

CLINICAL DIAGNOSIS OF COMMON SACROILIAC CONDITIONS*

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THE sacroiliac joint is subject to the same conditions as any other joint,—trauma, inflammation, neoplasms. The first two mentioned, trauma and inflammation, are the conditions which will be dealt with in this paper.

In the great majority of cases it is a simple matter to differentiate between symptoms arising from a lesion affecting the lumbosacral region and one affecting the sacroiliac region. This differential diagnosis should be made by the orthopedic surgeon on the basis of a careful history and an equally careful examination. The roentgenologist should not be expected to make the diagnosis, but his interpretation of the roentgenogram should be considered as confirmatory evidence. The roentgenologist, however, is as a rule rather reluctant to give this confirmatory evidence, and often responds: "Without clinical findings we are not justified in interpreting this roentgenogram as showing pathology." The object of this paper is to overcome this seemingly insurmountable obstacle to cooperation between the roentgenologist and the orthopedic surgeon, by giving some of the signs and symptoms practically constant in sacroiliac conditions.

History. A careful history is a tremendous aid in making a diagnosis.

Trauma. If trauma is present it should be described in detail. Leverage transmitted through the ham strings unilaterally to the pelvis is very effective in bringing about a sacroiliac strain.

The Effect of Positions on Pain. *Standing:* The patient is apt to stand on the unaffected leg with the knee on the affected side in the position of slight flexion. This position diminishes weight transmission through the affected side and also relaxes the ham strings.

Sitting. Usually the patient sits on the opposite buttock. Again, he is avoiding transmission of weight to the affected side of the pelvis, and also protecting the sensitive sciatic nerve from pressure.

Lying. The patient, as a rule, is comfortable on his back or on the opposite side; he is unable to lie on the side affected.

Walking. Walking aggravates the pain. Going up stairs is likewise apt to aggravate the pain; as a rule, the patient goes up stairs child-fashion, dragging the affected leg after him.

Straining at Stool. This is equivalent to raising the intrapelvic pressure and aggravates the pain in acute sacroiliac cases, whether traumatic or inflammatory.

Distribution of Pain. In regard to the patient's description of the distribution of pain; this of course is subjective and cannot be anatomically accurate. It is distinctly helpful, however, when we consider the innervation of the sacroiliac joints. This is derived from the following sources: (1) Anteriorly, from the lumbosacral cord; (2) posteriorly, from the first and second sacral nerves; (3) inferiorly, from the superior gluteal nerve; (4) from the obturator nerve.

There is some question as to the innervation derived from the obturator. The opinions of various anatomists differ on this point. Bardeleben and Morris, however, agree on the first three sources of innervation.

On the basis of the innervation just described we may have pain referred along the fourth and fifth lumbar and first and second sacral nerves. In other words, we may have pain referred to the posterior aspect of the thigh as well as to any part of the lower leg. The type of pain almost constantly present, however, is the pain referred along the first and second sacral nerves, namely, posterior aspect of the thigh, anterolateral and posterior aspect of the lower leg and lateral aspect of the ankle (Figs. 1 and 2). Because of the innervation from the superior gluteal nerve we are also apt to have pain referred to the sacrosciatic notch, extending in the anterolateral direction along the distribution of the superior gluteal nerve to its

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termination in the tensor fascia femoris muscle.

Finally, pain over the distribution of the internal obturator nerve, namely, the inferior, mesial aspect of the thigh. I have found pain referred to this area in 2 cases only; both cases were proven by operation to have a chronic inflammatory process in the sacroiliac joint.

