



Увеличить

SACROILIC JOINT PAIN

A.A.Baghaei

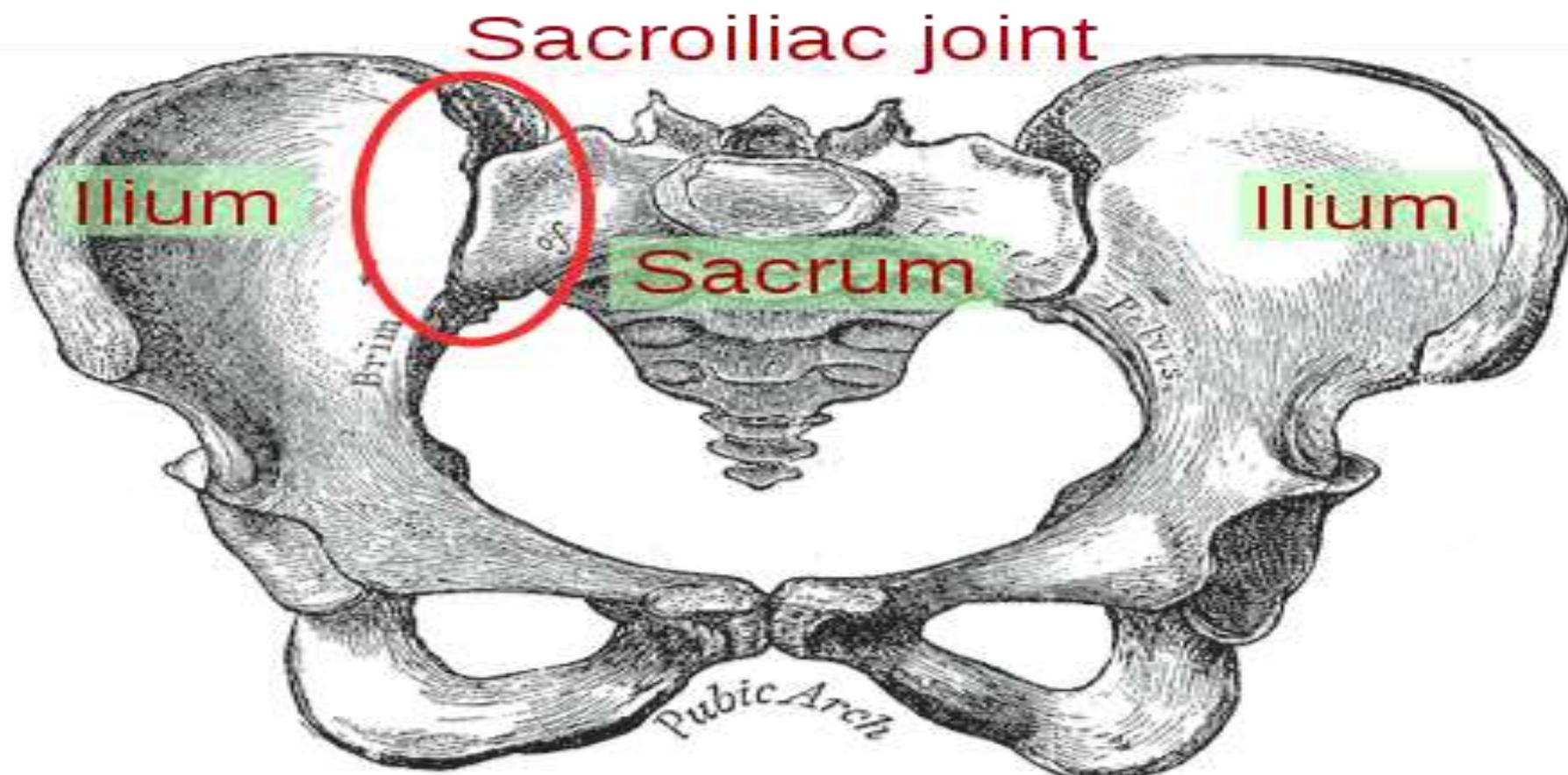
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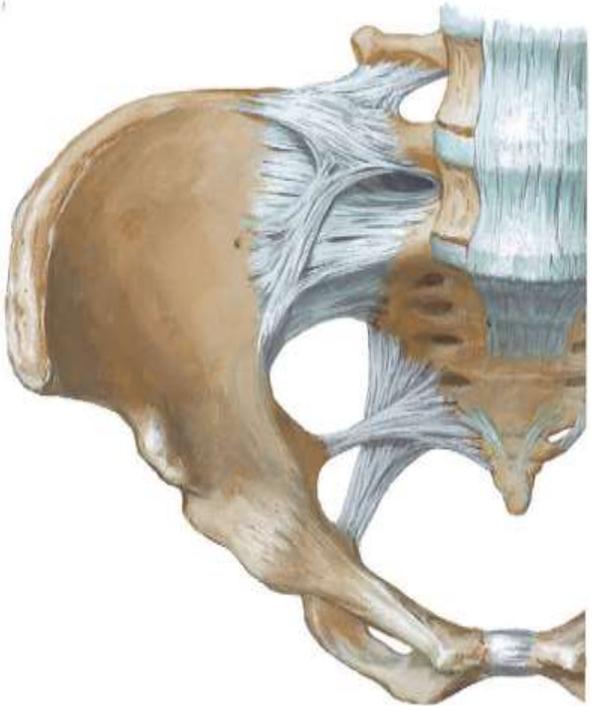
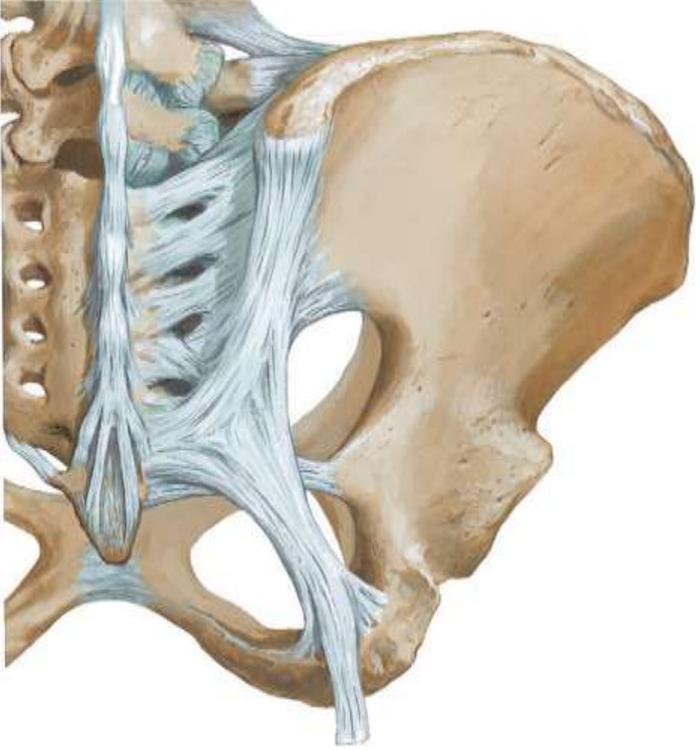


- For the first time Goldthwaite described the SI joint as one of the sources of lumbar pain in 1905
- It is a challenging condition
- to diagnose and treat
- given its unclear pathology,
- multifactorial causes,
- biopsychosocial aspects, and
- poorly defined treatment algorithms

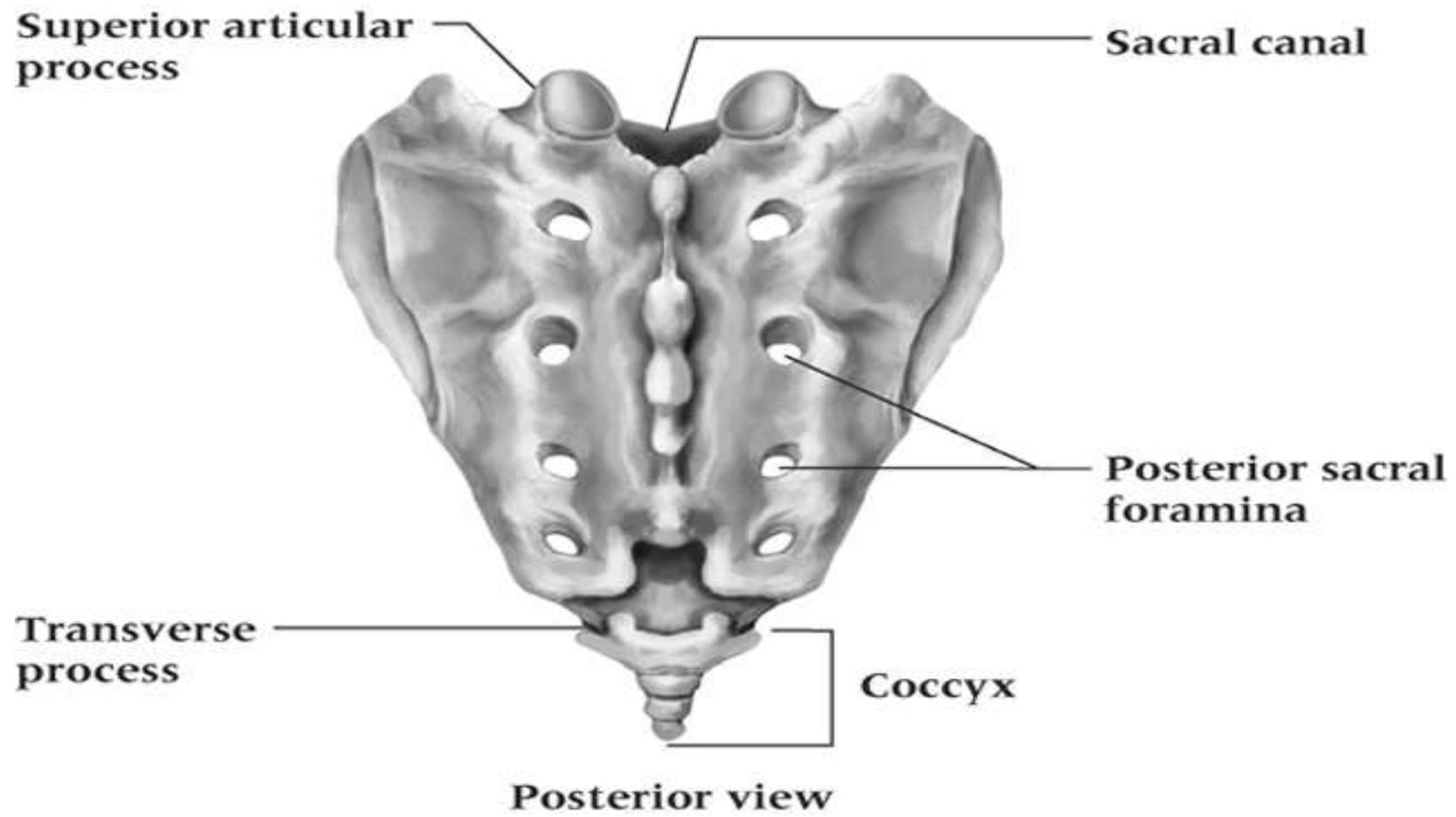


ANATOMY

- The Largest axial joint in the body is the SI joint.
- The average surface area is approximately 17.5 cm square, with variability in size and shape and surface contour among individuals
- A complex ligamentous networks supports the synovial joint anteriorly and posteriorly.



- Large irregularly shaped structure
 - bordered anteriorly and posteriorly by the SI ligaments
- Sacral concave depression interlocking with a corresponding iliac osseous ridge
- Designed primarily for stability
- Rotate about three planes of axes
 - (flexion and extension, rotation, and translation)
 - by very small amounts (at 2 degree)



- Pain provocation Capsular distention, Ligamentous stimulation
- The lateral branches of the S1- S3 dorsal rami comprise primary innervation to the posterior SI joint in human with contribution of the L5 dorsal ramus in most individuals. (L4-S4) but most from S2
- The posterior lateral branch nerves are inconsistent in their anatomic locations, varying in number and location from patient to patient, side to side and level to level.
- **The anterior portion** of the joint is innervated anteriorly via branches of the ventral rami of the spinal nerves and ultimately from branches of the gluteal nerves, the obturator nerve, and the lumbosacral trunks

