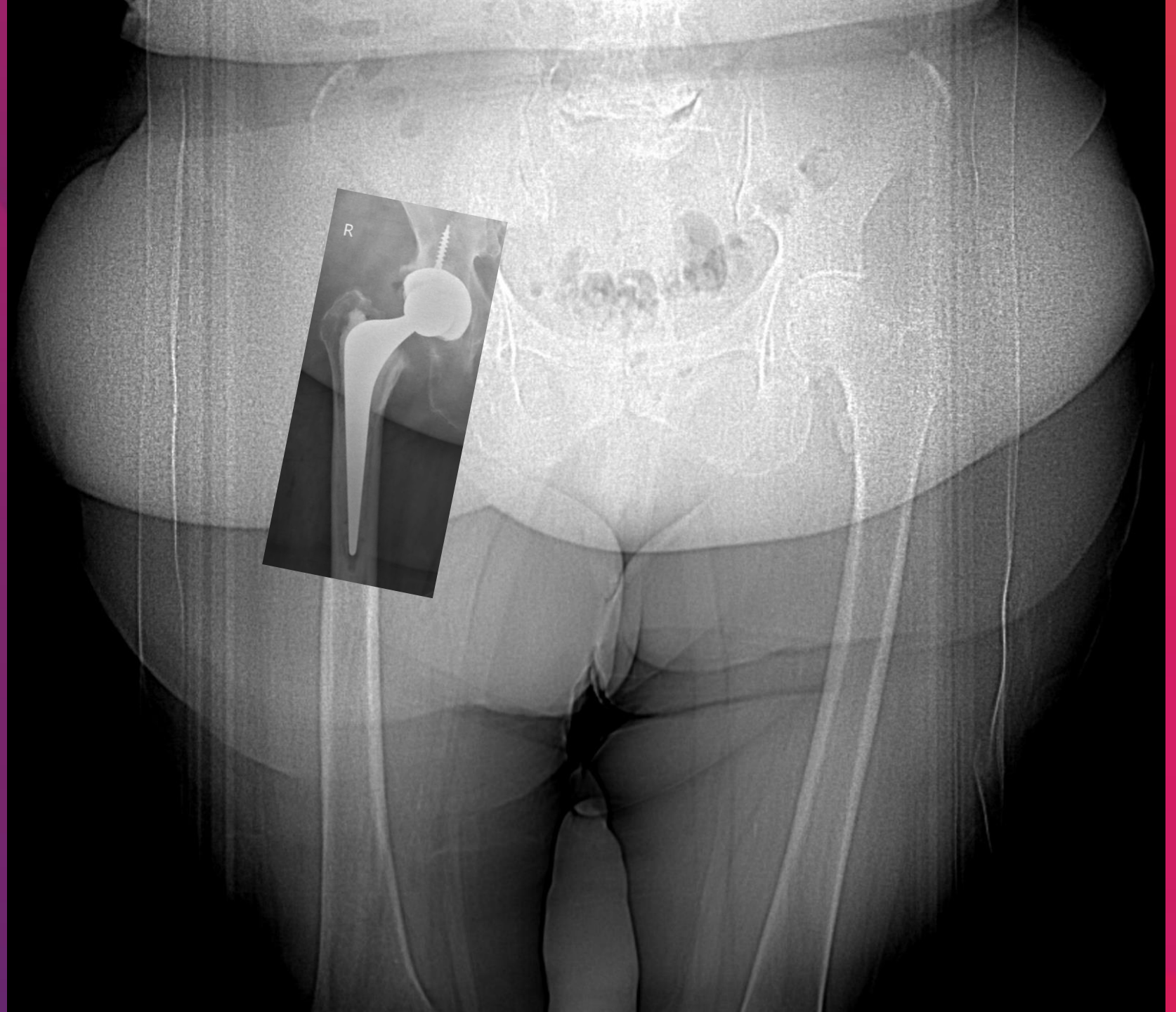

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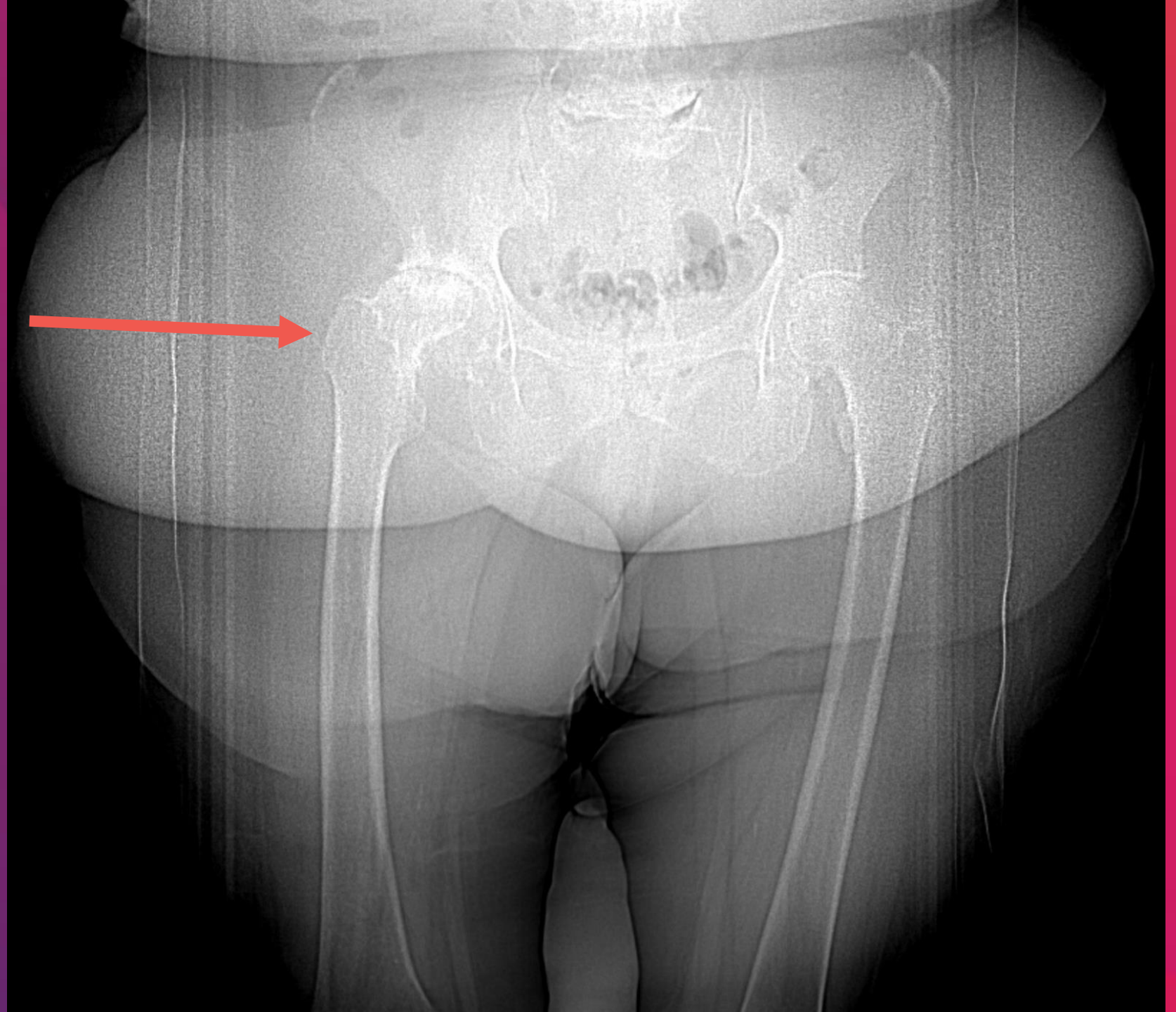