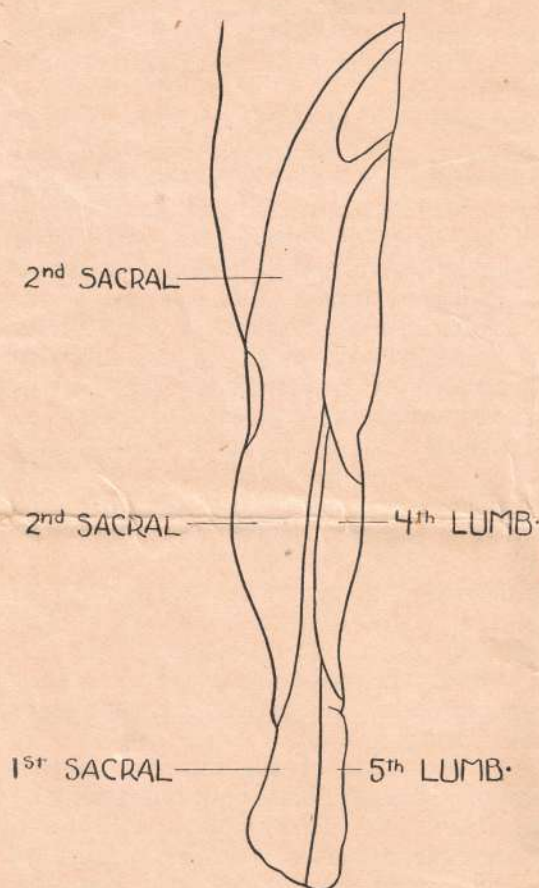


FIG. 1. From Tilney and Riley.

The above description of peripheral sensory distribution and the diagrams are taken from Tilney and Riley, "Anatomy of the Central Nervous System." These charts agree with the distribution of pain which I have found in a great many of my sacroiliac cases; they do not agree, however, with the peripheral sensory distribution as described by Head and Seiffer.

These are all practical points and practical questions which a roentgenologist

can easily ask a patient while he is taking his roentgenograms. It is hardly possible for the roentgenologist to carry out a detailed examination such as the orthopedic surgeon should perform. If the roentgenologist, however, will observe his patient as he moves about he can gather valuable information. He can also easily palpate certain points without taking additional time or annoying the patient.

The points which are particularly apt to be sensitive in sacroiliac conditions are:

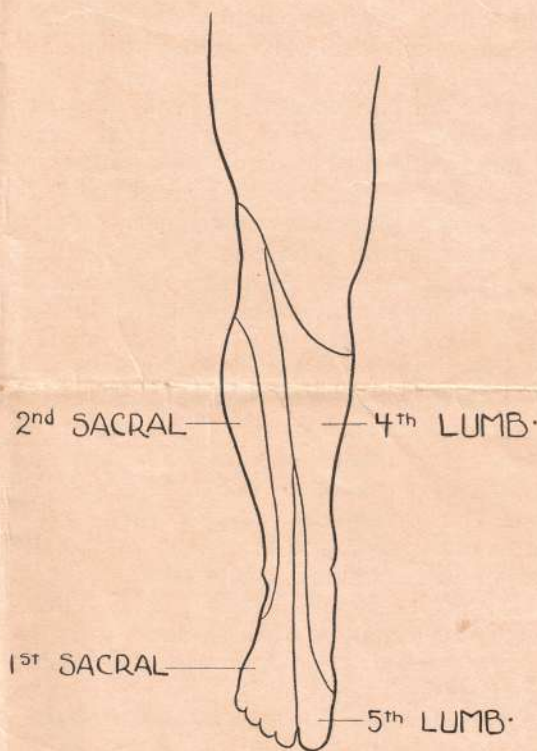


FIG. 2. From Tilney and Riley.

1. The inferior sacroiliac ligament between the posterior superior and posterior inferior iliac spines.

2. Sacrosciatic notch. At this point the superior gluteal nerve curves around as it passes forward and since it sends a branch to the sacroiliac joint we are very apt to have sensitiveness along the main nerve trunk.

3. Sciatic nerve trunk; half way between the ischial tuberosity and greater trochanter, at the level of the gluteal fold.

MOTIONS

In order to demonstrate the limitation of motions in a sacroiliac joint condition we have to compare them with limitation of motions due to a lumbosacral condition. For the purposes of this paper and for the sake of clearness I am going to analyse one motion only, that of flexion of the spine. We will analyse this motion in the three positions—standing, sitting and lying.

