Brief Report
Piriformis Syndrome: Assessment of Current Practice and Literature Review
Julie K. Silver, MD*
Wayne B. Leadbetter, MD†

A B S T R A C T

Although piriformis syndrome was initially described in 1928, it has remained a nebulous and controversial diagnosis. A literature review reveals that there is no consensus on the diagnosis or treatment of piriformis syndrome. In addition, a survey of 75 physiatrists revealed that whether the diagnosis of piriformis syndrome even exists is controversial. This survey and literature review examines the diagnosis and treatment of piriformis syndrome. The fact that it remains controversial is likely due to a lack of objective clinical trials.

Although Yeoman first described piriformis syndrome in 1928, it remains a controversial and nebulous diagnosis. Edwards described it as a “neuritis of branches of the sciatic nerve, caused by pressure of an injured or irritated piriformis muscle.” The anatomical relationships of the sciatic nerve as it relates to the piriformis muscle have been well-documented. Moreover, given the fact that any point along the path of a nerve is a potential point of compression together with the intimate relationship of the sciatic nerve and the piriformis muscle, it is logical to conclude that compression of the sciatic nerve by the piriformis muscle is a potential cause of buttock and low back pain. Bonica’s classic text, The Management of Pain, states that “Unfortunately, many patients with sciatic nerve entrapment are initially treated as if they had a herniated nucleus pulposus.” Steiner goes so far as to say that it is a common cause of back and leg pain and is a “major cause” of failed back surgery.

A review of the current literature and a survey of 75 physiatrists revealed that there is no consensus on whether the diagnosis of piriformis syndrome exists, and if it does exist, how to make the diagnosis. While it has been 70 years since Yeoman first described this syndrome, it remains a controversial diagnosis among health-care providers.

MATERIALS AND METHODS
To determine the frequency and consistency with which the diagnosis of piriformis syndrome is made, random surveys were mailed to 75 US physiatrists. Twenty-nine (39%) surveys were completed. Of the respondents, 11 (38%) said that >50% of their practice was outpatient musculoskeletal problems, 9 (31%) indicated that 11% to 50% of their practice was outpatient musculoskeletal problems, and 9 (31%) indicated that <10% of their practice was outpatient musculoskeletal problems.

RESULTS
Of the physiatrists surveyed, 21 (72%) stated that they thought the diagnosis of piriformis syndrome exists. Eight (28%) were not sure, and 2 (<1%) did not think the diagnosis exists. Of the 11 respondents whose practice consisted of >50% outpatient musculoskeletal conditions, 8 (73%) thought the diagnosis existed with certainty. Moreover, when asked whether piriformis syndrome was overdiagnosed or underdiagnosed, 16 (55%) physiatrists responded it was underdiagnosed, and 11 (38%) responded it was overdiagnosed. One respondent was unsure, and another respondent wrote in that it is overdiagnosed by

From the *Department of Physical Medicine and Rehabilitation, Harvard Medical School, Boston, Mass, and the †Orthopaedic Center PA and Shady Grove Center for Sports Medicine and Rehabilitation, Rockville, Md.
Reprint requests: Julie K. Silver, MD, Spaulding Neighborhood Rehabilitation Center at Framingham, 1291 Worcester Rd, Framingham, MA 01701.
Physiatrists and physical therapists, but is underdiagnosed by other health-care professionals.

Of the 20 physicians whose practice consists of >10% outpatient musculoskeletal conditions, 4 (20%) indicated that they never diagnosed piriformis syndrome, 11 (55%) diagnosed <10% of the cases per year, 3 (15%) diagnosed between 6 to 20 cases per year, and 2 (10%) diagnosed >20 cases per year.

Of the 29 physiatrists who responded to the survey, 20 (69%) thought there were consistent findings on physical examination confirming piriformis syndrome, while 9 (31%) responded that there were no consistent findings on physical examination. The two most commonly cited findings were a positive Freiberg's test (passive hip flexion and internal rotation) and tenderness to palpation of the piriformis muscle on rectal examination (Table).

### Table

<table>
<thead>
<tr>
<th>Question</th>
<th>No. (%) Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you think piriformis syndrome (PS) is a controversial diagnosis?</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>22 (76)</td>
</tr>
<tr>
<td>No</td>
<td>6 (21)</td>
</tr>
<tr>
<td>Not sure</td>
<td>1 (3)</td>
</tr>
<tr>
<td>Do you think PS exists?</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>21 (72)</td>
</tr>
<tr>
<td>No</td>
<td>2 (7)</td>
</tr>
<tr>
<td>Not sure</td>
<td>6 (21)</td>
</tr>
</tbody>
</table>

*One respondent chose both underdiagnosed and overdiagnosed.

†Three respondents chose not to answer this question.