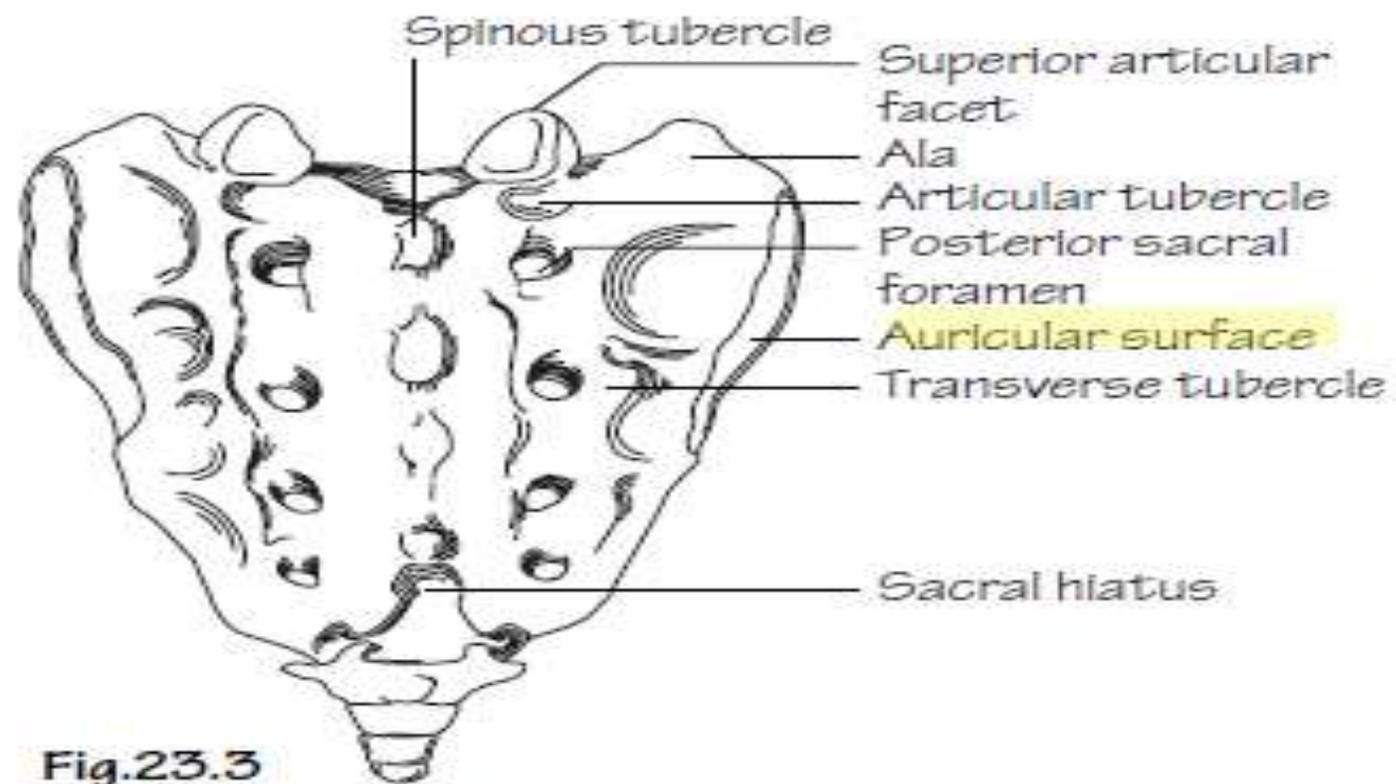


Fig.23.3

The posterior surface of the sacrum

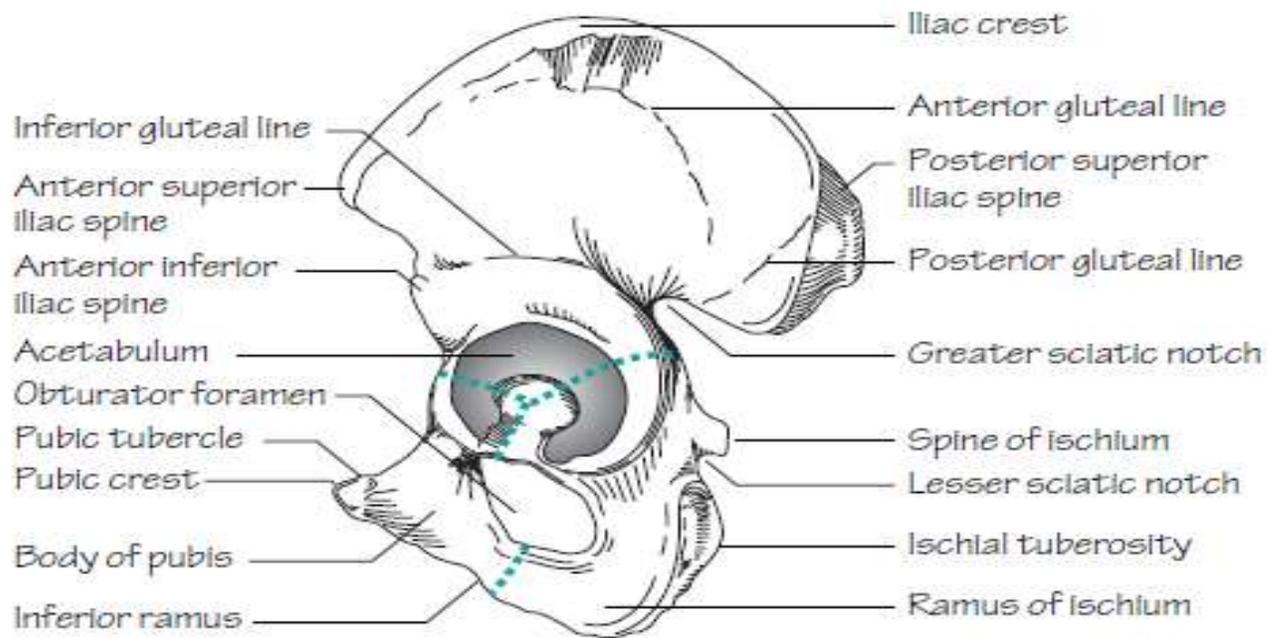


Fig.23.1
The lateral surface of the left hip bone

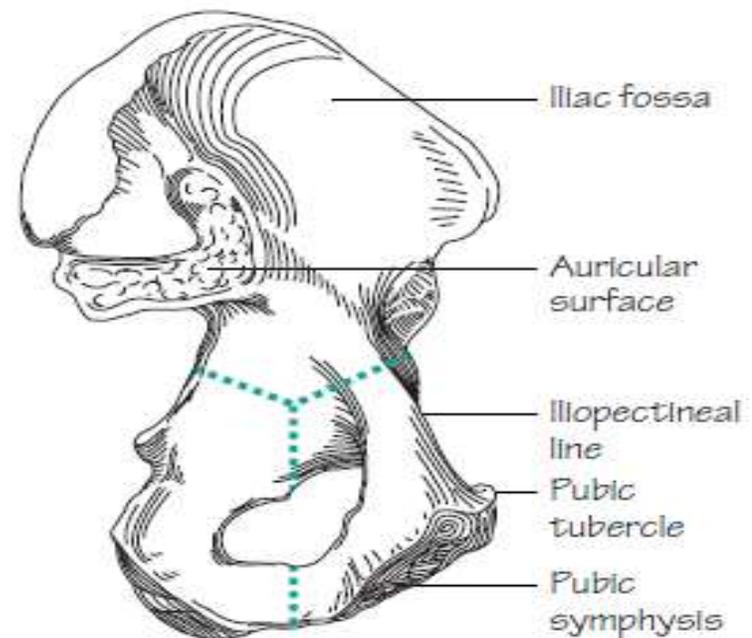


Fig.23.2
The medial surface of the left hip bone

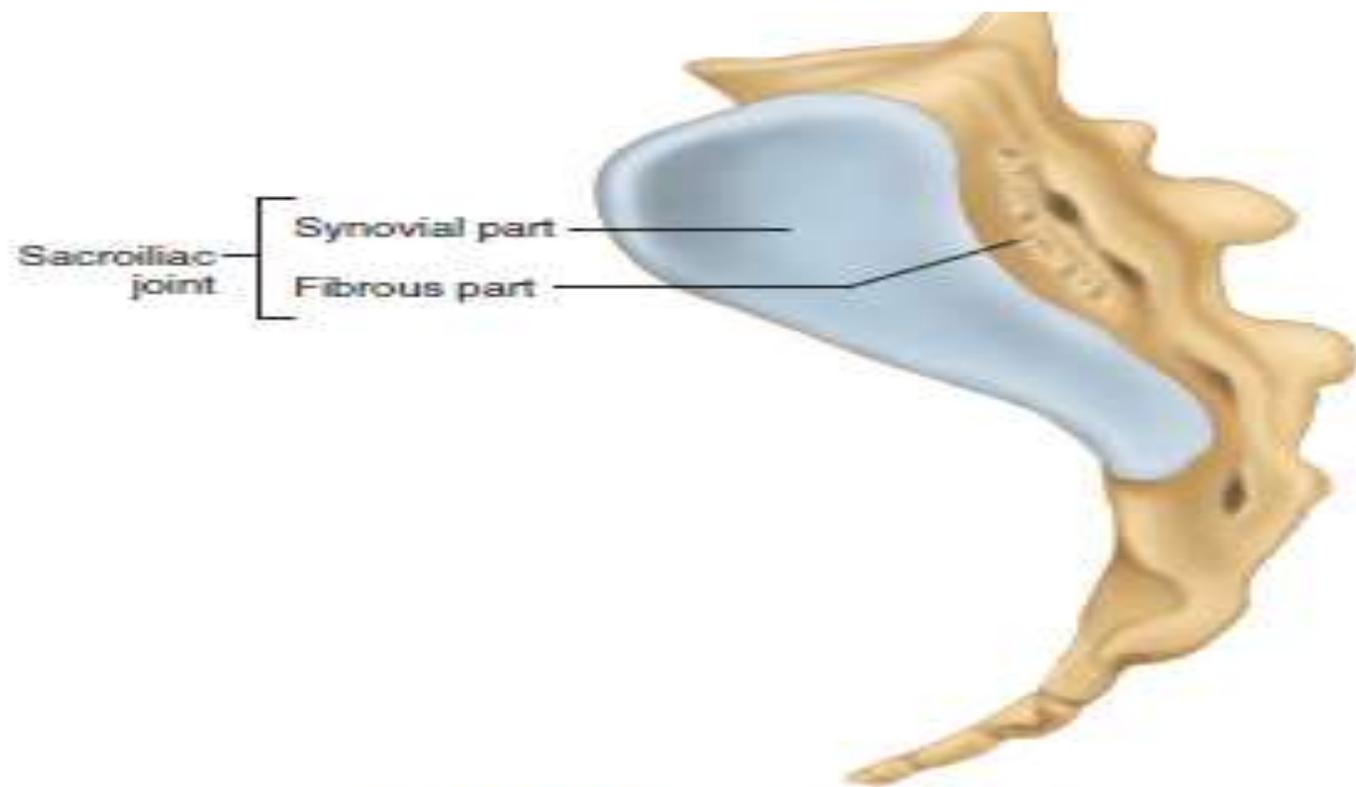


FIGURE 9-6 Sacroiliac joints.

Epidemiology

- 10- 38% of cases of lower back pain
- More likely in females
- Consider in Older patients with LBP
- Underdiagnosed and undertreated element of LBP
- SI Joint Should be examined routinely in the evaluation of back or leg complaints

- Pain below the belt line
with radiation into the groin and lower extremity,
infrequently below the knee
- Pain presentation as LBP, Leg pain, Sacral pain, Pelvic pain
- The pain is aching in quality or
numbness and tingling
- Pain is often with the movement



Patient Description

- cannot sit or stand for more than 5 minutes,
- Cannot perform normal activities of daily living,
- cannot walk up or down stairs,
- Pain on standing on one leg
- even may require a wheelchair

Cause of SI Joint pain

- Intra-articular sources
 - Arthritis,
 - Infection
- Extra-articular sources
 - Enthesopathy,
 - fractures,
 - Ligamentous injury,
 - Myofascial pain

- SIJ stiffness, joint hypermobility, and insufficient pelvic girdle stability result in faulty load transfer to the spine or lower extremity and increased shear forces through the SIJ
- Osteoarthritis
- Inflammatory Arthritis
- Infections
- Traumatic Arthritis

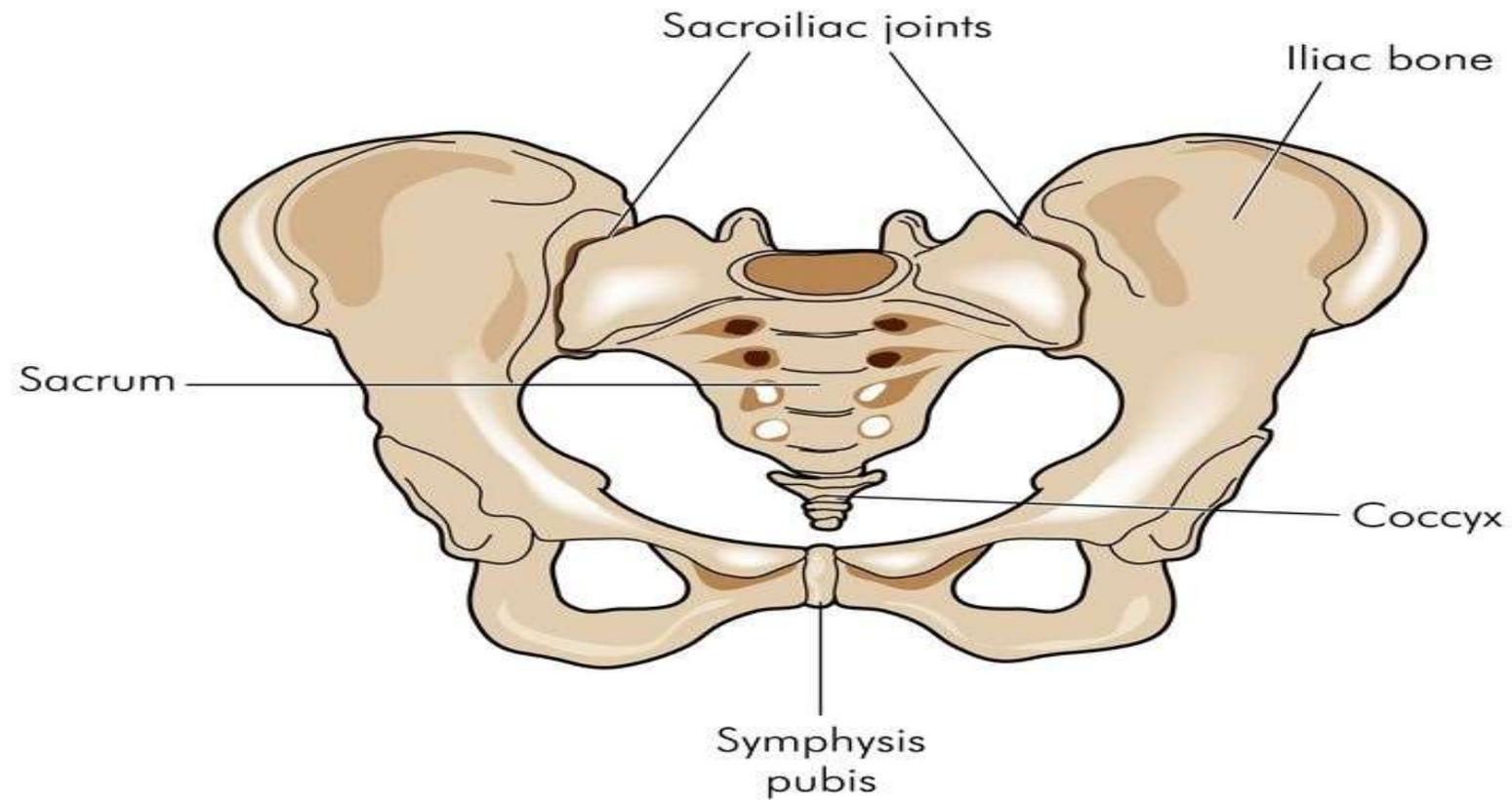
Risk factors

- Length discrepancy
- Gait abnormalities
- Prolonged vigorous exercise
- Scoliosis
- Pregnancy
- Spinal fusion to the sacrum
- Hip pathology
- Seronegative HLAB27 Spondyloarthropathies, Bilaterally Involvement
- Repetitive athletic activity
- Hyperparathyroidism

