DOI: 10.7860/JCDR/2017/24899.9794

Lasègue's Sign

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ABSTRACT

Lasègue's sign is an interesting and important clinical sign in medicine for the last 150 years. The Lasègue test is commonly used in the physical examination of patients with low back pain. It is a test for lower lumbosacral nerve root irritation for example, due to disc prolapse. It is evident that the method of performance of this diagnostic sign varies with the physician. This article reviews the historical background and method of eliciting the sign.

Keywords: Low back pain, Nerve root irritation, Straight leg raising test

INTRODUCTION

Lasègue's sign is an interesting clinical sign in medicine as the method and interpretation of the test varies amongst the physicians. The Lasègue test used in the clinical examination of patients presenting with low back pain. It is an important test for determining the nerve root tension. Nerve root irritation can be due to many causes, most common being intervertebral disc prolapse. Available literature on this subject has been reviewed with an aim to outline the mechanism of pain production and functional interpretation while doing this test.

"Lasègue's sign" is also called as 'straight leg raising test'. The remarkable feature of this sign is that it was never described by Lasègue [1]. It is named after the French clinician, Charles Lasègue by his student, JJ Forst in 1881, when he described this test to provoke pain in patients with sciatica [1]. In 1864 Lasègue wrote 'Thoughts of Sciatica' and since then most authors have been happy to imagine that this includes a description of this sign. Lasègue described two cases of sciatica observing that weight bearing and flexing both hips and knees together aggravated the pain. His pupil Forst described the sign in a doctoral thesis in 1881 and wrote that his attention was attracted to it by Lasègue his teacher, sponsor and president of the university examiners. Forst considered that the sign was produced by the hamstring muscles compressing the sciatic nerve [1,2].

Lazar K. Lazarevic, a Yugoslavian physician had published the sign in the 'Serbian Archives' before Forst's work went to print. Lazarevic described two other methods of stretching sciatic nerve either by asking the patient to sit up in the bed with knees extended or by attempting touch the toe [2]. His article "Ischiac postica cotunnii: One contribution to its differential diagnosis" was initially published in the Serbian Archives of Medicine (1880), and republished in German in Vienna (1884). In his article, Lazarevic described that stretching the sciatic nerve causes pain while doing the straight leg raising test. His description was based on six patients from his practice. He also described several other maneuvers to perform the test, and also the control test [2].

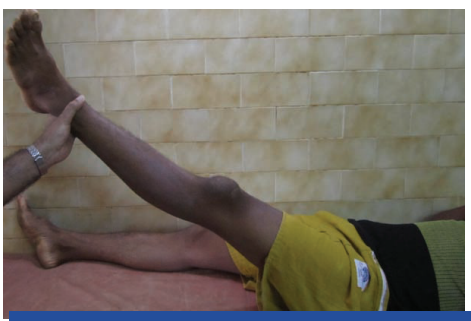
It was in 1884 de Beurmann studied the mechanism of the sign. He removed the sciatic nerve from a cadaver, replacing it by a piece of rubber tubing. On straight leg raising, the nerve elongated by 8 centimeters [1]. He explained that the pain produced was due to stretch of sciatic nerve. This theory was different from that of Forst who felt that pain was produced by the hamstring muscles compressing the sciatic nerve [1,2].

On reviewing the literature, a number of tests exist which are similar to or complement the straight leg raising test. Fajersztan described a variation of straight leg raising test called as 'crossed straight leg raising test' in which straight leg raising on the healthy side will provoke pain in the affected limb [3]. He also described a test which complements straight leg raising test in which the extended limb is raised to a point when pain is first experienced and then the limb is lowered with ankle dorsiflexed which fully manifests pain [1-3].

Lasègue's sign:

While performing the straight leg raising test, the examiner lifts the extended leg of a patient in a supine position. The test is said to be positive, when the patient experiences pain along the distribution of the lumbar roots [3]. The examiner stops the test when the pain is reproduced or maximum flexion is got. The basis of this test is that the pain is reproduced due to stretching of the lower lumbar and sacral roots when the leg is flexed.

Lasègue's test is a clinical test to demonstrate lumbosacral radicular irritation. Lasègue's sign is said to be positive if the angle to which the leg can be raised (upon straight leg raising) before eliciting pain is <45°. Other components have been added to the original description of the test.



[Table/Fig-1]: Straight leg raising test (Lasègue test). **[Table/Fig-2]:** Bragaad's test (dorsiflexion of foot). **[Table/Fig-3]:** Bowstring test (pressure on lateral popliteal nerve).

Reviewing the original literature revealed important facts. The Lasègue test performed in two steps. First step includes a passive straight-leg-raising test. Then the second step mostly includes "verification" maneuver, in which the leg is again raised but with the knee flexion. The first step will produce back and/or leg pain in the presence of low back pathology, the second step can be performed without the production of pain. Lasègue sign is said to positive with the production of pain along the distribution of lumbosacral roots on straight-leg raising and disappearance of pain knee flexion.

Recording angle at which pain occurs - a normal value would be 80^0-90^0 higher in people with ligament laxity. Then dorsiflexing the foot at this point of discomfort will cause additional pain (Bragaad's Test). By flexing the knee the buttock pain will get relieved and this would restore by pressing on the lateral popliteal nerve (Bowstring Test) [Table/Fig-1-3].

Lasègue test has high sensitivity (0.80-0.97) for a low lumbar disc protrusion but has a low specificity (about 0.4) as the test also found to be positive in ischialgia due to other causes. A crossed Lasègue test or Well leg raising test has been found to have a high specificity (> or = 0.90) for presence of a disc prolapsed [4-9]. There has been no literature evidence about the reversed Lasègue test and its aggravation by intra-abdominal pressure. The Lasègue test can be reproduced moderately (kappa about 0.55).

Severe root irritation is indicated when straight rising of the leg on the unaffected side produces pain on the affected side (Well leg raising test) [3,7,8].

A brief knowledge of pertinent anatomy of lumbar nerve roots and related structures is necessary to understand the concept of the test. The converging rootlets from anterior and posterior aspects of the spinal cord form the anterior and posterior nerve roots. As these nerve roots proceed towards the intervertebral foramen, they invaginate the dura and arachnoid forming funnel shaped depression and carry an individual and separate bilaminar sleeve of dura and arachnoid. This sleeve will be present as far as the ganglion and then becomes perineural sheath. The ventral and dorsal nerve roots form a spinal nerve which passes through the intervertebral foramen. The spinal nerve divides into ventral and dorsal ramus outside the foramen. In the lumbar region, the roots cross the disc above intervertebral canal by which they will exit. The root exiting the foramina is related to pedicle superiorly, ligamentum flavum posteriorly and vertebral body with disc anteriorly. These closely related structures can restrict the normal excursion of roots which is about 4 mm on average in various studies. While performing the straight leg raising, first the tension, then movement appears distally and then more proximally along nerve and nerve roots as the angle of the hip increases [10].

CONCLUSION

Relevant historical review with pertinent anatomy of lumbosacral nerve roots has been discussed. A positive Lasègue's sign is one when leg pain is reproduced or pain in the gluteal region passive straight leg raising. The test has a high sensitivity (0.80-0.97) for a low lumbar disc protrusion but has a low specificity (about 0.4). The crossed straight leg raising test may be more reliable for disc protrusion as it indicates severe compression and indicates a more centrally located prolapse.

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FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Oct 31, 2016**
Date of Peer Review: **Dec 19, 2016**
Date of Acceptance: **Feb 05, 2017**
Date of Publishing: **May 01, 2017**