SACROILIAC JOINT PAIN

Essay

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بسم الله الرحمن الرحيم

وقل رب ادخلني مدخل صدق وأخرجني مخرج صدق وأجعل لي من لدنك سلطانا نصيرا.

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Tha-Alnoon Mohammed Taleb

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Abbreviation

AS	Ankylosing Spondylitis
CRP	C- Reactive Protein
CT	Computed Tomography
DMARD	Disease Modifying Anti-Rheumatic Drugs
ESSG	European Spondylarthropathy Study Group
IASP	International Association for the Study of Pain
IBD	Inflammatory Bowel Disease
LBP	Low Back Pain
MRI	Magnetic Resonance Imaging
NSAIDs	Nonsteroidal Anti-Inflammatory Drugs
PSA	Prostate Specific Antigen
PSIS	Posterior Superior Iliac Spine
RF	Rheumatoid Factor
SIJ	Sacroiliac Joint
SIJS	Sacroiliac Joint Syndrom
SpA	Spondyloarthropathies
SPEP	Serum Protein Electrophoresis
T B	Tuberculous Bacilli
TNF	Tumour Necrosis Factor
UPEP	Urine Protein Electrophoresis

INTRODUCTION

The sacroiliac joint (SIJ) was initially described as a source of low back pain by Goldwaith and Osgood in 1905. [1] Painful conditions of the SIJ are known to result from spondyloarthropathies[2] , infection [3] , malignancy[4], pregnancy , and trauma.[5] It has been speculated that sacroiliac joint syndrome (SIJS), diagnosed by a suggestive history and/or physical examination, may occur acutely from trauma, such as with sudden heavy lifting , arising from a stooped position[6], prolonged lifting and bending , torsional strain, falling onto the buttock, or a rear-end motor vehicle accident with the ipsilateral foot on the brake.[7] It can also occur from cumulative shear or torsional forces to the SIJ, as occurs in sports such as figure skating, golf, and bowling.[5]

Some clinicians believe SIJS may also occur spontaneously without a precipitating event. However, the precipitating factors for SIJS have not been well established in the published literature. To date, no studies have been published that assess the inciting events leading to the development of SIJS .[8]

Although the concept of the SIJ as a primary source of low back pain has gained widespread acceptance among interventional physiatrists and spine physicians, the evidence supporting this hypothesis is only empiric. As yet, there are no pathognomonic clinical history or physical examination findings that unequivocally prove the diagnosis of SIJS.Without such evidence, the diagnosis previously depended only upon a suggestive history and/or examination. [9]

As well, radiologic findings have been unable to consistently identify patients with SIJS, thereby failing to serve as a definitive diagnostic tool. [10]

In addition, the clinicians reliabilities in the interpretation of radiographic findings of sacroiliitis are poor. [11] Attempts have been made to utilize nuclear medicine testing. Bone scan has demonstrated a poor sensitivity, 12-46%, in diagnosing SIJS. [12] Interestingly, even for a known inflammatory disease such as sacroiliitis, a positive bone scan has not been proven to be specific. [13]

The mechanism of sacroiliac pain generation is poorly understood . The positive response to steroids has led some authors to hypothesize the presence of inflammation; however, the role of inflammation in SIJS remains unconfirmed. [14]

Treatment of sacroiliac joint pain depends upon the cause. Any underlying condition would receive treatment specific for that disease. Treatment modalities include medications, physical therapy, bracing, manual therapy, injections, radiofrequency denervation, and arthrodesis; however, no published prospective data compare the efficacy of these modalities.[15]

ANATOMY

The sacroiliac joint(SIJ) is a synovial articulation between the sacral and iliac articular surfaces (Fig.1,2) , although often termed plane, is nearly flat only in infants; in adults the surfaces are irregular, often markedly so, and sometimes sinuous. [16,17]