Durrani and Winnie\(^9\) reported the results of a retrospective review of 26 patients with sciatica due to the piriformis muscle syndrome. Eleven patients were women and 15 were men for a male:female ratio of 1.4:1. The following tests were used to diagnose piriformis syndrome: 1) digital palpation of the piriformis muscle for reproducing sciatica, 2) rectal or pelvic examination to rule out lateral pelvic wall tenderness and reproduce sciatica, 3) Freiberg's and Pace's signs, and 4) tonic external rotation of the affected lower extremity.

While Durrani and Winnie stated that their patient population comprised individuals with "low back pain, sciatica, and negative radiological findings," only 18 patients had undergone CT scanning with 2 of these patients having positive findings of bulging lumbosacral disks. Moreover, of the 26 patients, 18 also underwent electrodiagnostic studies; 8 of these patients had positive findings consistent with radiculopathies. No mention was made of MRI studies; however, 6 patients did have negative myelograms. Clearly, this is not a patient population that was carefully chosen for their lack of objective evidence of radiculopathy. In addition, no mention was made of findings on physical examination other than the tests mentioned above.

While many authors advocate making the diagnosis of piriformis syndrome based on clinical evidence alone, some authors have suggested that radiographic imaging studies and evoked responses may be helpful.\(^10\) Fishman and Zybert\(^12\) have studied the use of the H-reflex in electrodiagnostic studies. H-reflexes were studied on 39 legs from 34 patients who met the following criteria: 1) positive Laségue sign at 45°; 2) tenderness at the sciatic notch; 3) increased pain within the distribution of the sciatic nerve with the leg in adduction, internal rotation, and flexion; and 4) electrodiagnostic studies excluding neuropathy and myopathy. They concluded that there was a significant delay in the H-reflex in the affected limbs. While
Fishman and Zyburt are quick to point out that the study had several shortcomings, this is the only study that systematically attempts to show that there may be some truth to the theory that "piriformis syndrome is a mechanical, functional impingement."

The preceding discussion is a summary of the few studies that have been done on this elusive topic; however, there are multiple case reports of piriformis syndrome in the literature. 7,11,13,24 While these cases are interesting, when analyzed together, they typify some of the difficulties in making the diagnosis of piriformis syndrome.

First, there is no clear consensus on what clinical presentation is characteristic. Pace and Nagle8 stated that piriformis syndrome can be confused with a herniated intervertebral disk; however, the two "should be distinguished by lack of neurologic deficit in piriformis syndrome." Steiner et al9 concurred and stated that "By far, the most important criterion in the differentiation of sciatic pain caused by piriformis syndrome is the lack of a true neurologic deficit." Yet of the 26 case studies reviewed, 8 (31%) had evidence of neurologic deficits on physical examination. 7,15,17-19,22 Moreover, the classic signs of pain with passive internal hip rotation and flexion and resisted abduction, described by Freiberg and Pace respectively, were reported in only 17 (65%) of the 26 patients. 7,11,13,15,18,20-24

Durrani and Winnie9 reported that all 26 patients they reviewed had severe tenderness of the lateral pelvic wall along with reproduction of their sciatica during pelvic or rectal examination and concluded that "reproduction of the sciatica upon rectal examination or deep digital palpation of the piriformis muscle appears to be diagnostic." However, rectal and pelvic examinations were rarely done in the cases reviewed in the literature.

A second discrepancy in the literature is whether piriformis syndrome can be diagnosed in the presence of positive radiographic findings of the lumbo-sacral spine or abnormal electromyographic studies. While many authors claim that these studies should be negative, 8 (31%) of the patients studied in case reports had abnormal imaging or electromyographic studies suggesting lumbar-sacral pathology.16-19,21,23 Moreover, while most authors agree that piriformis syndrome is much less common than other causes of back pain and is primarily a diagnosis of exclusion, 5 (19%) of the 26 case reports did not describe any radiographic or electromyographic studies of the lumbar-sacral spine. 7,13,22,24

Regardless of how the diagnosis is made, conservative treatment with stretching and local injections generally is advocated. Pace and Nagle8 reported that they successfully treated 45 patients with local piriformis muscle trigger point injections. In their retrospective review of 26 patients, Durrani and Winnie9 reported that all patients experienced pain relief within 5 minutes of infiltration of the piriformis muscle with local anesthetic. Pain relief reportedly lasted from 2 weeks to 2.5 years. However, of the 26 reported cases in the literature, 12 (46%) went on to require surgical intervention. 7,14-18,20,23

**CONCLUSION**

Clearly, based on this survey and a review of the literature, the diagnosis of piriformis syndrome is a confusing one. While some advocate that it is under-diagnosed, others do not believe it exists at all. While the literature contains many descriptions and case reports of piriformis syndrome, there is a paucity of clinical studies. This has led to confusion about whether the diagnosis even exists. Furthermore, clinicians who believe the syndrome exists often do not agree on how the diagnosis is made. There is a need for carefully controlled prospective clinical trials to substantiate both the diagnosis and treatment of piriformis syndrome.

**REFERENCES**

2. Edwards FO. Piriformis syndrome.