Access



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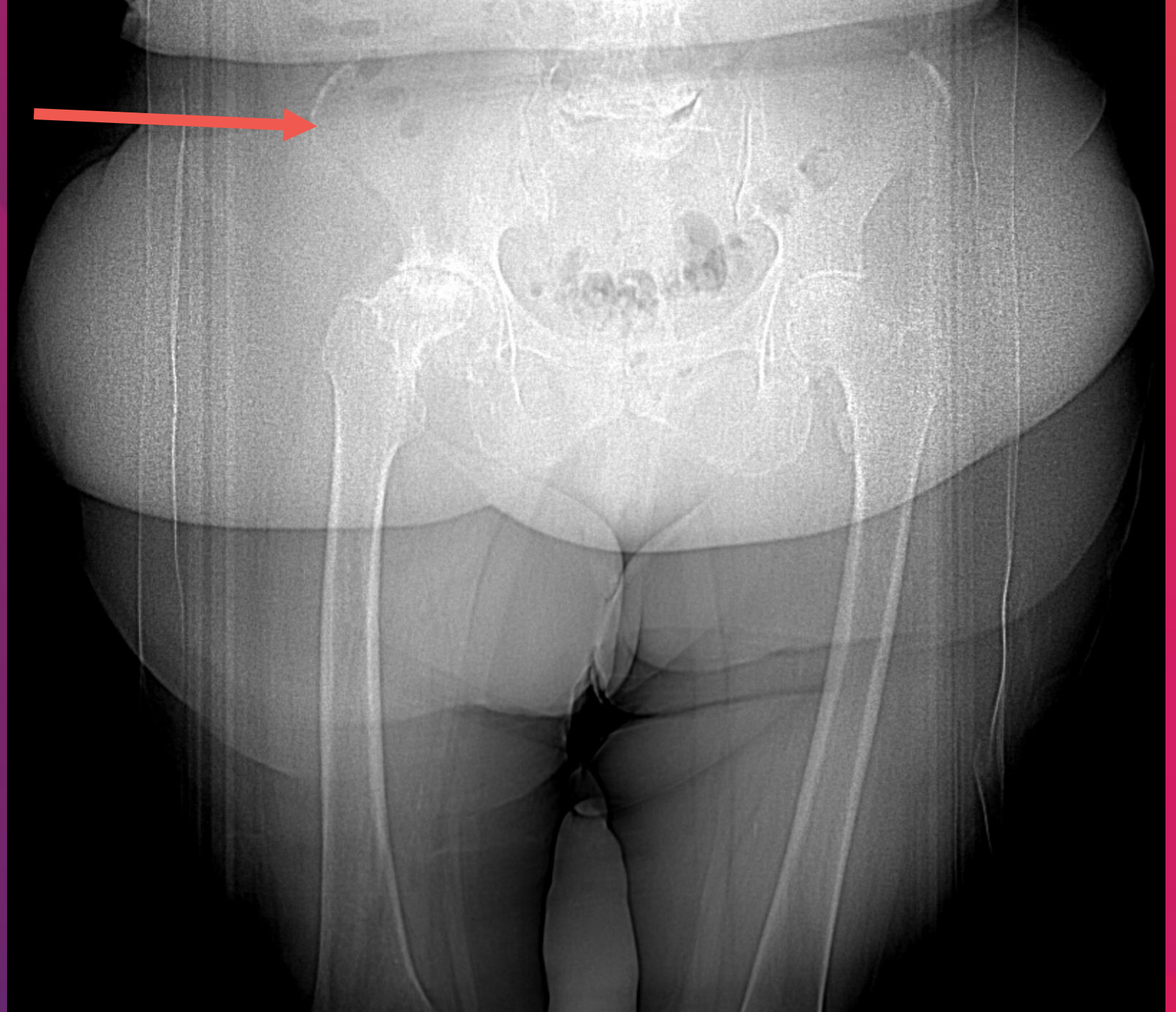
Pins