Their curvatures and irregularities, greater in males, are reciprocal; they restrict movements and contribute to the joint's considerable strength in transmitting weight from the vertebral column to the lower limbs. The sacral articular surface is indeed typically hyaline , being thicker anteriorly than posteriorly in adults; the thinner iliac cartilage was thought to be fibrocartilage but it is also hyaline cartilage as confirmed by the presence of Type II collagen.[16]

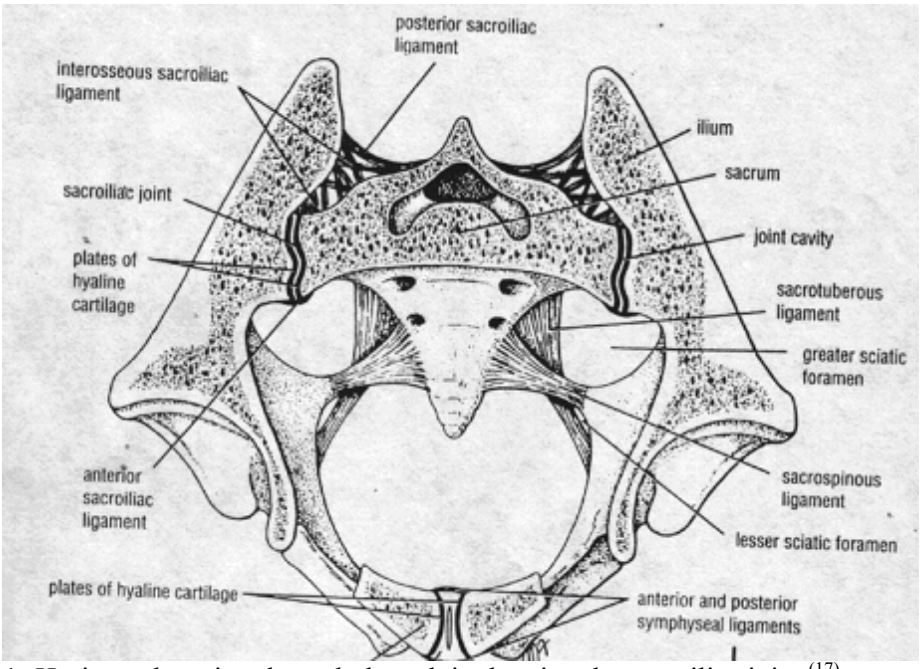

Figure1- Horizontal section through the pelvis showing the sacroiliac joint [17]

Fibrous adhesions and gradual obliteration occur in both sexes, earlier in males, after the menopause in females. In old age the joint may be completely fibrosed and occasionally even ossified. The articular capsule is attached close to both articular margins.[18]

There is great variability in external contours of the SIJ articular surfaces. They are generally auricular in form, tending to be more of a C-shape in males and an L-shape in females. Generally, the sacral surfaces are longer and narrower than the iliac surfaces. The articular surface spans from the S1 to S3 levels in both men and women, sometimes extending to S4 (Fig. 2). [16]

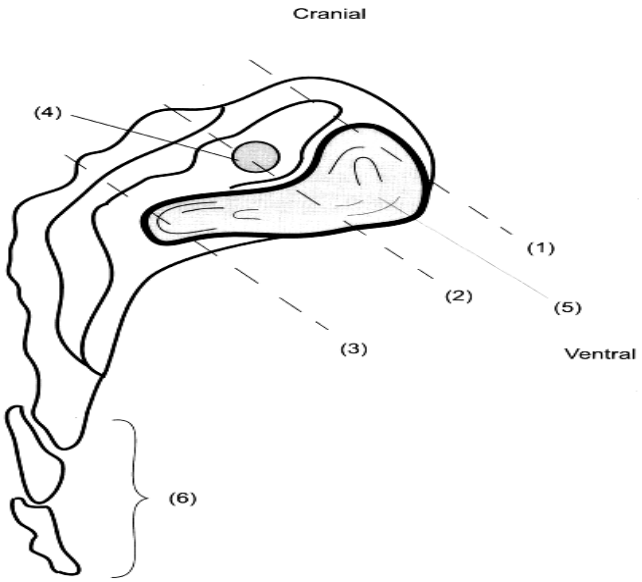

Figure 2-Lateral view of the sacrum. (1) S1 level; (2) S2 level; (3) S3 level; (4) Location of the axial joint; (5) Sacral articular surface of the sacroiliac Joint; Note the inverted auricular shape; (6) Coccyx. [16]