Differential Diagnosis

- other possible sources of posterior hip and lower back pain
- other common spinal pathologies: lower facet joints and lumbar discs,
- other pathologies such as pudendal nerve entrapments, hamstring tendinopathies, and piriformis syndrome
- In female patients, intrapelvic sources such as endometriosis and pelvic varicosities should be considered
- The SI joint is also affected by the lack of movement in the hip joint
 - Hip abnormalities limiting flexion can cause increased strain on SI joint

Diagnosis



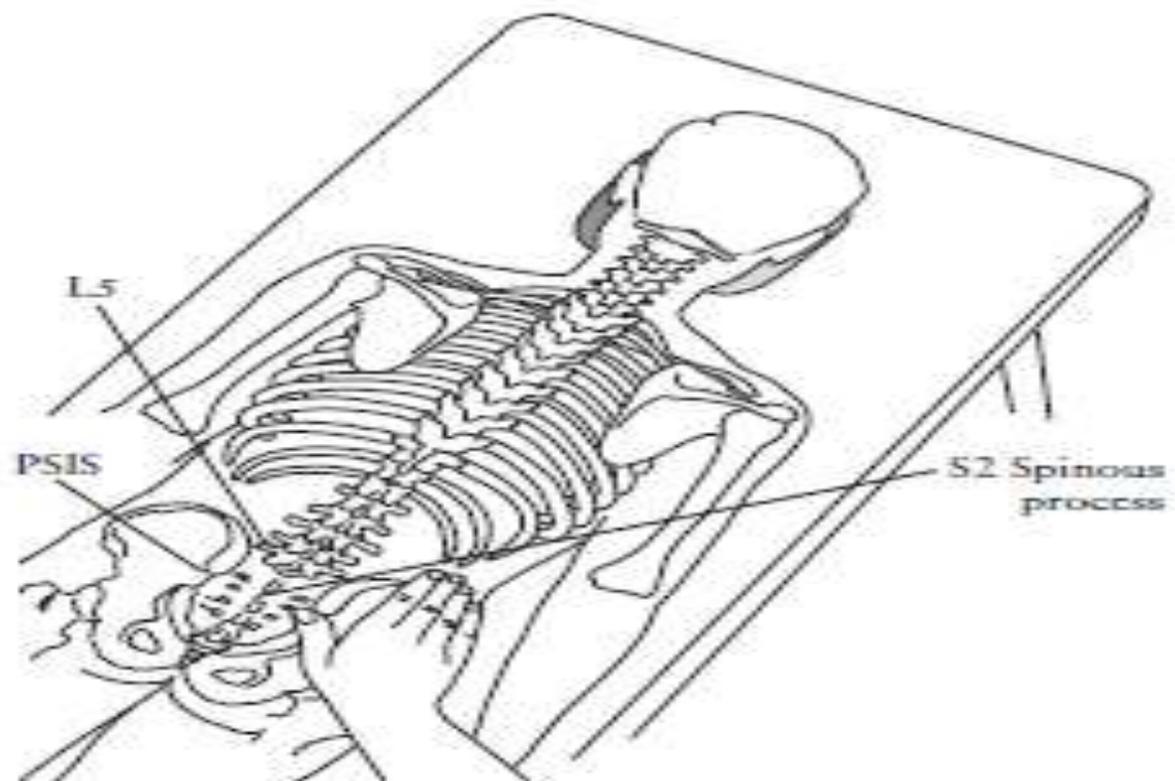


Figure 6.5 Palpation of the sacroiliac joint.

Physical exam findings

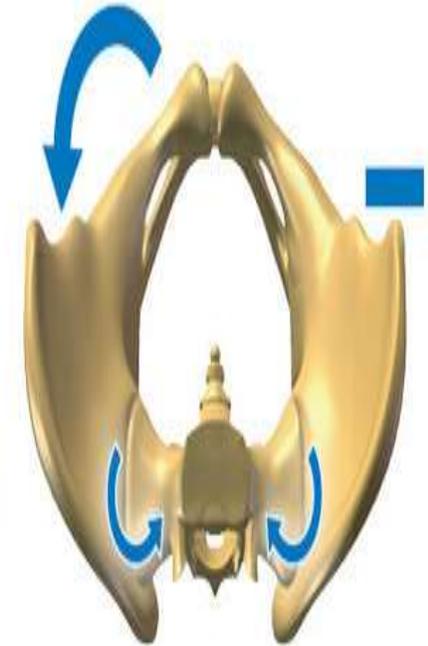
- Provocative Tests
 - Three or more positive provocation tests,
Sensitivity 85%-91%, Specificity 76%-78%
- | | | |
|------------------|-------|-------------------|
| FABER | 91.4% | Sensitivity |
| Gaenselen | | lower sensitivity |
| Thigh Trust | | |
| Compression Test | | |
| Distraction Test | | |

FABER TEST

FABER: Flexion, Abduction, External Rotation

Applies tensile force on the anterior aspect of the SI joint on the side tested

- The patient lies supine as the examiner crosses the affected-side foot over the opposite-side thigh. The pelvis is stabilized at the opposite ASIS with the hand of the examiner.
- A gentle downward force is applied to the affected-side knee of the patient and is steadily increased, exaggerating the motion of hip flexion, abduction, and external rotation.



Gaenslen Test

Gaenslen's

Applies torsional stress on the SI joints

- The patient lies supine with the affected side leg near the edge of the table. For safety, the patient's shoulders are positioned toward the middle of the table.
- The patient then draws the non-affected side leg into full flexion and holds the flexed knee. The examiner stabilizes the leg with their hand placed over the patient's hand. This action keeps the ilium on the non-tested side in a slightly posterior and stable position during the maneuver.

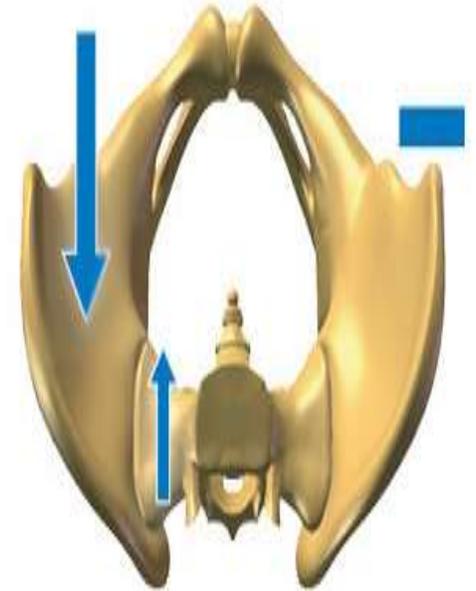


Thigh Thrust

Thigh Thrust

Applies anteroposterior shear stress on the SI joint

- The patient lies supine with affected side hip flexed to 90 degrees. The pelvis is stabilized at the opposite ASIS with the hand of the examiner.
- The examiner stands on the same side as the flexed leg. The examiner provides steady increasing pressure through the axis of the femur.



Distraction

Distraction

Applies tensile forces on the anterior aspect of the SI joints

- The patient lies supine and is asked to place their forearm under their lower back to maintain lordosis and to support the lumbar spine. A pillow is placed under the patient's knees. The examiner places their hands on the anterior and medial aspects of the patient's left and right ASIS with arms crossed and elbows straight.
- A slow and steady posterior force is applied by leaning down toward the patient.



Compression

Compression

Applies compression force across the SI joints

- The patient is placed in a side-lying position, with the affected side up, facing away from the examiner, with a pillow between the knees.
- The examiner places a steady downward pressure through the anterior aspect of the lateral ilium, between the greater trochanter and iliac crest.



Fortin finger Test



**Fig 1. Pain in specific location.
(The Fortin Finger Test)**

Yeoman Test

Fig. 47 Yeoman test



Gillet Test

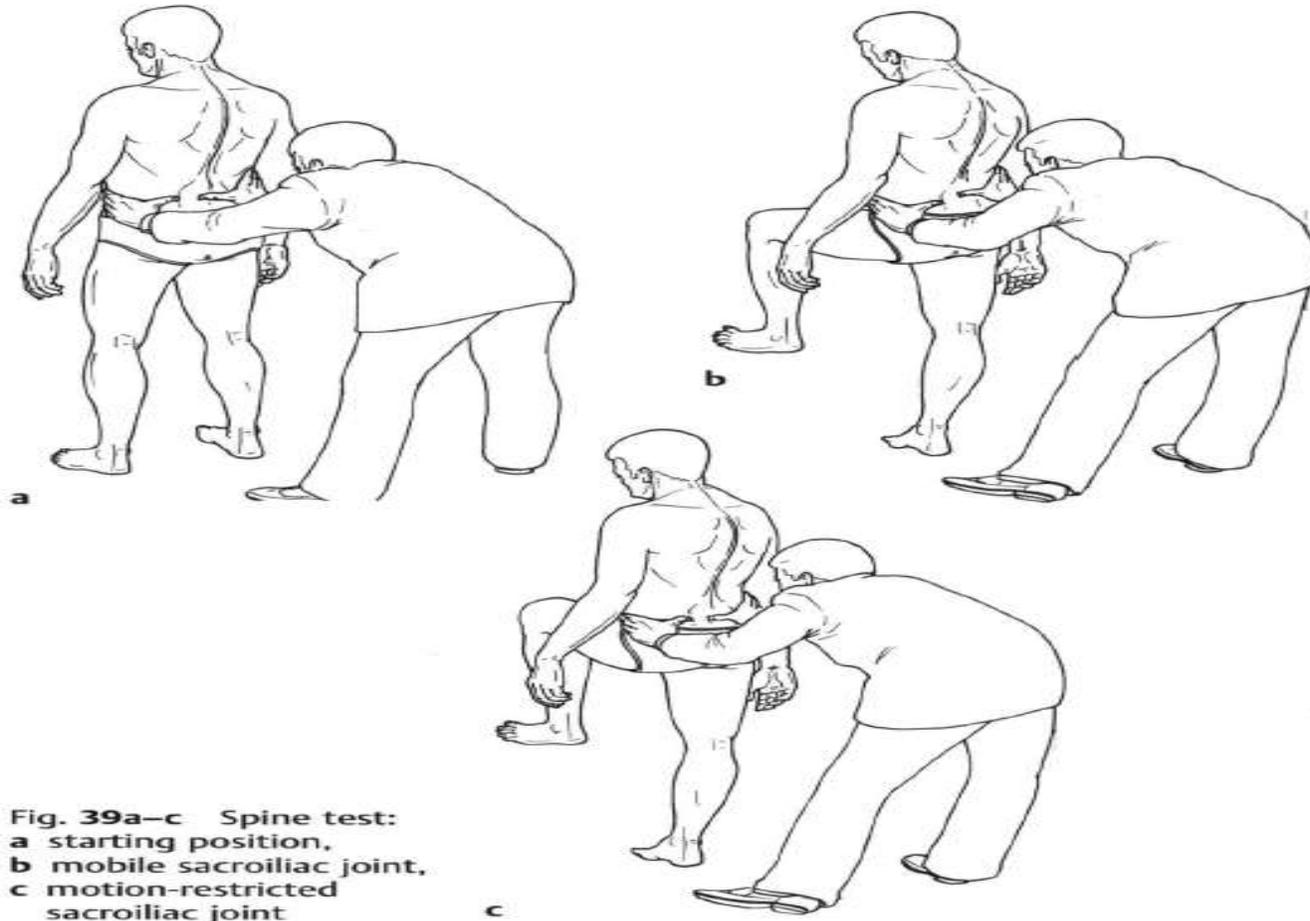
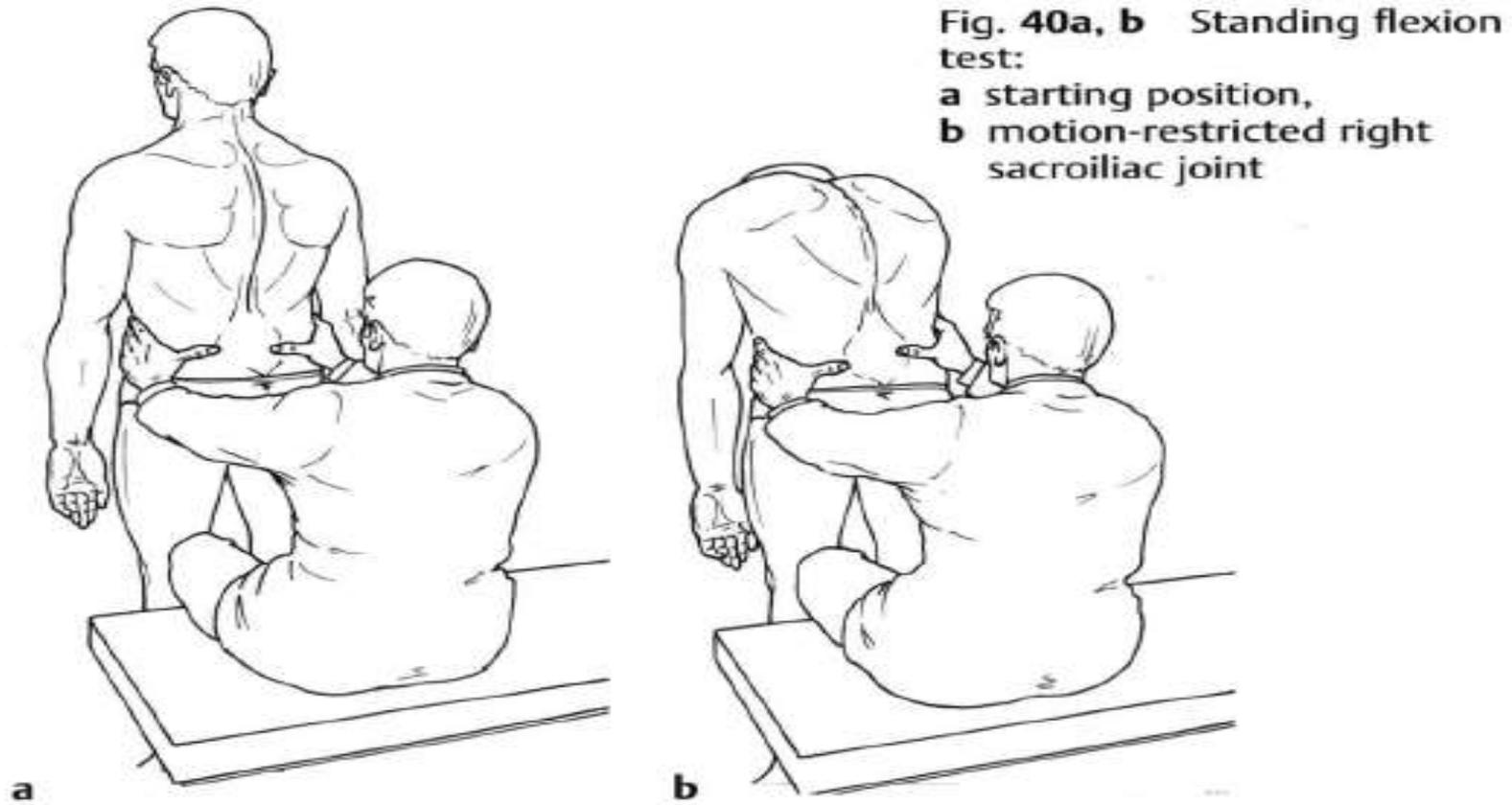