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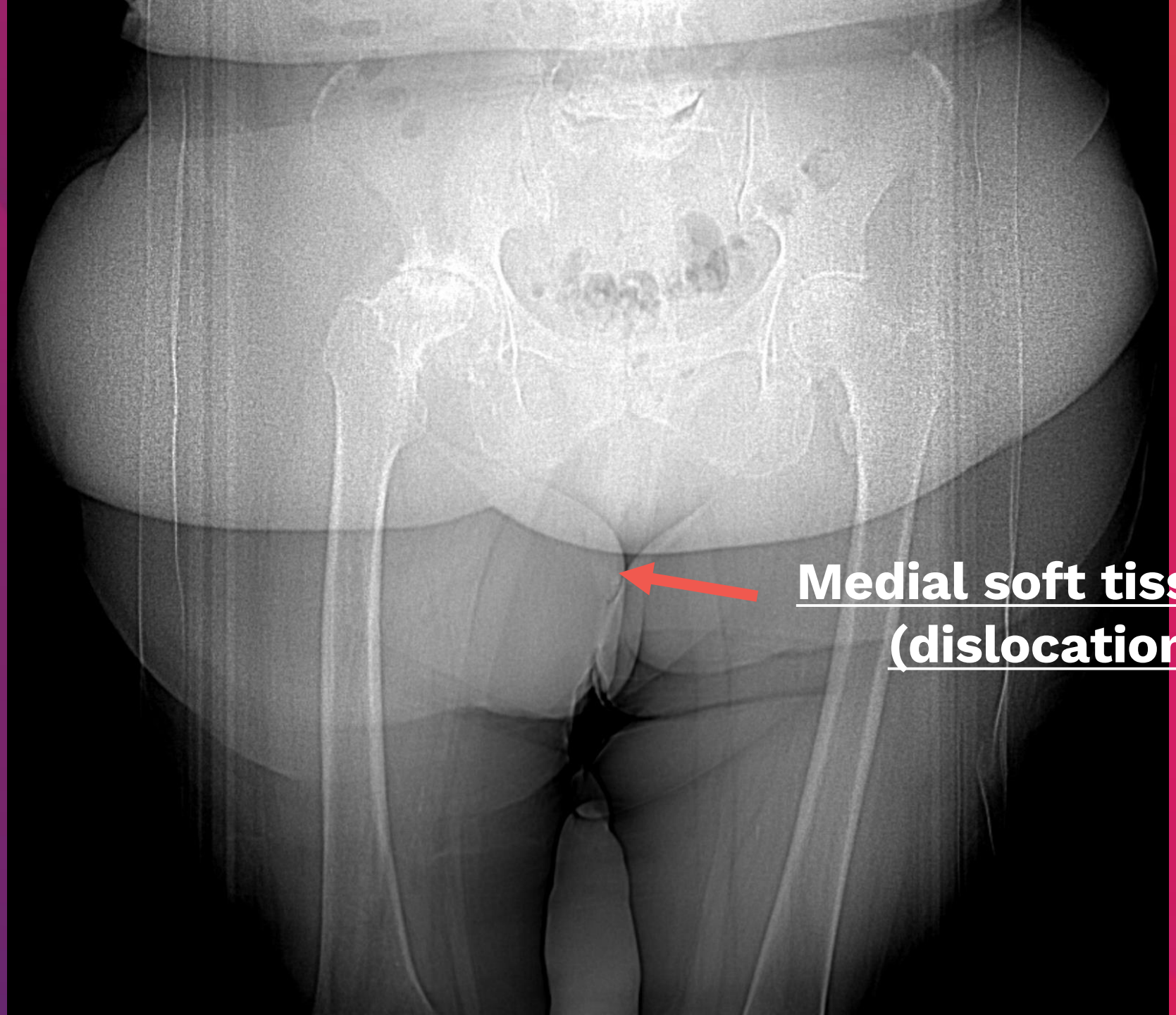

Medial soft tissue leverage (dislocation)

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Performing the Orthopaedic Surgery

All surgeries:

Occupational Health and Safety

Special Operating Tables (or two)

Weight of limbs

Operative Time

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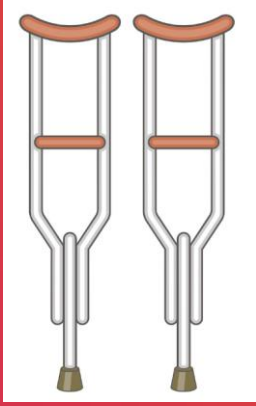