Standing. In lumbosacral conditions the muscle spasm is apt to keep the lumbosacral region rigid, and forward bending takes place at the hips and in the upper lumbar and dorsal regions. In sacroiliac

markedly limited. In lumbosacral cases attempt at flexion of the spine in the sitting position is just as limited as in the standing position (Fig. 4).

Lying. Passive lumbar flexion by the examiner flexing the hips on the pelvis is of particular value in differentiating between lumbosacral and sacroiliac joint conditions. Passive flexion of this sort eliminates to a great extent muscle leverage and I have come to feel that we get more of a pure joint motion than when we attempt the same test in the standing and lying positions actively. In lumbosacral conditions, of course, this test is productive of pain and it is impossible to flex the lumbar spine. In sacroiliac conditions, however, there is no leverage transmitted

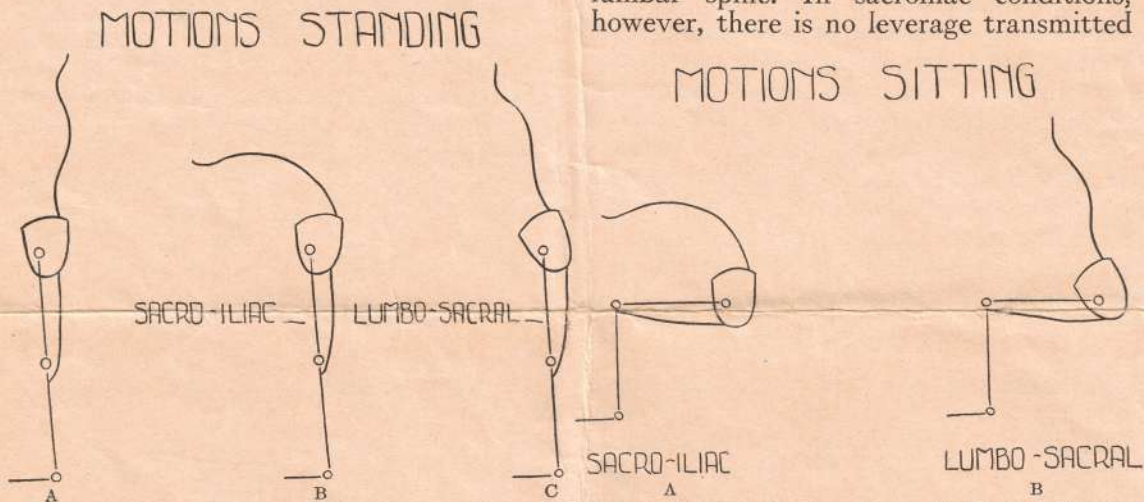


FIG. 3. Flexion of spine. A. Standing position. B. Flexion of spine in sacroiliac cases—good motion in lumbar spine, pelvis does not move. C. Flexion of spine in lumbosacral cases—no motion in lumbar spine, pelvis tilts forward at the hips.

conditions the patient is apt to bend forward first by flexing the lumbar spine, then by tilting the pelvis until the ham strings become taut. At this point he either stops because of pain or flexes his knee on the affected side so as to relax the ham strings and then is able to bend over farther (Fig. 3).

Sitting. The only difference between flexion standing and flexion sitting is that in the latter the ham strings are relaxed and consequently no leverage is transmitted to the pelvis. In sacroiliac cases it is quite remarkable to note how freely the patient bends forward from the sitting position, even though flexion standing was

FIG. 4. Flexion of spine, sitting. A. Flexion of spine in sacroiliac cases—good motion in lumbar spine, pelvis remains fixed. B. Flexion of spine in lumbosacral cases—no motion in lumbar spine, pelvis tilts forwards.

to the pelvis but the pelvis moves as a whole and consequently the motion is apt to be free and unaccompanied by pain. There are cases of acute sacroiliac conditions where this motion would be productive of pain but much less so than active flexion in the standing position (Fig. 5).