The joint surfaces at the S1 level are the largest, while at the S3 surfaces are smallest. Each entire SIJ surface demonstrates a surface area of approximately17.5cm^2, allowing for shock absorption and a transfer of large bending forces. [16]

Ligaments of sacroiliac joint are:

1-The anterior sacroiliac ligament:

The anterior sacroiliac ligament consists of numerous thin bands, which connect the anterior surface of the lateral part of the sacrum to the margin of the auricular surface of the ilium and to the preauricular sulcus(Fig.3).It restraints the external rotation of the hemipelvis. [18]

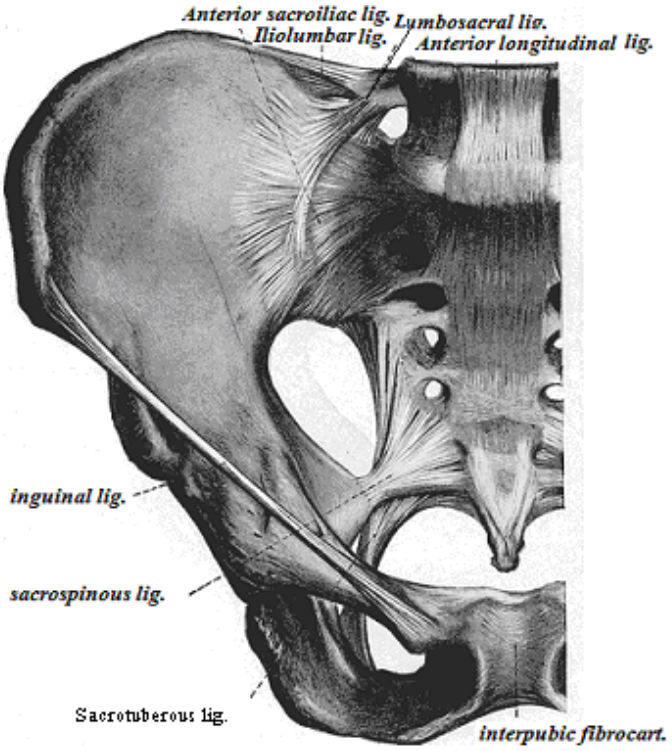

Figure3- Ligaments of sacroiliac joint. Anterior view. [18]

2-Interosseous sacroiliac Ligament:

This ligament lies deep to the posterior ligament, and consists of a series of short, strong fibers connecting the tuberosities of the sacrum and ilium. It is the major and strongest bond between the bones, filling the irregular space posterosuperior to the joint . Its deeper part has superior and inferior bands passing from depressions posterior to the sacral auricular surface to those on the iliac tuberosity. These bands are covered by, and blend with, a more superficial fibrous sheet connecting the posterosuperior margin of a rough area posterior to the sacral auricular surface to the corresponding margins of the iliac tuberosity. This sheet is often partially divided into superior and inferior parts, the former uniting the superior articular process and lateral crest on the first two sacral segments to the neighbouring ilium as a short posterior iliac ligament .It maintains the normal position of the sacrum in the pelvis. [18]

3- The Posterior sacroiliac Ligament:

The posterior sacroiliac ligament is situated in a deep depression between the sacrum and ilium behind; it is strong and forms the chief bond of union between the bones(sacrum and ilium) (Fig.4). It consists of numerous fasciculi, which pass between the bones in various directions. The upper part (**short posterior sacroiliac ligament**) is nearly horizontal in direction, and pass from the first and second transverse tubercles on the