Recovery after the Orthopaedic Surgery

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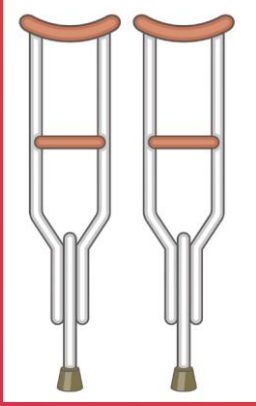
Recovery after the Orthopaedic Surgery



Obesity affects:

Length of Stay increased (16) (13)

Number of staff needed to mobilise patient

Less likely to be discharged *home* (20)

More likely to need inpatient *Rehabilitation*

Other resources and requirements

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Complications of the Orthopaedic Surgery

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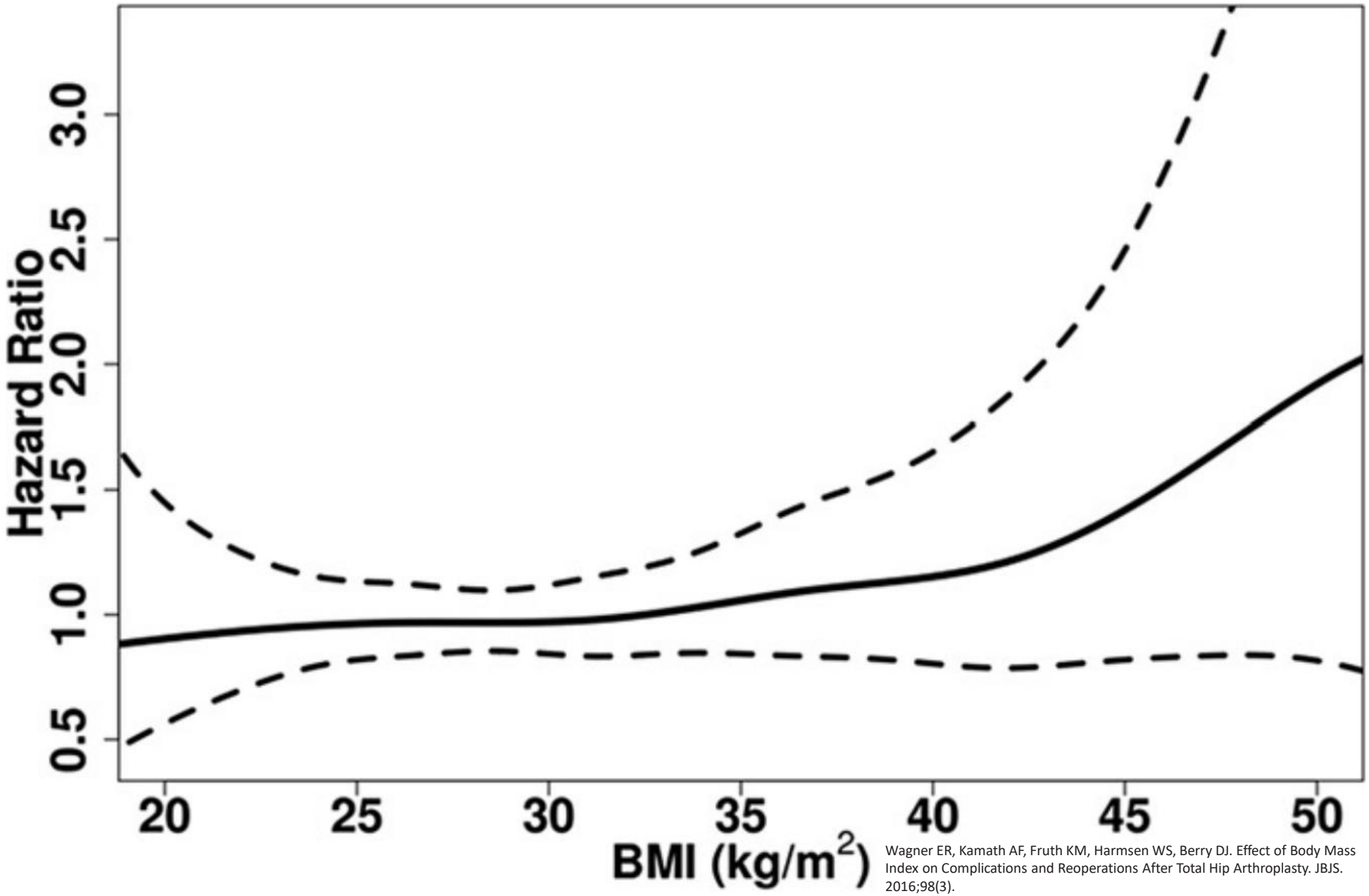
Complications of the Orthopaedic Surgery

Early:

Medial Collateral Ligament injury [21]
Patellofemoral dislocations [21]
DVT [22]
Wound Infection [23]
Deep Infections
- 8 x RR in Super-obese [22]
- But 3.5 x lower in bariatric surgery group [24]

Readmissions [25] [13]
Dislocations [26]

Osteoarthritis: Early Dislocation



Wagner ER, Kamath AF, Fruth KM, Harmsen WS, Berry DJ. Effect of Body Mass Index on Complications and Reoperations After Total Hip Arthroplasty. JBJS. 2016;98(3).