Fig. 39a–c Spine test:
a starting position,
b mobile sacroiliac joint,
c motion-restricted
sacroiliac joint

Forward Flexion Test



SIJ Provocative Tests¹

FABER



Compression



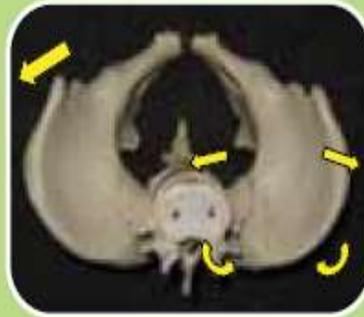
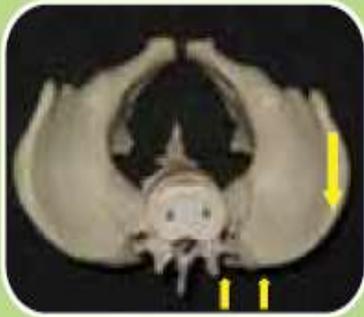
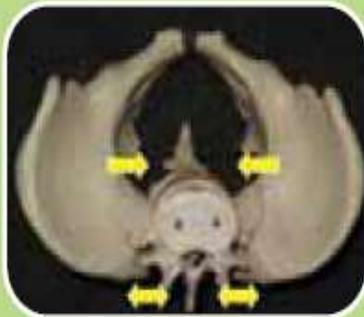
Thigh Thrust



Distraction



Gaenslen's



If pain inferior to L5, negative neurological exam and minimum 3 positive tests, the SIJ is likely pain generator.

Note: Minimum 1 of 3 positive tests must be Compression or Thigh Thrust. Order image-guided diagnostic SIJ injection(s).

Imaging

- Radiography
- MRI
- Low dose CT

- no specific imaging modality has demonstrated acceptable sensitivity and specificity in the diagnosis of noninflammatory, nontraumatic SIJ pain
- For Rule out Red flags

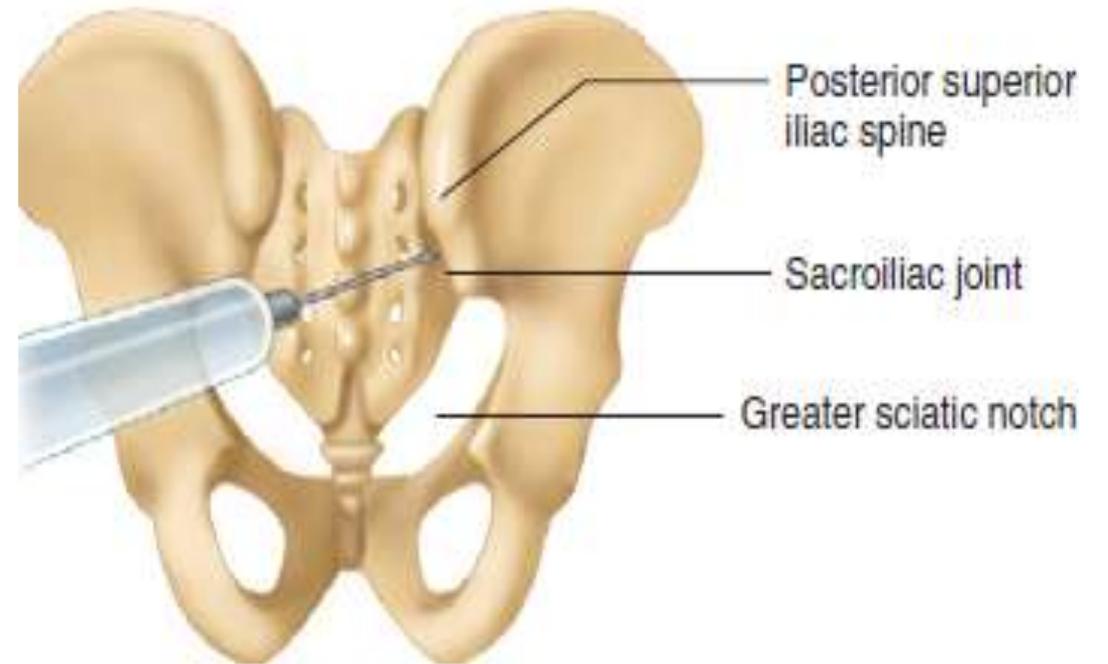
IASP

Proposed Criteria for Diagnosis

- pain in the area of the sacroiliac joint
- (approximately 3 cm x 10 cm inferior to the ipsilateral posterior superior iliac spine),
- reproducible with provocative maneuvers, and
- must be relieved with local anesthetic injection into the SIJ or the lateral branch nerves,
- although this is controversial

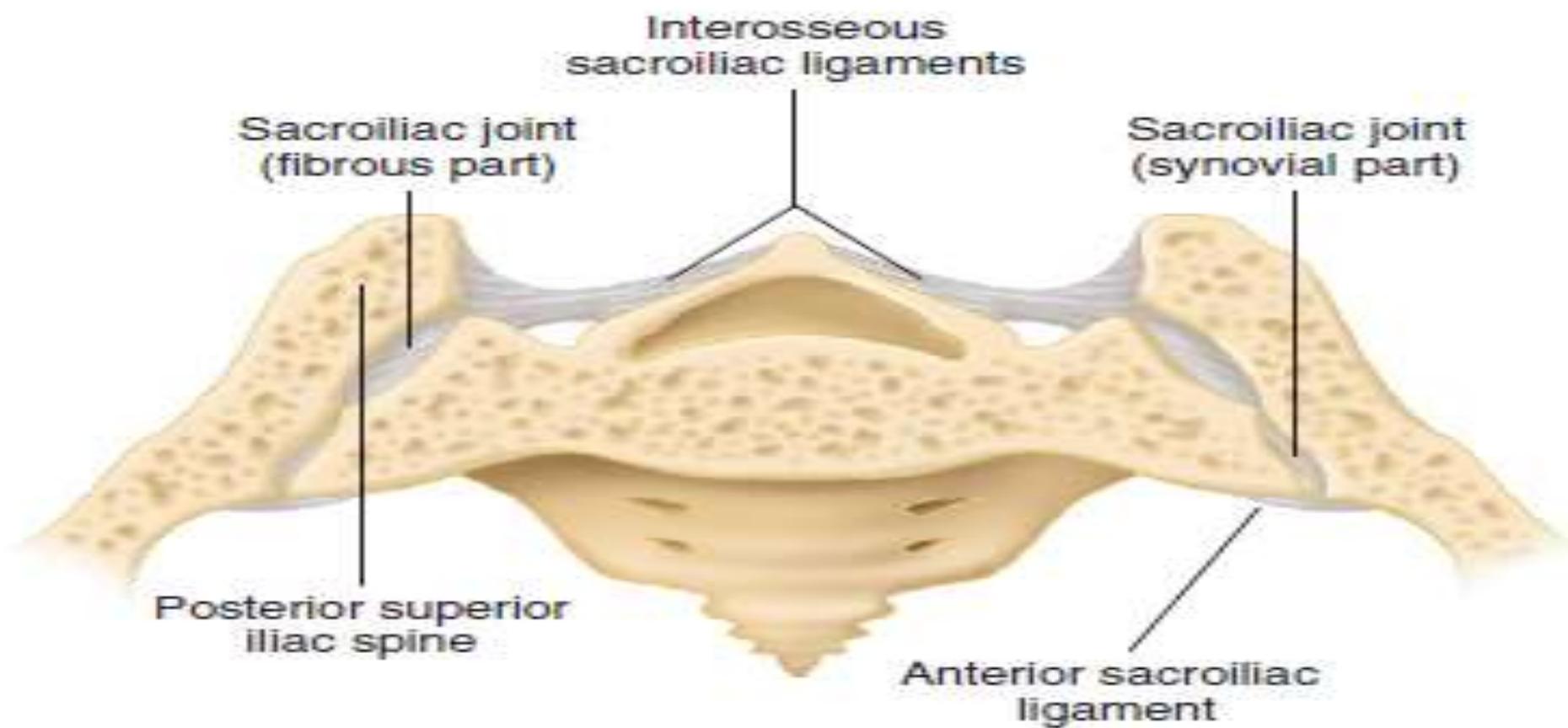
Gold standard for Diagnosing SI Joint Pain

Image guided injection of a
LA into SI Joint



SI Joint Diagnostic Injection

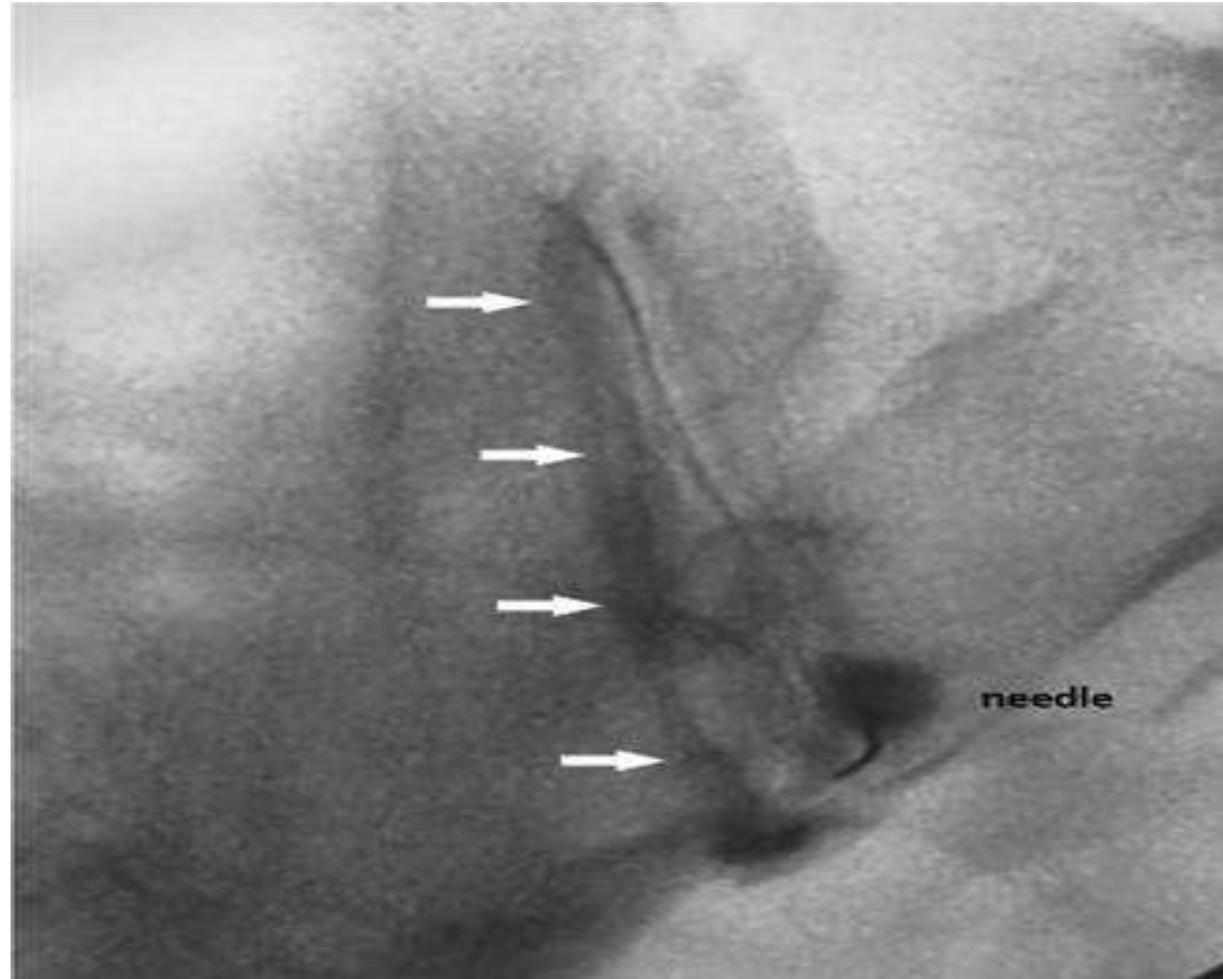
- When **Lidocaine** is injected into the sacroiliac joint and symptoms temporarily resolve, this is confirmation of the SI joint as the source of the patient's low back pain.
- The current standard is that an SI joint injection should be performed under **fluoroscopic guidance, utilizing contrast** to confirm needle placement, injecting no more than 2 ccs.
- Posterior and inferior approach
- 22 gauge 5" styletted needle
- 0.25ml contrast medium
- 1.25ml Lidocain



- The SIJ has a large surface area but has a **very small joint capacity** which ranges from 0.8 to 2.5 mL in asymptomatic individuals
- It is generally advised to inject **no more than 2.5 mL** during an intra-articular diagnostic injection.
- Extravasation of injectate (local anesthetic) onto nearby neural structures theoretically compromises the specificity of the diagnostic injection



- With diagnostic SI joint injections, when there is **more than 75% pain relief** while performing previously painful movements, the SI block is deemed successful
- There is systematic review evidence that offers **moderate support** for the use of SI joint injection in chronic low back pain and/or lower extremity pain below the L5 vertebra.



