



Case report

Is the Patellar Pubic Percussion Test useful to diagnose only femur fractures or something else? Two case reports

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ABSTRACT

In the literature, the utility of the Patellar Pubic Percussion Test (PPPT) to diagnose occult fractures of the femur is well described. However, up to now there are no studies demonstrating the efficacy of this test in recognizing fractures of the pelvis. In this two case report a positive PPPT allowed the therapist to recognize clinical conditions requiring caution, protecting patients from a potentially unsuitable treatment. Both patients had a negative pelvis and femur x-ray after a fall, but the clinical findings and a positive PPPT lead the physiotherapist to suggest further examinations. In these two cases the PPPT seemed to be a useful diagnostic tool to identify periacetabular, ileo-pubic and ischio-pubic ramus fractures. These findings suggest that PPPT could be positive even for a bone lesion in any of the transit points of the vibration, from the patella to the pubic symphysis.

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1. Introduction

Italian physiotherapists are considered independent practitioners who are responsible for their medical acts on their patients, both from a civil and criminal point of view (Ministero della Sanità, 1995; Corte di Cassazione, 1998; Stato Italiano, 1999, 2000, 2006; AIFI, 2011).

In Italy, the direct access of the patient to the physiotherapist, which is permitted by law to any independent practitioner, implies the need to arrive at a correct differential diagnosis, in order to avoid inappropriate treatments, possible damages or delays in the necessary treatment. In particular, when a patient reports a positive recollection for a recent trauma, the therapist always needs to carefully consider the case history as there may be bone lesions which make any physiotherapy treatment contra-indicated.

In the lower limbs, bone fractures frequently lead to a high level of disability and, as a consequence, to high costs in health care (Piscitelli et al., 2012). An early identification of the fracture reduces the probability of secondary associated diseases such as osteonecrosis, pseudarthrosis, misalignment, immobilization syndrome,

pulmonary embolism, deep vein thrombosis, etc (Boden and Osbahr, 2000; Clough, 2002; Gurney et al., 2006). Among the different lower limb fractures, the femoral ones are the most frequent, with a higher incidence in the elderly population. In an Italian analysis based on data collected in 2008, Piscitelli et al. (2013) counted 91,494 new cases of hip fractures in Italy, in the population over 40. The highest incidence was in women and the most affected age group was from 80 to 90.

Not infrequently, so called occult hip fractures are detected in the head/neck of the femur, amongst which the authors can include those injuries in which a first standard x-ray examination does not show any bone fracture. Patients with this kind of condition could consult a physiotherapist due to their persistent pain and disability. The physiotherapist need to be careful in assess these patients to avoid suggesting activities not indicated. At present in Italy physiotherapists cannot request any investigative examination, therefore it is important to take advantage of useful clinical tests to recognize a hip fracture in directly accessing patient. In this respect the medical literature supports the use of the Patellar Pubic Percussion Test (PPPT) for diagnosis of proximal femoral fractures (Adams and Yarnold, 1997; File et al., 1998; Tiru et al., 2002; Borgerding et al., 2007; Rahman et al., 2013). The PPPT has distant origins and has been cited by Lisfranc in 1824 (Borgerding

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et al., 2007). However, it was brought to light again only towards the end of the nineties as a useful instrument in clinical practice (Adams and Yarnold, 1997).

In a recent systematic review by Rahman et al. in 2013, the authors state that the PPPT shows an excellent diagnostic accuracy to identify or exclude occult hip fractures sensibility 0.96 (95% CI), specificity 0.86 (95% CI), LR + 6.73 (95% CI) and LR – 0.05 (95% CI) (Jawad et al., 2012). In their study of 1997 Adams and Yarnold found a 90.02 (χ^2 ; $P < 0.0001$) inter examiner reliability.

However, in none of the articles so far examined are there descriptions of the use of the PPPT in hip fractures involving the acetabulum or in fractures involving other anatomical sites from the kneecap to the pubic symphysis. This article presents two clinical cases where the physiotherapist was able to identify a peri-acetabular fracture and a fracture of the ischio-pubic ramus by using the PPPT in patients who had negative imaging reports.