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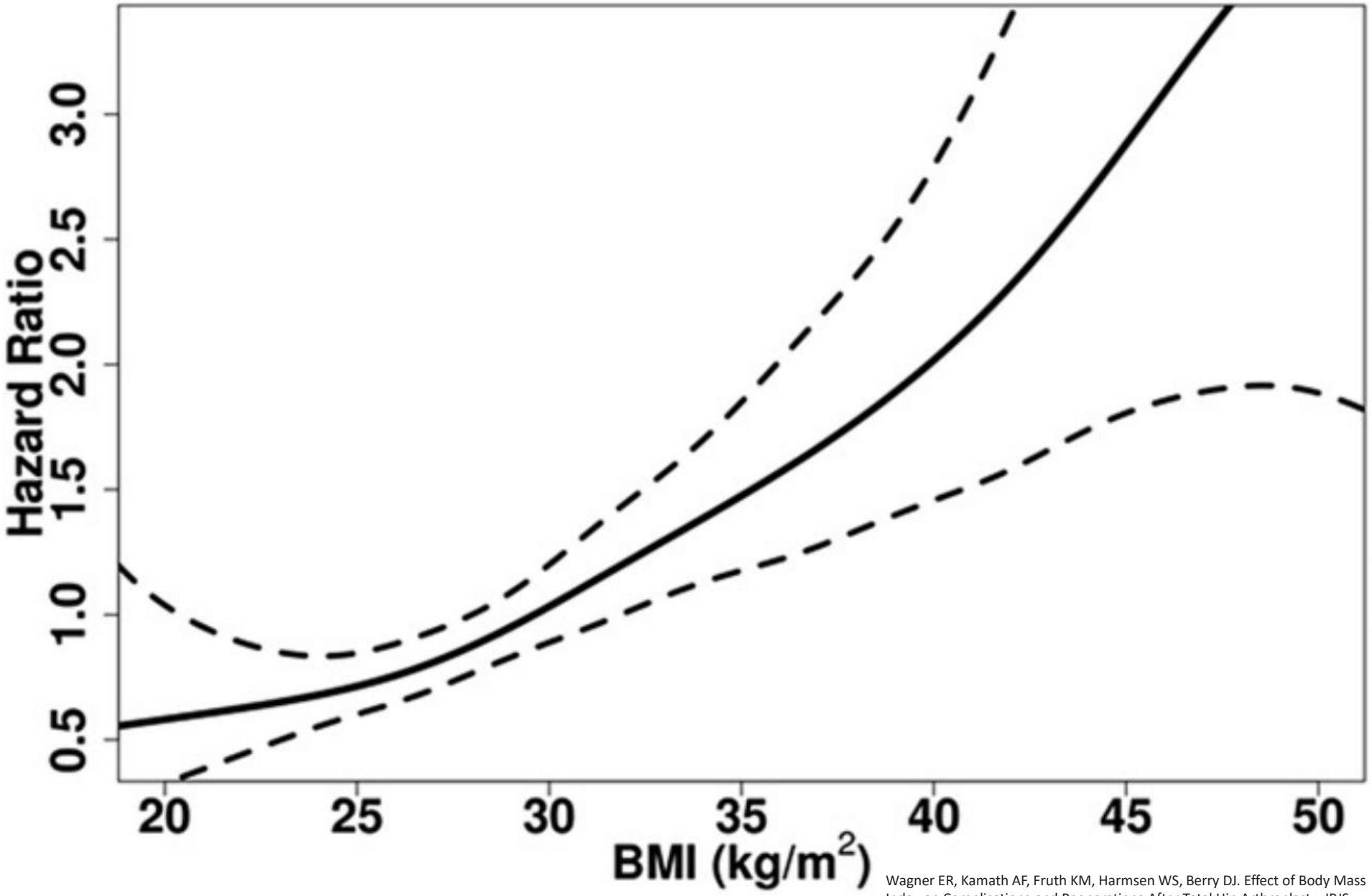
Osteoarthritis: Infection