Treatment

- Medication
- Physical Therapy
- Direct SI Joint injections
- RF Denervation
- Sacral Neuromodulation
- Regenerative Medicine
- Surgical fixation, Stabilization or Fusion

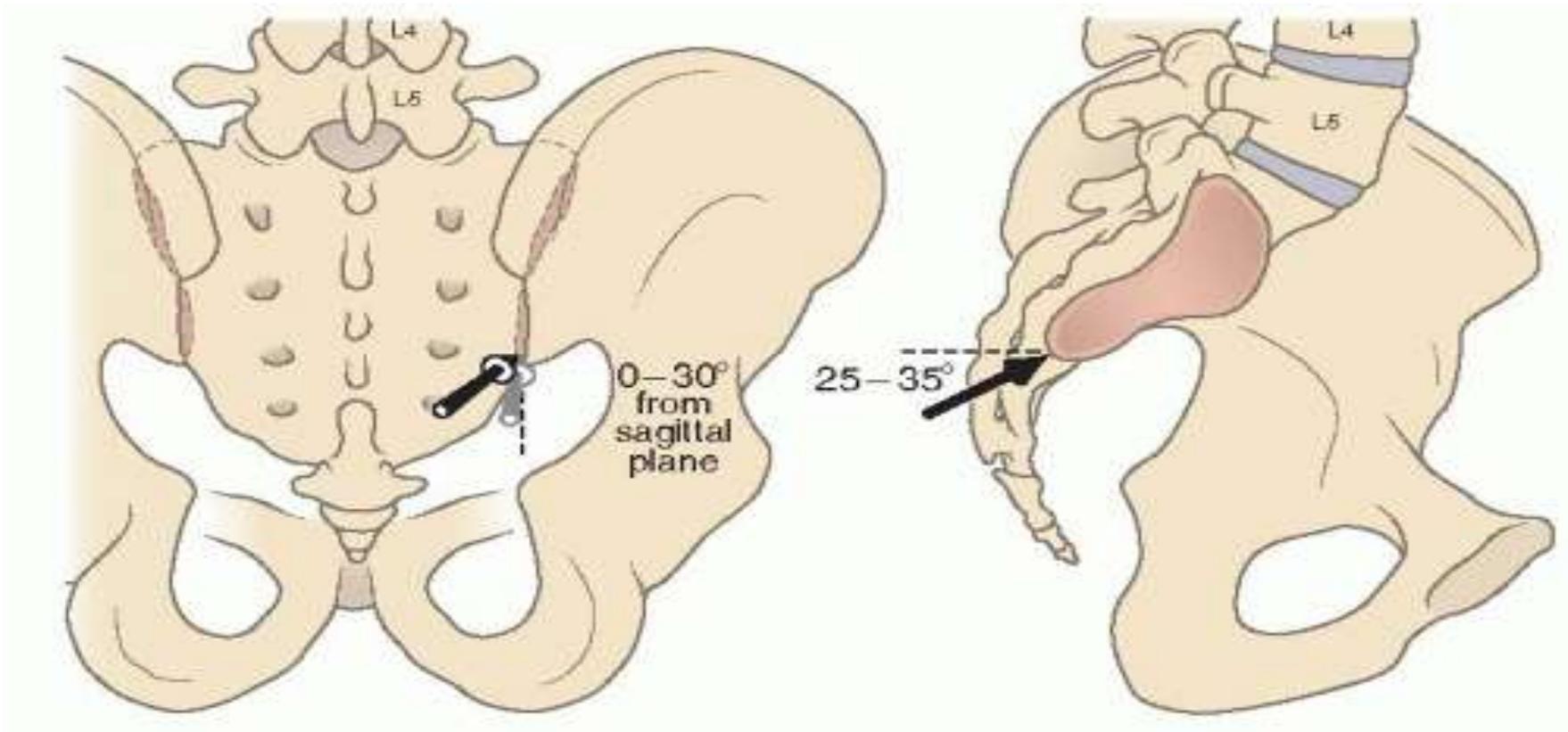
- Consider any correctable etiology, activity modification
- Medications, Simple Analgesics
 - Muscle relaxants and NSAIDs
 - Opioids have not been shown to be a safe and effective treatment

Physical therapy

- Correction the functional biomechanical deficit
- Muscles commonly found to be working in a suboptimal shortened position include
The iliopsoas, rectus femoris, tensor fascia lata, adductors, quadratus lumborum, Latissimus dorsi, and obturator internus
- Muscles commonly found to be weak in people with SIJ pain include
The gluteus medius, gluteus maximus, lower abdominals, and hamstrings.
- **Strength Exercise Program**, Manipulation therapy
short course (4–6 weeks) of individualized,
supervised therapeutic exercises focused on
Strengthening of the core muscles (local stabilizers) progressing to
strengthening of the global stabilizers as tolerated

Articular Injection

- Therapeutic SI joint injections can be intraarticular or periarticular, and increasing research suggests that **intraarticular therapeutic injections are superior** to periarticular injections.
- Peri-articular SIJ block is not considered a reference standard for the diagnosis of pain coming from the articular SIJ.



- It is conceivable that the **entity “SI joint pain”** is, in reality, a spectrum of disorders:
 - those pain states arising from **within the SI joint**,
 - those arising from structures **outside the joint** proper, and
 - those arising from **both of these structures**.
- All states result in pain complaints that localize to the SI joint region but likely respond differently to interventional therapies.

- There is controversy on the **maximum volume of injectate** to be used; however, as a rule of thumb, the injectate should be used until there is a firm end-point, extra-capsular escape, or a maximum volume of 2.5 ml is reached.
- Only 22% of non-radiologically guided SI joint injections, extended into the joint space
- 0.5 mL of Kenalog 40 (20 mg) mixed with 0.5 mL of 0.25% bupivacaine is injected into each SI joint

Diagnostic SIJ injection

- Posterior & inferior approach
- 22 gauge 5" stylet needle
- 0.25ml contrast medium
- 1.25ml Lidocaine, +/- 0.75ml steroid



AP inferior SIJ target



AP needle in SIJ pre-contrast



AP needle in SIJ



Lateral needle in SIJ

Contraindication

- **Absolute contraindications of SI joint injections include:**

- Patient-reported or documented history of allergic reaction to cortisone injections

- Local malignancy

- **Relative contraindications include:**

- Coagulopathy or current/recent use of blood thinning agents

- Pregnancy

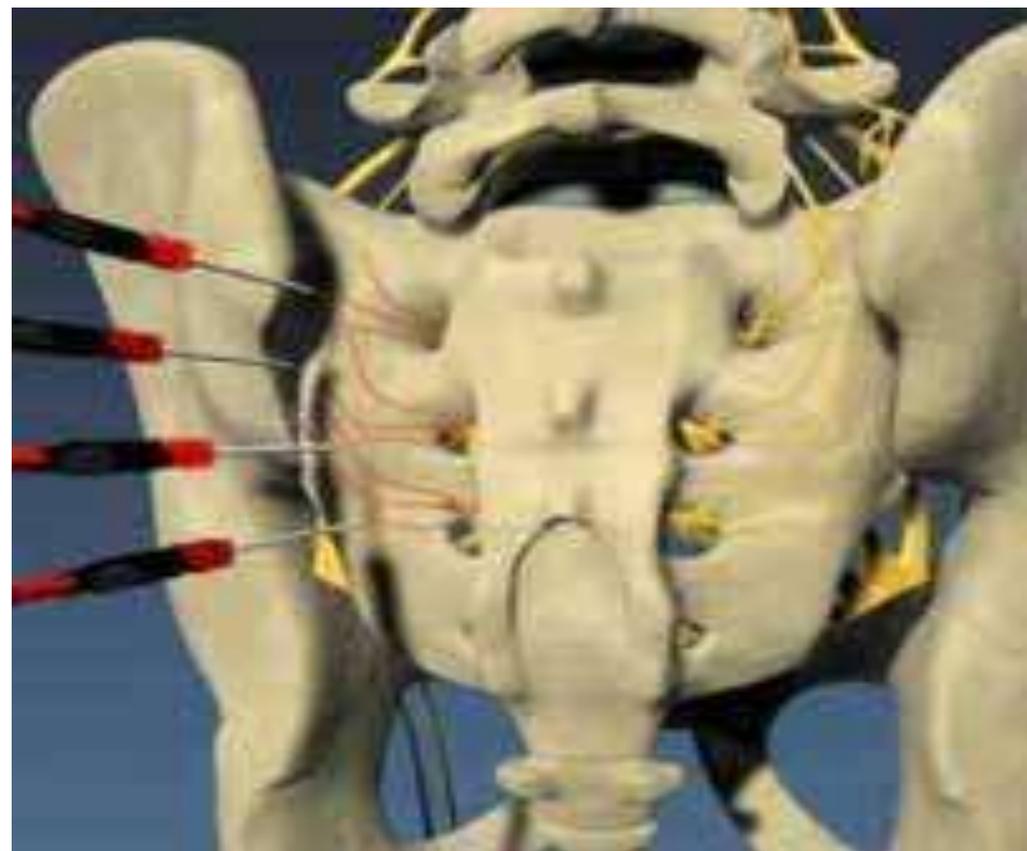
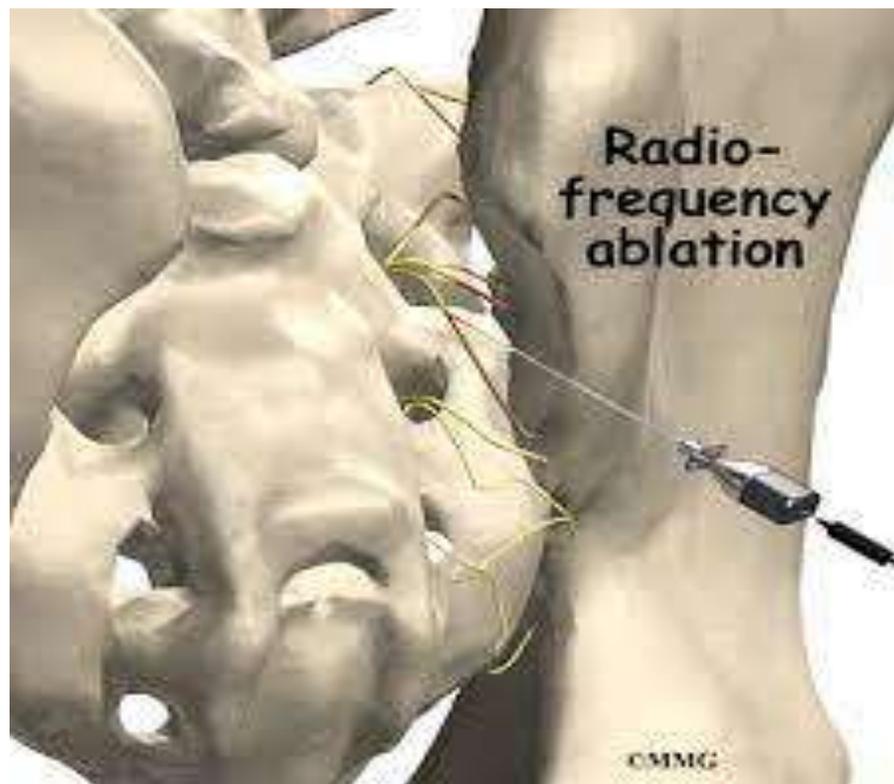
- Systemic infection, septic joint, or osteomyelitis

- Diabetes Mellitus, Type II, with history of poor glycemic control

Complication

- Vasovagal shock
 - increased pain and soreness
 - Infectious
 - Hematoma
 - Bleeding (rare)
-
- A technically unsuccessful rate of 10% has been reported by several studies

- For those who do not have long-lasting pain relief after SI joint steroid injection, RFA is usually employed
- The current RFA treatment of chronic SI joint pain targets only the lateral branches of the S1–3 sacral dorsal rami and L4 medial branch/L5 dorsal ramus
- This approach is not able to access ventral neural structures, and thus leaves some intra-articular structures untreated



Neuroablative Techniques

- Sequential RF lesions in the **posteroinferior aspect of the joint** by leapfrogging an electrode at less than 1 cm intervals

Inconsistent Results and disappointing

- Intra-articular Phenol, not popular due to inherent risks

- **RF Ablation targeting the lateral branches of the primary dorsal rami from L5-S2**

Anatomic studies have demonstrated that the lateral branches which provide nociceptive and proprioceptive input from the SI joints vary in number, location, level and also between patients, hence conventional RF techniques where the RF lesion is about 3–4 mm and uniplanar cannot capture it all

- Bipolar lesioning,

 - Continuous strip lesion but asymmetric ablative patterns

- Cryoablation,

 - Shorter duration of benefit

- Cooled RF

 - cause lesion expansion

- **Proper patient selection** is more critical for SI joint denervation
- Patients should be educated that the SI injection is not curative and repeat injections may be required

Cause of limited Success

- The nerve supply of the SIJ complex has been described posteriorly by the lateral branches of the S1–S3 dorsal rami (with some fibers of the L4 and L5 dorsal rami)
- while the anterior aspect is supplied by branches of the lumbosacral trunk and the obturator and superior gluteal nerves.
- Being that the anterior and posterior compartments of the SIJ joint complex have their own individual varying nerve supply,
- radiofrequency neurotomy of the posterior nerves may not provide complete relief of the painful presentation