1.1. Case 1

This case concerns an 84 year old woman, hospitalized in a home for the elderly with a diagnosis of right hemiparesis and pancreatic cancer. When arriving the patient was independent in walking. At dinner time, while trying to sit down in her usual place, she lost attention, missed the chair and fell on the floor, violently hitting her pelvis. After being helped by the staff she soon complained of the difficulties bearing weight on her right side and returned to her bed in a wheelchair. The next morning the staff doctor decided to send her to an Emergency Department for assessment. She was subjected to x-ray examination: left and right femur, front and lateral lumbosacral and pelvic views (see Fig. 1).

The report showed a visible decrease of osseous tropism. No fractures were observed but there were some right femoral neck irregularities of uncertain significance, for which different clinical correlation and possible further investigation were suggested. It also showed a prominent arthritic alteration in both trochanters.



Fig. 1. Pelvis X-ray case 1.

The next day the patient was examined by a physiotherapist, who noted pain at rest (VAS 3/10) and severe pain (VAS 8/10) in right inguinal area (see Fig. 2) during active spontaneous movement, suggesting mechanical pain. The patient was unable to weight bear on the right side due to pain and therefore a functional loading test was impossible. Based on these findings the physiotherapist decided to focus the assessment on the hip with the patient lying in bed. Observation of the patient in supine did not reveal any postural asymmetry. Passive hip mobility was partially reduced bilaterally with an empty end feel (patient asked to stop movement) in flexion, adduction and abduction. Extension wasn't tested because of the fear of the patient of moving to prone position. Right passive hip flexion and adduction were painfree. Right passive hip abduction was more painful than on the left side. Active movements were possible but weaker on the right than on the left side and in every direction. Active adduction and abduction were also painful. Resisted adduction on the right side was gently tested and the manoeuvre increased pain compared with active adduction not resisted. Resisted abduction was gently tested too, resulting negative for pain. The combination of active movements weakness, pain pattern, functional limitations, and anamnesis let the physiotherapist conjecture an impairment of the adductor muscles or a lesion of bone were these muscles insert. Finally, a PPPT was performed giving a positive outcome on the right side where the sound was more muffled than on the contralateral limb. This last test confirmed the physiotherapist's suspicion of a possible bone lesion and hence the patient was referred back to the doctor.

The physiotherapist reported her evaluation to the physician and in particular told him she considered it dangerous to let the patient return straight away to bearing weight. She suggested the patient have a further investigative examination. The doctor decided to let the patient rest for two days, waiting for a spontaneous pain reduction. Two days later the physician examined the patient again together with the physiotherapist. They noted no change compared with the data previously collected and thus decided to send the patient to the department of orthopedics with a suspected fracture but negative x-ray. The Tridimensional Computerized Axial Tomography (3D CAT) scan (see Figs. 3 and 4)

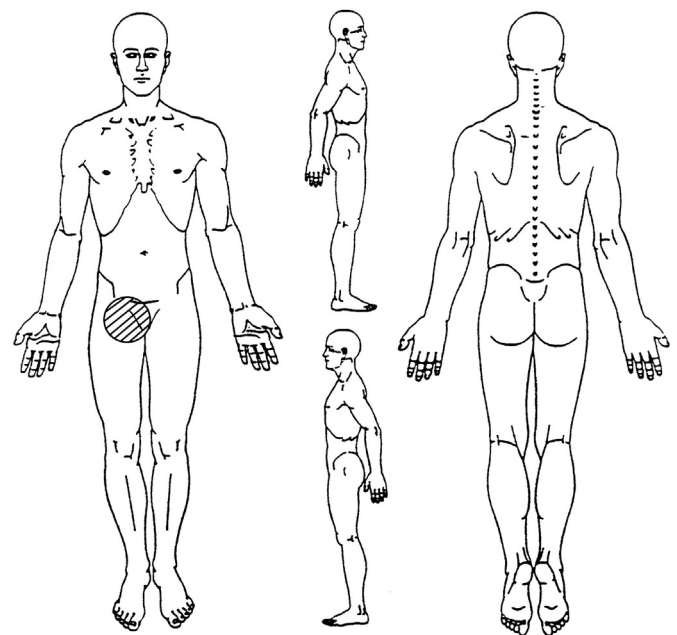


Fig. 2. Body chart case 1.

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