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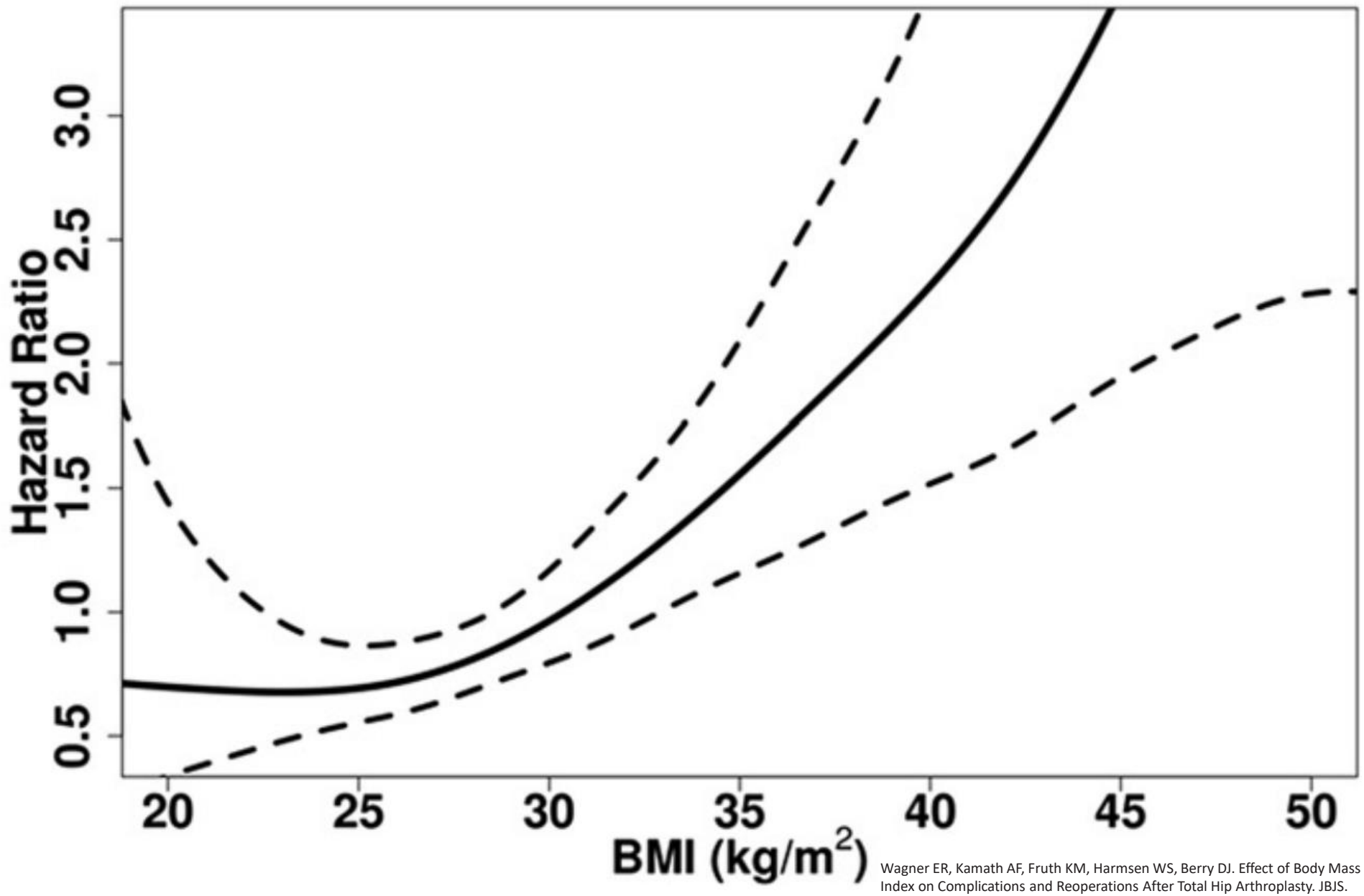
Osteoarthritis: Deep Infection



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Complications of the Orthopaedic Surgery

Late:

Revision rates

- 4.5 x higher odds ratio in super-obese[22]
- Higher rate for deep infections [26]
- But NO difference for mechanical failure or aseptic looseining [26]

No difference dislocation and revisions after 1 year [21]

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Complications of the Orthopaedic Surgery

After *revision surgery* in obese patients [27]:

Higher Risk of subsequent:
- Further revisions
- Reoperation
- Reinfection

Worse
- Pain relief
- Functional Outcomes

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Outcomes of the Orthopaedic Surgery

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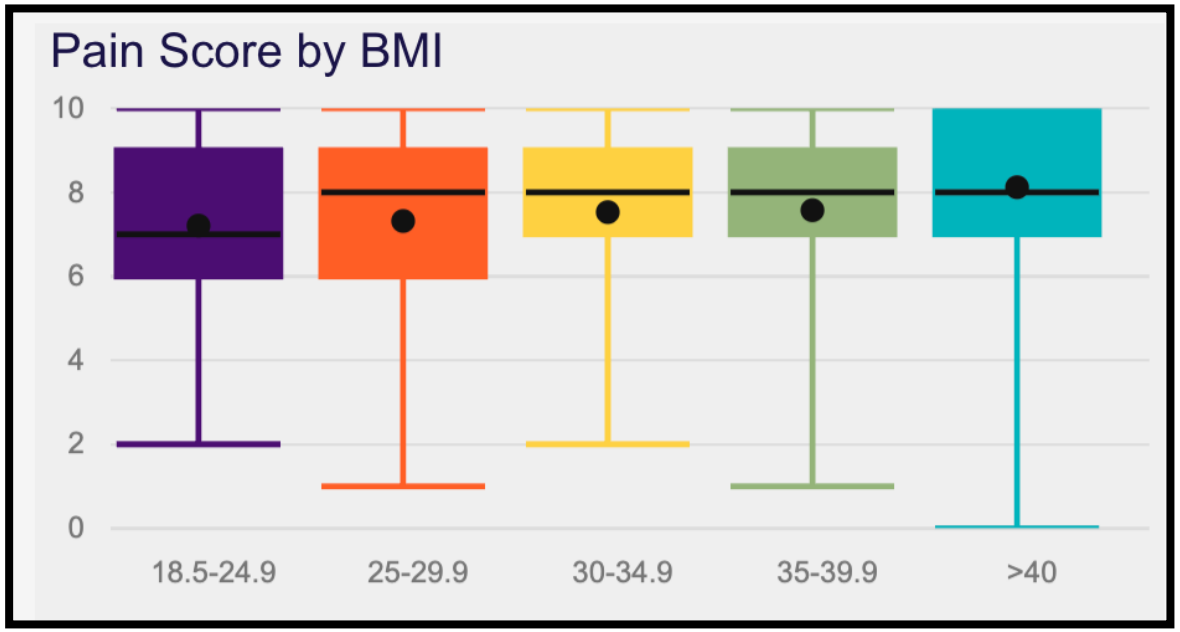
Outcomes of the Orthopaedic Surgery