Neuromodulation

- Subcutaneous stimulation
- Sacral N root stimulation

Regenerative Medicine

- prolotherapy and injection of platelet-rich plasma or other substances
- There is no high-level evidence supporting the short or long-term effectiveness of this treatment option

Surgical Treatment options

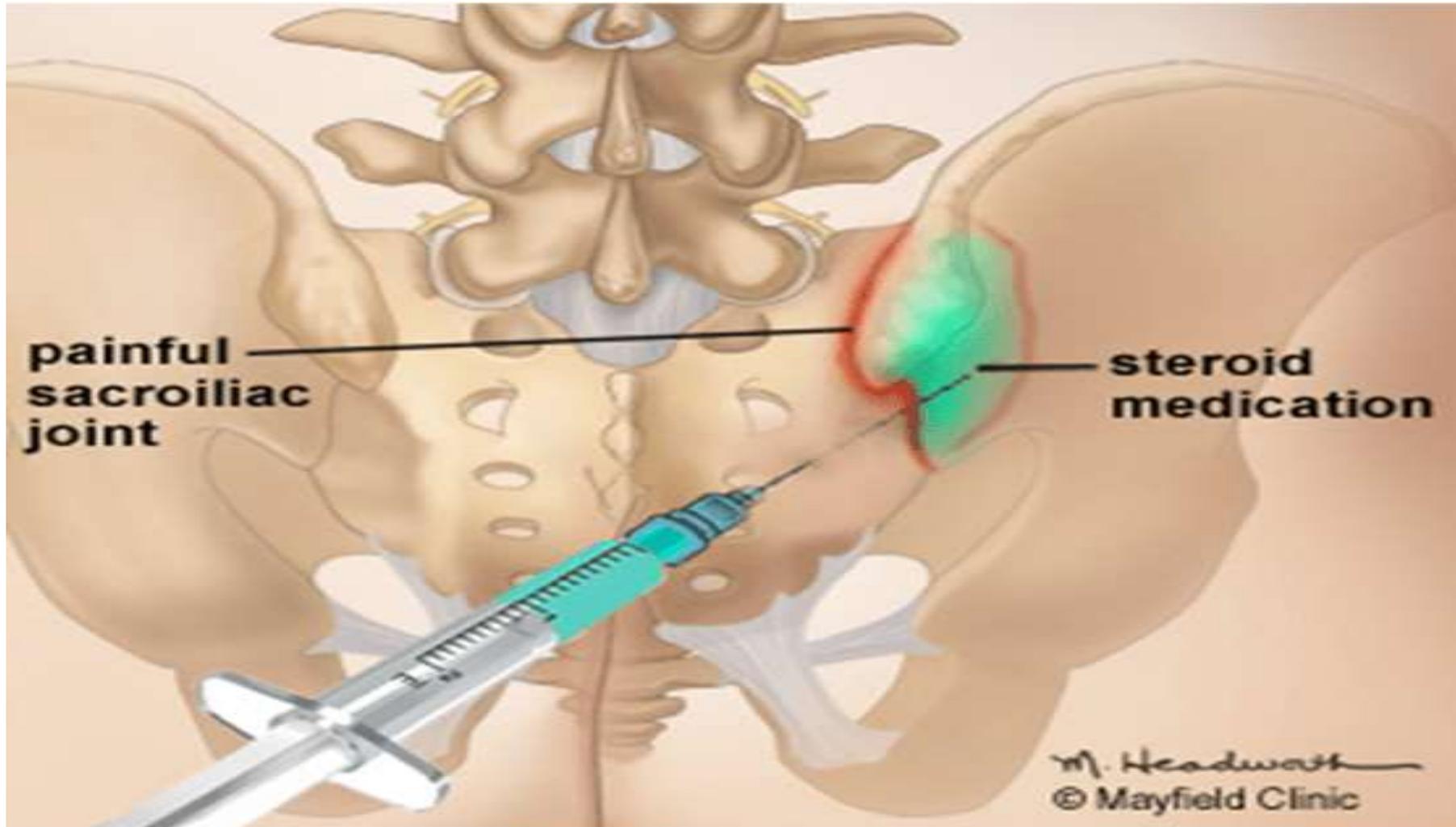
- More than 50% response to SI Joint injection for < 3 month
 - Only after 6 month of intensive nonoperative care
 - have marked impairment of quality of life (QOL)

 - Lateral approach
 - Posterior, posterior oblique approach
- Percutaneous Graft Implants

A



Literature Review



Nonoperative Treatment Options for Patients With Sacroiliac Joint Pain

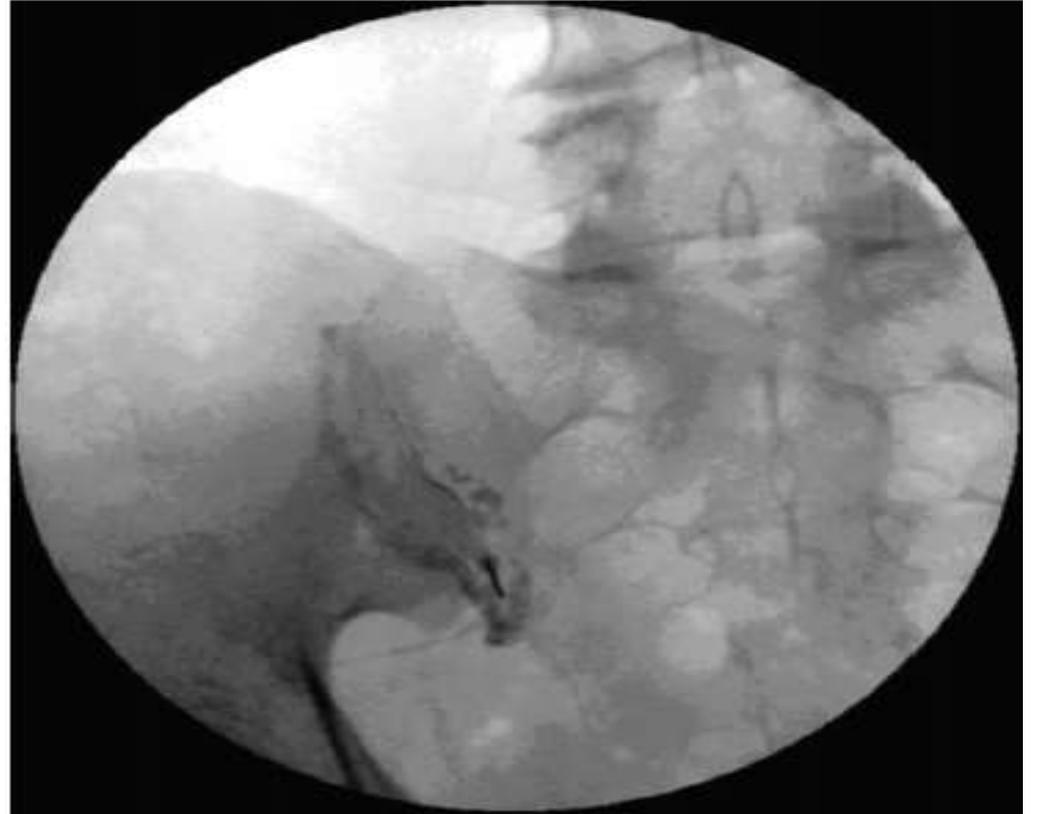
- International Journal of Spine Surgery, Vol. 14, Supplement 1, 2020, pp. S35–S40
- <https://doi.org/10.14444/6082>
- International Society for the Advancement of Spine Surgery

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Intra-Articular Injection

- It has been well established
- The use of fluoroscopic guidance is necessary
- Ultrasound and computed tomography guidance do not rule out intravascular flow and are not as effective in verifying intra-articular placement of the injectate
- CT Scan has 3 dimensional advantage
- The capacity of the SI Joint ranges from 1.0 to 2.6 mL
- Selection of patients for both intra-articular injections and radiofrequency ablation is difficult

- patients, who do not achieve immediate relief after the procedure, are unlikely to have substantial relief at 2- or 4-week follow-up.
- The use of radiofrequency ablation has been suggested to give longer duration of symptom relief in some patients than intra-articular steroid injections



• Radiofrequency neurotomy in chronic lumbar and sacroiliac joint pain. A meta-analysis

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- without permission from the journal. *Medicine* (2019) 98:26(e16230) Received: 21 February 2018 / Received in final form: 5 May 2019 / Accepted: 6 June 2019 <http://dx.doi.org/10.1097/MD.00000000000016230>

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Radiofrequency neurotomy in chronic lumbar and sacroiliac joint pain

A meta-analysis

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Abstract

Background: Effective treatment of low back pain (LBP) originating in the lumbar and sacroiliac joints is difficult to achieve. The objective of the current study was to compare the clinical effectiveness of radiofrequency (RF) neurotomy versus conservative nonsurgical approaches for the management of chronic lumbar and sacroiliac joint pain.

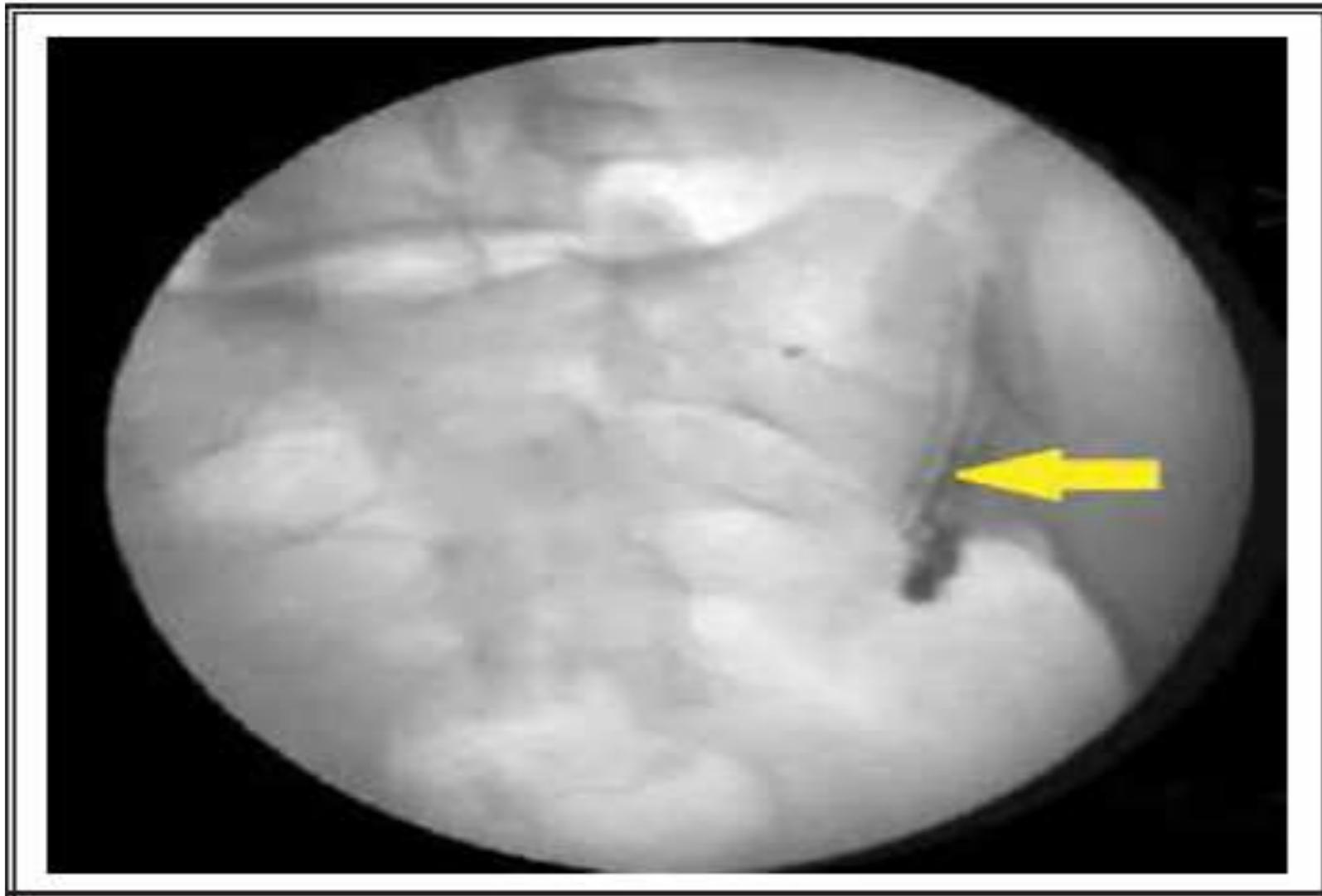
Methods: The PICOS framework was adhered to (P [population]: patients with a history of chronic function-limiting lumbar and sacroiliac joint pain lasting at least 6 months; I [intervention]: RF neurotomy; C [comparator]: other nonsurgical treatments; O [outcomes]: the Oswestry Disability Index (ODI), measurement for pain, and a quality of life (QoL) questionnaire; S [study design]: meta-analysis). Two trained investigators systematically searched Medline, Cochrane, EMBASE, and ISI Web of Knowledge databases for relevant studies published in English through March 2019.

Results: Patients treated with RF neurotomy (n=528) had significantly greater improvement in ODI scores, pain scores and QoL measured by EQ-5D compared with controls (n=457); however, significant heterogeneity was observed when data were pooled from eligible studies. In subgroup analyses, patients who received RF neurotomy had a significantly greater improvement in ODI scores compared with those with sham treatment. Patients treated with RF achieved significantly greater improvement in pain scores compared with controls who received sham treatment or medical treatment. In a subgroup analysis of pain in the sacroiliac joint and in lumbar facet joints, the RF neurotomy group achieved a significantly greater improvement in ODI score and pain scores compared with the control group. The ODI score and pain score were improved after 2 months of follow up in the analyses stratified by follow-up duration.

Conclusions: Use of RF neurotomy as an intervention for chronic lumbar and sacroiliac joint pain led to improved function; however, larger, more directly comparable studies are needed to confirm this study's findings.

Abbreviations: LBP = low back pain, NRS = numerical rating scale, ODI = Oswestry Disability Index, QoL = quality of life, RCT = randomized controlled trial, RF = radiofrequency, VAS = Visual Analogue Scale, VNS = Visual Numeric Pain Scale.