Just a word about the special test usually referred to as "straight leg raising." This test consists in raising the leg from the table with the knee extended. By keeping the knee extended the ham strings gradually become taut and leverage is transmitted unilaterally to the pelvis. If the sacroiliac joint on that side is sensi-

tive this test is productive of pain. The same test carried out on the opposite side from the side affected is, as a rule, not productive of pain unless the sacroiliac joint condition is extremely acute.

In regard to the interpretation of roentgenograms of sacroiliac joint conditions, these are best considered under the following headings.

1. Sacroiliac strain or relaxation.
2. Inflammatory conditions.

SACROILIAC STRAIN OR RELAXATION

In the majority of acute cases the roentgenograms are negative. They may show disalignment, which is best demonstrated at the pubis. In chronic cases proliferative changes are frequently seen along the inferior joint line, at the pubis, and at the attachment of the iliolumbar ligaments. Proliferative changes in the last named region are also present in cases of lumbosacral strain. In chronic cases there may be increased density along the joint line but this is not so common a finding as the proliferative changes. Disalignment also may be present the same as in acute cases.

INFLAMMATORY CONDITIONS

Tuberculosis. In the early stages there is increased density along the joint line and in the soft tissues at the inferior margin of the joint. In the later stages there is in addition erosion of the joint line and bone atrophy in the ilium and in the sacrum.

Gonorrheal Arthritis. Gonorrheal arthritis is more apt to involve the entire joint than is tuberculosis; it is frequently bilateral. In the early stages there is markedly increased density along the entire joint line and this increased density is more intense than in tuberculosis. In the later stages there is in addition erosion of the joint line and areas of bony fusion.

Infectious Arthritis. In the early stages the appearance is very similar to early tuberculosis and it is impossible to differentiate between the two. In chronic infec-

tious arthritis, however, the bone atrophy is very much less marked than in tuberculosis.

I have now operated on over 30 cases for sacroiliac relaxation and the results have been uniformly successful. I have also had about 20 cases with inflammatory conditions. The majority of these have been successful but some cases of tuberculosis still have draining sinuses although relieved from all pain. This is fairly good proof that the diagnosis in these cases was correct, and the diagnosis was made on the basis of an examination the practical points of which I have just given you.

MOTIONS LYING

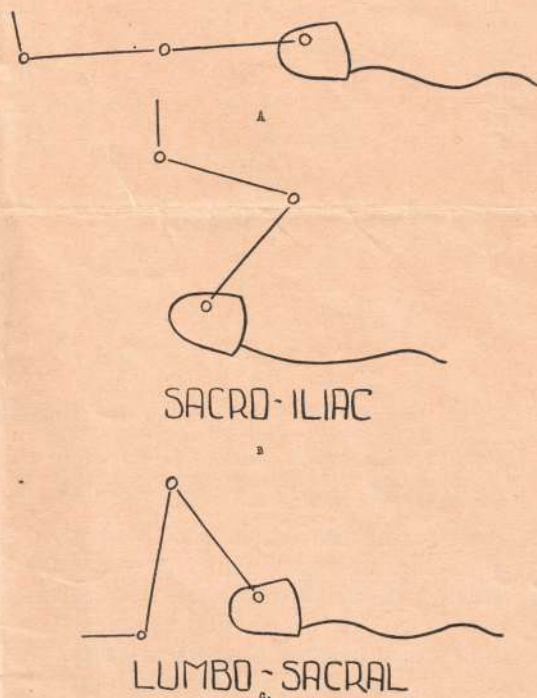


FIG. 5. A. Lying at rest. B. Passive flexion of lumbar spine in sacroiliac cases—good flexibility of the lumbar spine. C. Passive flexion of lumbar spine in lumbosacral cases—lumbar spine remains fixed and hips cannot be flexed except through a very limited arc.