Obese patients still have *relative* improvements in PROMs

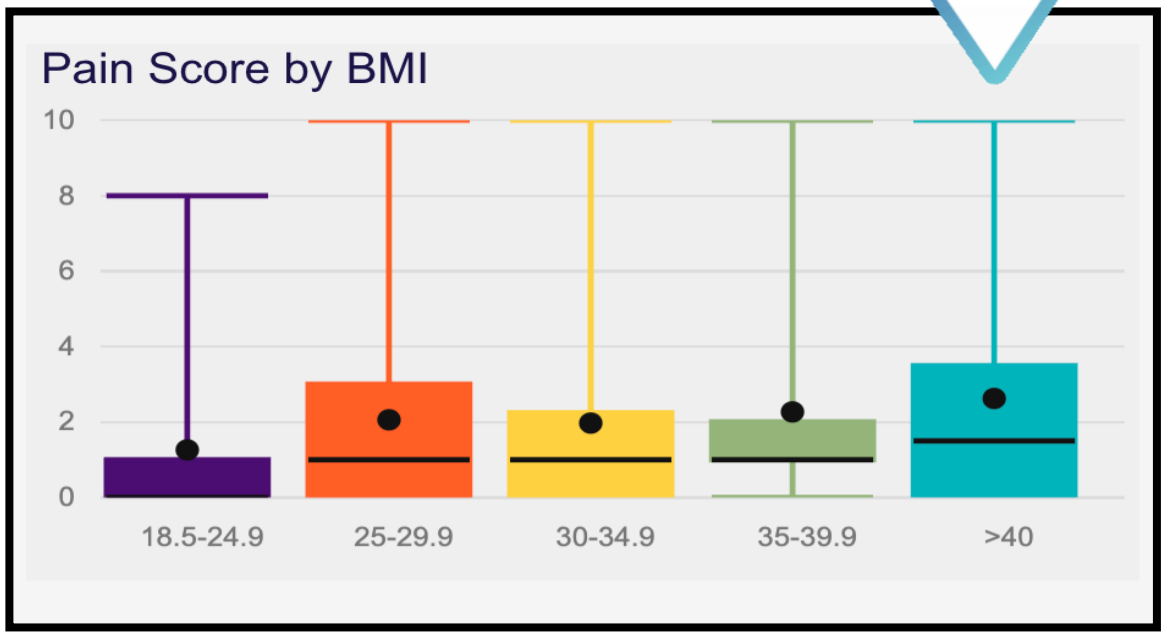
Outcomes of the Orthopaedic Surgery

PAIN (Lower better)