Keywords: chronic lumbar and sacroiliac joint pain, denervation, meta-analysis, radiofrequency neurotomy



Randomized Trial

Comparison of Efficacy of Lateral Branch Pulsed Radiofrequency Denervation and Intraarticular Depot Methylprednisolone Injection for Sacroiliac Joint Pain

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her immediate family, has
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(i.e., consultancies,
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interest, patent/licensing
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might pose a conflict of
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Free full manuscript:
www.painphysicianjournal.
com

Background: Sacroiliac joint dysfunctional pain has always been an enigma to the pain physician, whether it be the diagnosis or the treatment. Diagnostic blocks are the gold standard way to diagnose this condition. Radiofrequency neurotomy of the nerves supplying the sacroiliac joint has shown equivocal results due to anatomical variation. Intraarticular depo-steroid injection is a traditional approach to treating sacroiliac joint pain. For long-term pain relief, however, lesioning the sacral lateral branches may be a better approach.

Objective: This study compared the efficacy of intraarticular depo-methylprednisolone injection to that of pulsed radiofrequency ablation for sacroiliac joint pain.

Study Design: This study used a randomized, prospective design.

Setting: Thirty patients with diagnostic block-confirmed sacroiliac joint dysfunctional pain were randomly assigned to 2 groups. One group received intraarticular methylprednisolone and another group underwent pulsed radiofrequency of the L4 medial branch, the L5 dorsal rami, and the lateral sacral branches.

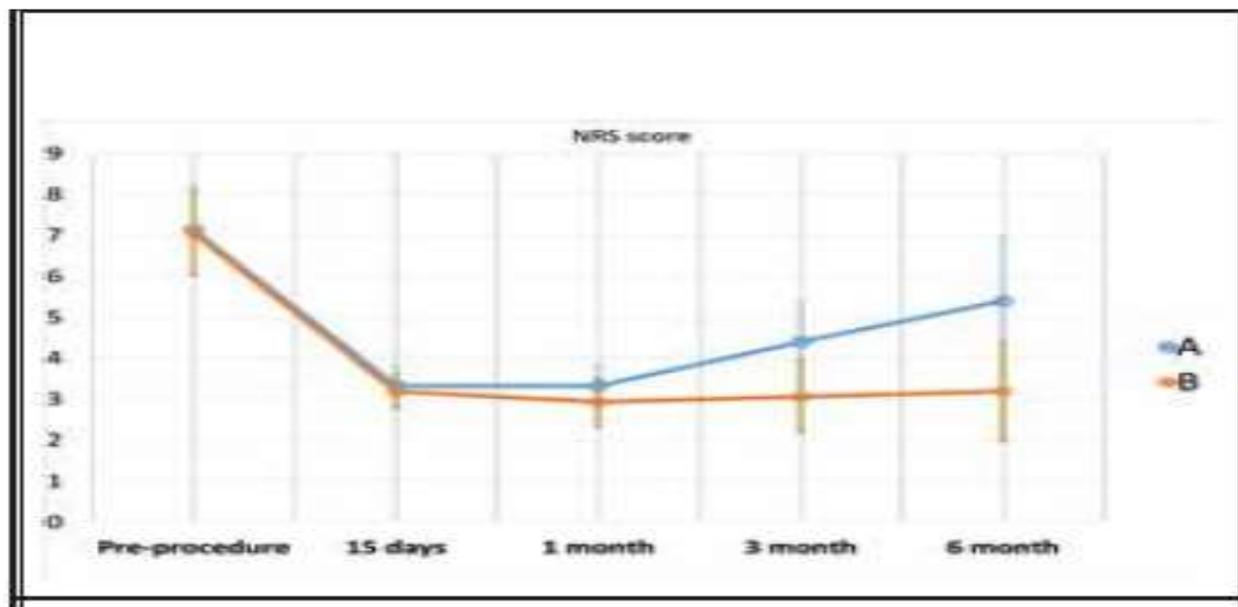
Results: Reduction in Numeric Rating Scale (NRS) for pain at 1 month post-procedure remained similar in Group A, while in Group B few patients reported a further decrease in the NRS score (3.333 ± 0.4880 and 2.933 ± 0.5936 , respectively). At 3 months post-procedure, the NRS score began to rise in most patients in group A, while in Group B, the NRS score remained the same since the last visit (4.400 ± 0.9856 and 3.067 ± 0.8837 , respectively). At 6 months post-procedure, the NRS score began to rise further in most patients in group A. In Group B, the NRS score remained the same in most of the patients since the last visit (5.400 ± 1.549 and 3.200 ± 1.207). There was a marked difference between the 2 groups in Oswestry Disability Index (ODI) scores at 3 months post-procedure (Group A, 12.133 ± 4.486 vs Group B, 9.133 ± 3.523) and at 6 months post-procedure there was a significant ($P = 0.0017$) difference in ODI scores between Group A and Group B (13.067 ± 4.284 and 8.000 ± 3.703 , respectively). Global Perceived Effect (GPE) was assessed in both groups at 3 months post-procedure Only 33.3% (Confidence Interval (CI) of 11.8- 61.6) of patients in Group A had positive GPE responses whereas in Group B, 86.67% (CI of 59.5- 98.3) of patients had positive GPE responses. At 6 months post-procedure, the proportion of patients with positive GPE declined further in Group A, while in Group B, positive GPE responses remained the same (20% with a CI of 4.30- 48.10 and 86.67% with a CI of 59.5- 98.3, respectively).

Limitations: Small sample size.

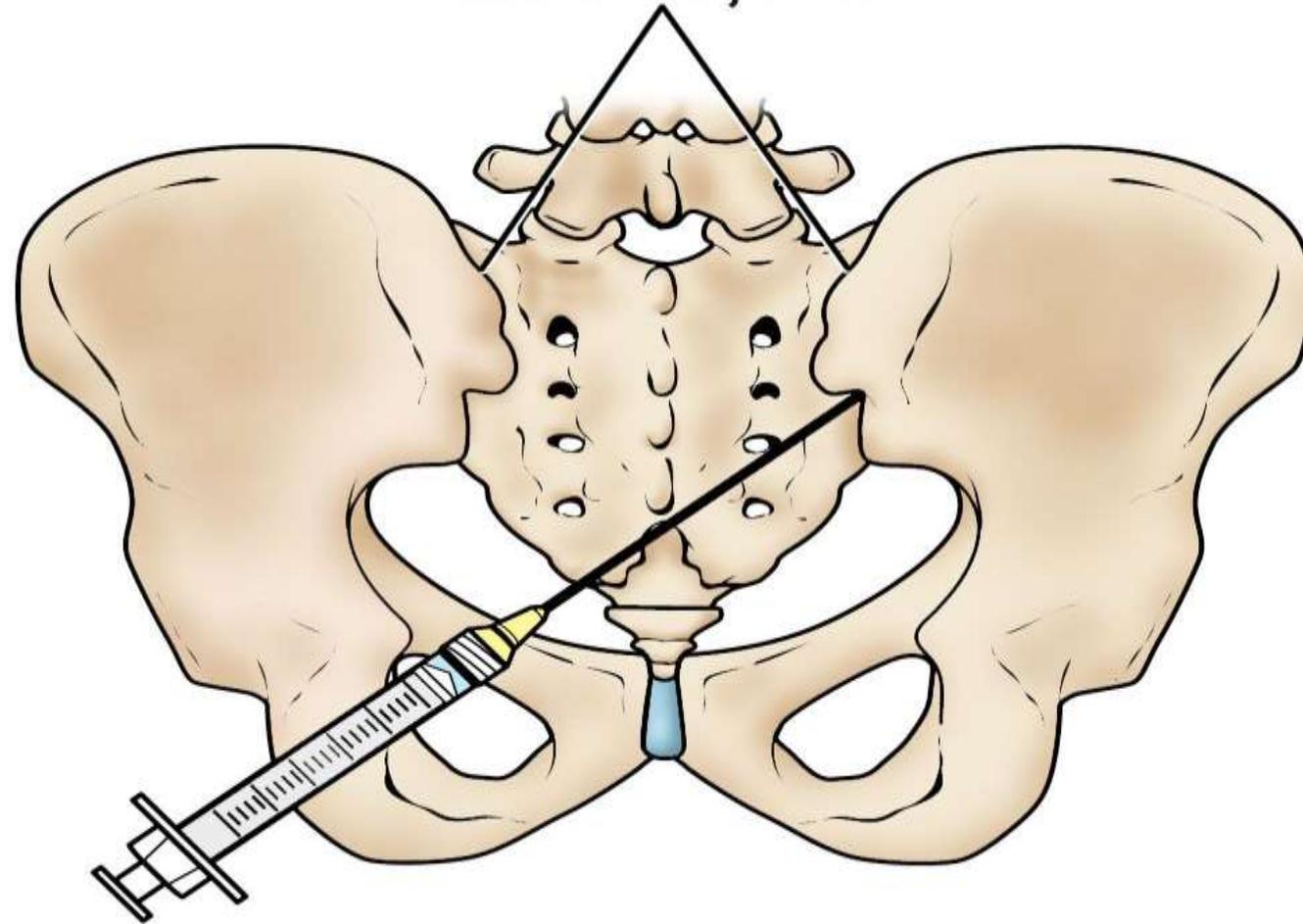
Conclusion: This comparative study shows that pulsed radiofrequency denervation of the L4 and L5 primary dorsal rami and S1-3 lateral branches provide significant pain relief and functional improvement in patients with sacroiliac joint pain.

Key words: Low back pain, sacroiliac joint dysfunctional pain, radiofrequency, intraarticular injection

Pain Physician 2018; 21:489-496



Sacroiliac joints



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**International Society for the Advancement of Spine Surgery
Policy 2020 Update—Minimally Invasive Surgical Sacroiliac
Joint Fusion (for Chronic Sacroiliac Joint Pain): Coverage
Indications, Limitations, and Medical Necessity**

MORGAN LORIO, RICHARD KUBE and ALI ARAGHI

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International Society for the Advancement of Spine Surgery Policy 2020 Update—Minimally Invasive Surgical Sacroiliac Joint Fusion (for Chronic Sacroiliac Joint Pain): Coverage Indications, Limitations, and Medical Necessity

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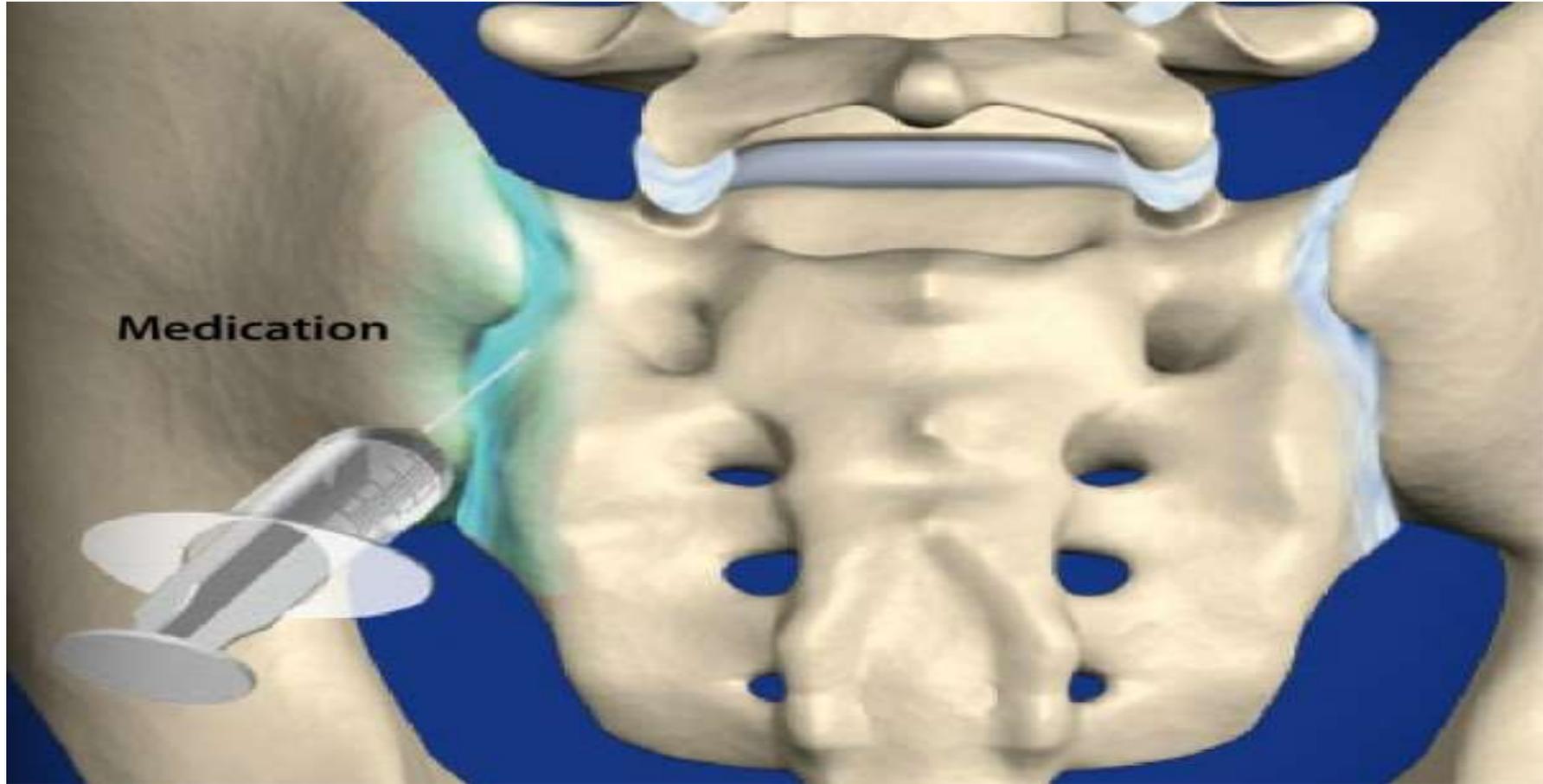
ABSTRACT

The index 2014 International Society for the Advancement of Spine Surgery Policy Statement—Minimally Invasive Surgical Sacroiliac Joint Fusion—was generated out of necessity to provide an *International Classification of Diseases, Ninth Revision* (ICD-9)-based background and emphasize tools to ensure correct diagnosis. A timely ICD-10-based 2016 update provided a granular threshold selection with improved level of evidence and a more robust and relevant database (Appendix Table A1). As procedures and treatment options have evolved, this 2020 update reviews and analyzes the expanding evidence base and provides guidance relating to differences between the lateral and dorsal surgical procedures for minimally invasive surgical sacroiliac joint fusion.

