When one leg is better than two

By Annie Hayashi

SINGLE-LEG STANCE HELPS DIAGNOSE PELVIC INSTABILITY

Diagnosing late pelvic instability in patients can be quite challenging. Using standard radiographs and computed tomography (CT) scans to identify pelvic instability and displacement is difficult when the patient is in a supine, unstressed position.

At the 2007 annual meeting of the Orthopaedic Trauma Association, Paul Tornetta III, MD, presented the results of a study that demonstrated the effectiveness of single leg stance pelvic radiographs for diagnosing pelvic instability.

Double vs. single leg

The study was conducted over a 12-year period with 38 consecutive patients (24 women and 14 men) who saw one of two orthopaedic traumatologists. The average age of the patients was 46 years, and presentation times from injury to evaluation ranged from 6 weeks to 27 years.

Most patients' (19) problems were related to injuries; 7 patients had problems associated with childbirth; 8 patients had problems related to previous surgeries, including spinal fusions. All were referred for unremitting pelvic pain and a history suggestive of instability.

“We took a history, performed an examination, and determined pain levels based on a visual analog scale. Our protocol called for a standard series of radiographs (Fig. 1): a supine anteroposterior (AP) view, inlet and outlet pelvis images, a standing AP view, and bilateral single-leg views of the pelvis,” said co-author David C. Templeman, MD.

“The diagnosis of pelvic instability was based on the difference in height of the symphyseal bodies on alternate single-leg stance views,” explained co-author Jodi Siegel, MD.

Majority have instability

Two thirds (66 percent) of the patients demonstrated pelvic instability that averaged about 2 cm (range: 0.5 cm to 5 cm). This “displacement” was seen on the single-leg stance radiographic images as a difference in the heights of the symphyseal bodies. The single-leg stance views revealed instability that was not seen on the supine or the double-standing radiographs.

Single stance aids diagnosis

Although the authors concede “that treatment algorithms for this problem are not fully established,” they also point out that “the initial diagnosis of instability is greatly aided by the described radiographic series.”

“In this very select group of patients where the diagnosis is difficult and one is considering pelvic instability as one of the possible etiologies, single-leg stance views are substantially more helpful in making the diagnosis than any other method that is currently available,” concluded Dr. Tornetta.

Disclosure information for Drs. Templeman, Siegel, and Tornetta are available at www.aaos.org/disclosure. Annie Hayashi is the senior science writer for AAOS Now. She can be reached at hayashi@aaos.org

Fig. 1  Radiographic series illustrating the use of single-leg stance radiographs to diagnose pelvic instability. (Above) A standard double-leg stance AP pelvic-view radiograph demonstrates good alignment. (Top right) Single-leg stance radiographs of the same patient, standing on the left leg, show a 1 cm difference between the heights of the symphyseal bodies. (Bottom right) When the patient shifts to stand on the right leg, the difference is more pronounced (2.5 cm), indicating significant instability not apparent on the standard double-leg radiograph.