PreOp Hip & Knee n=426



PostOp* Hip & Knee n=268

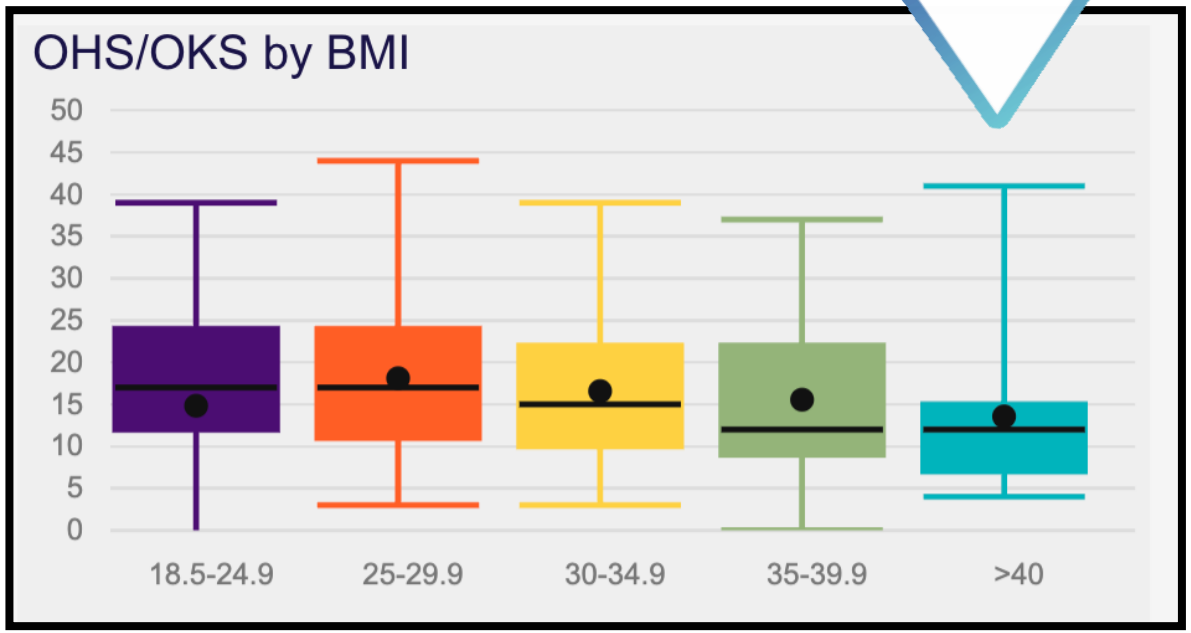


VAS Pain Score 0 - 10

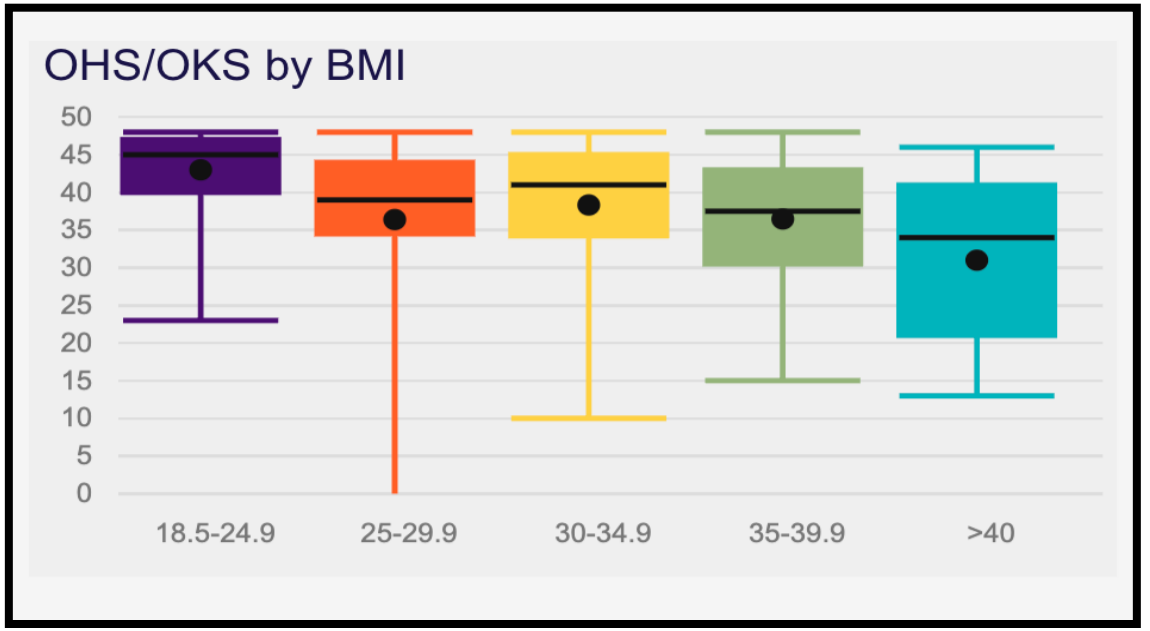
Outcomes of the Orthopaedic Surgery

Oxford Hip Score (Higher better)

PreOp Hip & Knee n=426



PostOp* Hip & Knee n=268



VAS Pain Score 0 - 10

Oxford Hip Score / Oxford Knee Score
0 = Severe Arthritis
47 = Satisfactory Joint Function

Outcomes of the Orthopaedic Surgery

Obese patients still have *relative* improvements in PROMs

Our data is definitely showing this

Evidence supports this [28]

But still not same *absolute* outcome as if BMI was lower

Also

- Range of motion of TKR is less [29]
- Harris Hip Scores lower in super-obese [22]

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SUMMARY

Obesity has an effect on
every part of ***Orthopaedic Surgery***:

- ***Requirement*** *for*
- ***Timing*** *of*
- ***Access*** *to*
- ***Performing*** of
- ***Recovery*** from
- ***Complications*** from
- ***Outcomes*** from

} ***Orthopaedic surgery***

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SUMMARY

But does bariatric surgery *improve* all of these?

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Bariatric Surgery before Orthopaedic Surgery

There are a couple of things it *might not*...

Post-operative blood transfusion [30]

Hip dislocations in some papers [31, 32]

Related to nutrition?

Bariatric Surgery before Orthopaedic Surgery

But *LOTS* of things it *DOES*...

Risk of most post-operative complications [33]

Fewer short-term complications [10], [34]
Pulmonary Emboli [30]
Respiratory Complications [30]

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Bariatric Surgery before Orthopaedic Surgery

But *LOTS* of things it *DOES*...

Lower Operative Time [35]

Shorter Length of Stay [35]

Lower Re-operations and Revisions [36]

Lower Costs [30]

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Bariatric Surgery before Orthopaedic Surgery

Bariatric *before or after* Orthopaedic surgery?

Bariatric *first* is best [37, 38, 39]

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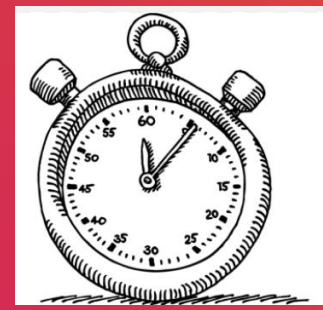
Bariatric Surgery before Orthopaedic Surgery



How much before?

Improvement starts at *6 months* [37, 39]

Best > 2 years after bariatric surgery [38]

Complications
Anaesthesia length
Torniquet Time
Total OR Time

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Is it *Cost-effective*
to perform Bariatric surgery before Orthopaedic Surgery?

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YES! (40, 41)

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Would *Orthopaedic Surgeons*
prefer Bariatric surgery before Orthopaedic Surgery?

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YES! (**)

(**) Non RCT-based pure opinion of Andrew Hardidge, but likely correct...

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Thank You!

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4-9-2024

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