Testing & Regulatory Affairs

Keywords: sacroiliac joint, minimally invasive surgery, pelvis, diagnosis

- Surgical stabilization of the sacroiliac joint is generally considered when a patient has persistent moderate to severe pain, functional impairment, and failed a minimum of 6 months of conservative care
- Some insurance carriers will require 70% pain relief with injections prior to proceeding with a surgical fixation
- In addition, some carriers also require two injections prior to fixation which can be covered by having both a diagnostic and therapeutic injection



Medication

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EXPERT OPINION

A Review and Algorithm in the Diagnosis and Treatment of Sacroiliac Joint Pain

This article was published in the following Dove Press journal:
Journal of Pain Research

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Introduction: The sacroiliac joint (SIJ) has been estimated to contribute to pain in as much as 38% of cases of lower back pain. There are no clear diagnostic or treatment pathways. This article seeks to establish a clearer pathway and algorithm for treating patients.

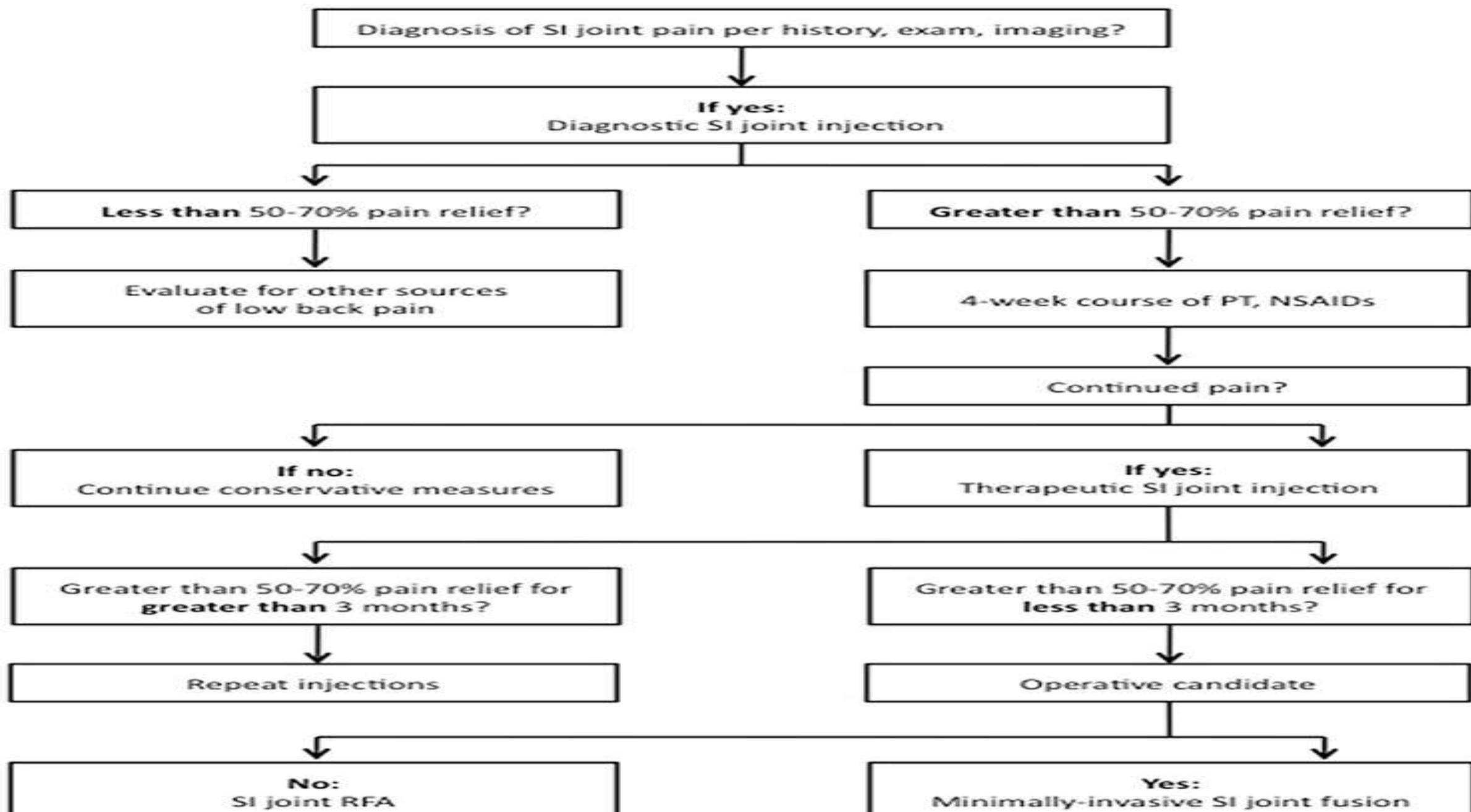
Methods: The literature was reviewed in order to review the biomechanics, as well as establish the various diagnostic and treatment options. Diagnostic factors addressed include etiology, history, physical exam, and imaging studies. Treatment options reviewed include conservative measures, as well as interventional and surgical options.

Results: Proposed criteria for diagnosis of sacroiliac joint dysfunction can include pain in the area of the sacroiliac joint, reproducible pain with provocative maneuvers, and pain relief with a local anesthetic injection into the SIJ. Conventional non-surgical therapies such as medications, physical therapy, radiofrequency denervation, and direct SI joint injections may have some limited durability in therapeutic benefit. Surgical fixation can be by a lateral or posterior/posterior oblique approach with the literature supporting minimally invasive options for improving pain and function and maintaining a low adverse event profile.

Conclusion: SIJ pain is felt to be an underdiagnosed and undertreated element of LBP. There is an emerging disconnect between the growing incidence of diagnosed SI pathology and underwhelming treatment efficacy of medical treatment. This has led to an increase in SI joint fixation. We have created a clearer diagnostic and treatment pathway to establish an algorithm for patients that can include conservative measures and interventional techniques once the diagnosis is identified.

Keywords: sacroiliac joint, SIJ pain, sacroiliac joint dysfunction, sacroiliitis, sacroiliac joint fusion

SACROILIAC JOINT DYSFUNCTION ALGORITHM FOR THE INTERVENTIONALIST





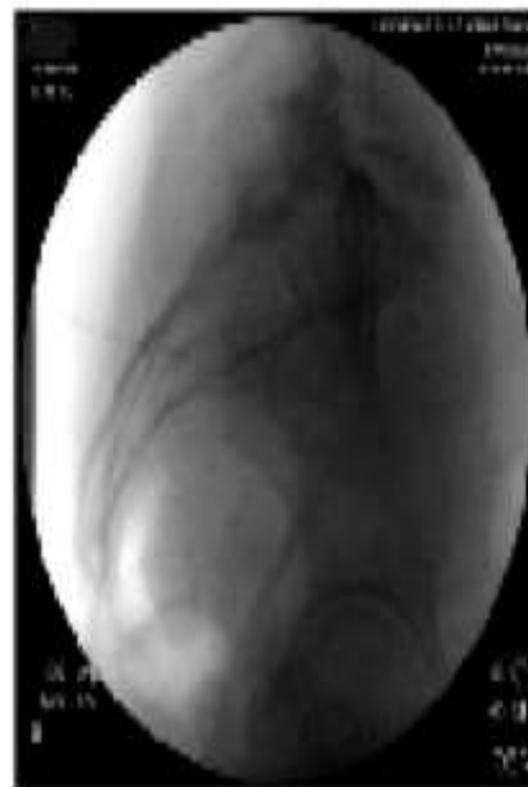
AP inferior SU target



AP needle in SU
pre-contrast



AP needle in SU



Lateral needle in SIJ

EVIDENCE-BASED MEDICINE

Evidence-based Interventional Pain Medicine according to Clinical Diagnoses

13. Sacroiliac Joint Pain

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Abstract

The sacroiliac joint accounts for approximately 16% to 30% of cases of chronic mechanical low back pain. Pain originating in the sacroiliac joint is predominantly perceived in the gluteal region, although pain is often referred into the lower and upper lumbar region, groin, abdomen, and/ or lower limb(s). Because sacroiliac joint pain is difficult to distinguish from other forms of low back pain based on history, different provocative maneuvers have been advocated. Individually, they have weak predictive value, but combined batteries of tests can help ascertain a diagnosis. Radiological imaging is important to exclude “red flags” but contributes little in the diagnosis. Diagnostic blocks are the diagnostic gold standard but must be interpreted with caution, because false-positive as well as false-negative results occur frequently. Treatment of sacroiliac joint pain is best performed in the context of a multidisciplinary approach. Conservative treatments address the underlying causes (posture and gait disturbances) and consist of exercise therapy and manipulation. Intra-articular sacroiliac joint infiltrations with local anesthetic and corticosteroids hold the highest evidence rating (1 B+). If the latter fail or produce only short-term effects, cooled radiofrequency treatment of the lateral branches of S1 to S3 (S4) is recommended (2 B+) if available. When this procedure cannot be used, (pulsed) radiofrequency procedures targeted at L5 dorsal ramus and lateral branches of S1 to S3 may be considered (2 C+).

Key Words: evidence-based medicine, low back pain, sacroiliac joint, radiofrequency, cooled radiofrequency treatment

Table 1. Summary of Evidence Scores and Implications for Recommendation

Score	Description	Implication
1 A+	Effectiveness demonstrated in various RCTs of good quality. The benefits clearly outweigh risk and burdens	} Positive recommendation
1 B+	One RCT or more RCTs with methodologic weaknesses, demonstrate effectiveness. The benefits clearly outweigh risk and burdens	
2 B+	One or more RCTs with methodologic weaknesses, demonstrate effectiveness. Benefits closely balanced with risk and burdens	
2 B±	Multiple RCTs, with methodologic weaknesses, yield contradictory results better or worse than the control treatment. Benefits closely balanced with risk and burdens, or uncertainty in the estimates of benefits, risk and burdens.	} Considered, preferably study-related
2 C+	Effectiveness only demonstrated in observational studies. Given that there is no conclusive evidence of the effect, benefits closely balanced with risk and burdens	
0	There is no literature or there are case reports available, but these are insufficient to suggest effectiveness and/or safety. These treatments should only be applied in relation to studies.	Only study-related
2 C-	Observational studies indicate no or too short-lived effectiveness. Given that there is no positive clinical effect, risk and burdens outweigh the benefit	} Negative recommendation
2 B-	One or more RCTs with methodologic weaknesses, or large observational studies that do not indicate any superiority to the control treatment. Given that there is no positive clinical effect, risk and burdens outweigh the benefit	
2 A-	RCT of a good quality which does not exhibit any clinical effect. Given that there is no positive clinical effect, risk and burdens outweigh the benefit	

RCT, randomized controlled trial.

Table 2. Evidence of Interventional Pain Management for SIJ Pain

Technique	Assessment
Therapeutic intra-articular injections with corticosteroids and local anesthetic	1 B+
Radiofrequency (RF) treatment of rami dorsales and laterales	2 C+
Pulsed RF treatment of rami dorsales and rami laterales	2 C+
Cooled RF treatment of the rami laterales	2 B+

SIJ, sacroiliac joint.

REVIEW ARTICLE

“Evidence-Based Interventional Pain Medicine According to Clinical Diagnoses”: Update 2018

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■ Abstract

Introduction: Between 2009 and 2011 a series of 26 articles on evidence-based medicine for interventional pain medicine according to clinical diagnoses were published. The high number of publications since the last literature search justified an update.

Methods: For the update an independent 3rd party, specialized in systematic reviews was asked in 2015 to perform the literature search and summarize relevant evidence using Cochrane and GRADE methodology to compile guidelines on

interventional pain management. The guideline committee reviewed the information and made a last update on March 1st 2018. The information from new studies published after the research performed by the 3th party and additional observational studies was used to incorporate other factors such as side effects and complications, invasiveness, costs and ethical factors, which influence the ultimate recommendations.

Results: For the different indications a total of 113 interventions were evaluated. Twenty-seven (24%) interventions were new compared to the previous guidelines and the recommendation changed for only 3 (2.6%) of the interventions.

Discussion: This article summarizes the evolution of the quality of evidence and the strength of recommendations for the interventional pain treatment options for 28 clinical pain diagnoses. ■

Key Words: interventional pain management, evidence-based medicine, systematic review, GRADE, recommendations

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Table 1. Classification of the Quality of Evidence, Strength of Recommendation, and Description of the Recommendation

Quality of Evidence	Strength of Recommendation	Recommendation
High	Strong	Must (not) be used
Moderate	Moderate	Should (not) be used
Low	Weak	Could (not) be used
Very low	Very weak	Could (not) be considered

- The fact that the quality of the evidence is rather low does not mean that the effect of the treatment is minimal; it indicates the need for clinical research.

Treatment	Recommendations in 2010†	GRADE Level of Evidence in 2015	Recommendations in 2018
Sacroiliac joint pain			
Intra-articular corticosteroid injections	1 B+	Low	Weak
Radiofrequency treatment of rami dorsalis and lateralis (palisade)	2 C+	Very low	Very weak
Radiofrequency treatment of rami dorsalis and lateralis (palisade) SIJ pain due to ankylosing spondylitis		Moderate	Moderate
Radiofrequency treatment of rami dorsalis and lateralis (simplicity)		Not graded	Moderate against
Pulsed radiofrequency treatment of rami dorsalis and lateralis	2 C+	Not graded	Very weak
Radiofrequency treatment of ramus dorsalis at L4–L5 and cooled radiofrequency of the ramus lateralis	2 B+	Low	Weak
Cooled radiofrequency treatment of ramus dorsalis at L4–L5 and ramus lateralis		Moderate	Moderate



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THANKS