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Appearance of the weight-bearing lateral radiograph in retrocalcaneal bursitis

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Background and purpose  A retrocalcaneal bursitis is caused by repetitive impingement of the bursa between the Achilles tendon and the posterosuperior calcaneus. The bursa is situated in the posterosuperior corner of Kager’s triangle (retrocalcaneal recess), which is a radiolucency with sharp borders on the lateral radiograph of the ankle. If there is inflammation, the fluid-filled bursa is less radiolucent, making it difficult to delineate the retrocalcaneal recess. We assessed whether the radiographic appearance of the retrocalcaneal recess on plain digital (filmless) radiographs could be used in the diagnosis of a retrocalcaneal bursitis.

Methods  Whether or not there was obliteration of the retrocalcaneal recess (yes/no) on 74 digital weight-bearing lateral radiographs of the ankle was independently assessed by 2 observers. The radiographs were from 24 patients (25 heels) with retrocalcaneal bursitis (confirmed on endoscopic calcaneoplasty); the control group consisted of 50 patients (59 heels).

Results  The sensitivity of the test was 83% for observer 1 and 79% for observer 2. Specificity was 100% and 98%, respectively. The kappa value of the interobserver reliability test was 0.86. For observer 1, intraobserver reliability was 0.96 and for observer 2 it was 0.92.

Interpretation  On digital weight-bearing lateral radiographs of a retrocalcaneal bursitis, the retrocalcaneal recess has a typical appearance.

Patients and methods  24 patients (mean age 42 (15–73) years, 25 heels, 13 men) who had digital radiographs taken and who had undergone endoscopic calcaneoplasty for chronic retrocalcaneal bursitis from 2000–2008 were included (Figure 3). 1 patient had had surgery on both ankles on different occasions. Patients with previous hindfoot surgery were not included.

A control group matched for age and sex, consisting of 50 patients (mean age 42 (15–72) years, 59 heels, 30 men) with ankle problems not related to the hindfoot, was identified from our hospital archives from the same period. From the 10 individuals with bilateral radiographs (x of whom were control subjects), we selected 1 heel at random; thus, the study involved 74 heels (from 24 patients and 50 controls). All heels had been examined with lateral weight-bearing radiographs in 20 degrees endorotation, which was the standard procedure at our hospital.
Figure 1. A. Kager’s triangle with a normal appearance. B. The triangular lucency with sharp, smoothly curving borders is indicated with the dotted line. C. The arrowhead indicates the retrocalcaneal recess: the “bursal wedge” of Kager’s fat pad, which normally forms a radiolucent corner posterosuperior to the calcaneus.

Figure 2. A patient with a chronic retrocalcaneal bursitis. The retrocalcaneal recess has disappeared because of the less radiolucent fluid in the distended retrocalcaneal bursa.

Figure 3. Clinical image (A) and radiograph (B) of a patient with a retrocalcaneal bursitis. The retrocalcaneal recess is obliterated by a chronic inflamed bursa (arrow). C. Endoscopic view of a patient with a retrocalcaneal bursitis.
Pathology. Often, Haglund’s syndrome, Haglund’s disease, neal bursitis, a syndrome of combined bony and soft tissue

The terminology is confused when describing a retrocalcaneal recess of Kager’s triangle in retrocalcaneal bursitis. In addition, positive and negative predictive values (PPV and NPV, respectively) were calculated.

To test interobserver reliability, all radiographs were evaluated independently by 2 experienced observers: an orthopedic surgeon and a radiologist. They rated the radiographs positive or negative for the appearance of the retrocalcaneal recess (measurement 1). On a positive radiograph the retrocalcaneal recess of Kager’s triangle was less radiolucent, meaning that it was obliterated and had a whiter appearance. On a negative radiograph the retrocalcaneal recess was radiolucent, meaning that it had a black appearance and its borders were sharp. Both observers were blinded regarding the patients’ history. For intraobserver reliability testing, both observers evaluated the radiographs 2 weeks later, which were now arranged in a different order (measurement 2).

The results are essentially similar to increasing contrast in the photon energy can be used to clarify details of soft tissues. We obtained the lateral ankle radiographs during weight bearing and in 20 degrees of endorotation, for parallel alignment of the lateral and medial malleolus and to make sure the lateral and medial aspects of the talus overlapped to be able to see the ankle joint. This is not a standard procedure everywhere, and we do not know whether radiographs obtained in other ways would influence the appearance of the retrocalcaneal recess.

When digital techniques are not available, conventional radiography may still suffice. It is known that lowering the photon energy can be used to clarify details of soft tissues. The results are essentially similar to increasing contrast in the evaluation of a digital radiograph, which has been used in the past to assess patients with Achilles tendon problems (Fischer 1974a,b, Scotti et al. 1979).

In conclusion, the radiographic appearance of the retrocalcaneal recess confirms the clinical diagnosis of a retrocalcaneal bursitis and further diagnostic evaluations are not necessary.
Study design: MvS, MM, IS, and CvD. Collection and assembly of data: MvS, BM, MM, and CvD. Data analysis and interpretation: MvS, BM, and IS. Preparation of the manuscript: all authors.

No competing interests declared.


