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Postoperatively, there were no complications. After 3 weeks in a velpeau-bandage, active and passive exercises were started under the direction of a physiotherapist. 6 weeks postoperatively, the patient had no pain. At 3 months, he was self-reliant in daily living and satisfied with the result.

## Discussion

There are many reports on vascular injury after proximal humerus fracture (Neer 1970, Tanner and Cofield 1983, Stableforth 1984). Although rare (< 5%), the commonest injuries are axillary artery and brachial plexus injuries (Bigliani 1991). No pseudo-aneurysm has been described.

In our case, the radial pulse after trauma was absent. After closed reduction under general anesthesia, the radial pulse was palpable again, oxygenation and capillary refill of the hand became normal. These 3 parameters were misleading. If a perioperative angiography had been done after reduction, the arterial lesion would have been identified immediately, and an adequate vascular repair could have been performed, combined with a stable fixation of the fracture or a hemiarthroplasty, resulting in a better function.

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# Spontaneous bilateral hip fractures in a patient with steroid-induced osteoporosis—a case report

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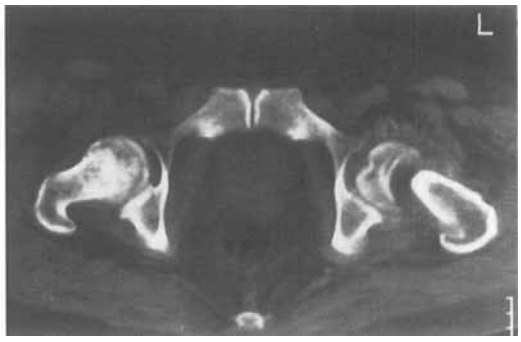
A 44-year-old man was referred to us because of pain in both hips for 3 preceding months. He had received daily doses of fluocortolone (ULTRALAN ORAL®, Schering Turkey equivalent oral dose 5 mg) 100 mg for 3 days, 80 mg for 3 days, 60 mg for 3 days, 40 mg for 3 days and 20 mg for 18 days—1200 mg in 30 days—after a cataract operation, because of cystic macular edema 9 months before. 6 months after steroid therapy, he felt pain in his left hip which was aggravated by weight bearing and sometimes kept him awake at night. Radiographs of the hips 1 month later were reported to be normal. The patient had to use walking aids and 1 month later he developed pain in the right hip too and was referred to us.

A detailed history excluded any previous illness, except the cataract operation and steroid therapy. There was no evidence of injury to the hip, epileptic disease or any convulsion, renal disease, fluoride treatment, alcohol abuse or any strenuous exercise. He was a smoker. The general physical examination was unremarkable, except for the hips, which had normal movement on both sides, but discomfort in full extension and flexion.

Complete blood count, erythrocyte sedimentation rate, alkaline phosphatase and calcium and phosphorus levels were all normal. Parathyroid hormone assay was normal, as also were serum thyroxine, T3 and T4 levels, and 24-hour urinary excretion of calcium and phosphorus. Serum creatinine, creatinine clearance and serum testosterone levels were also normal.

Radiographs revealed a transcervical fracture of the left hip with surrounding bony sclerosis and an undisplaced fracture at the base of the right femoral neck. Osteopenia was noted throughout the pelvis. A CT confirmed the presence of bilateral femoral neck fractures (Figure).





A 48-year-old man with bilateral femoral neck fractures.

Dual-energy x-ray absorptiometry of the lumbar spine and hips revealed values much below normal. Bone scintigraphy showed no blood supply to the left femoral head and decreased blood flow to the right femoral head. The patient underwent closed reduction and internal fixation of his right fracture, with 3 screws and hemiarthroplasty of his left hip fracture. Histologic examination of the femoral head showed osteoporosis, without evidence of osteomalacia. The postoperative course was uneventful. At 3 months, both hips had normal passive range of movement, with no pain. Radiographs showed minimal callus formation in the right hip. The longest follow-up is 6 months, the patient was pain-free at 3 months.

## Discussion

Bilateral fractures of the femoral neck are rare and usually etiologic factors have been identified. Most cases have concerned patients with trauma (Günal et al.1991), stress fractures (Annan and Buxton 1986, Çalpur and Aktas 1994) or hypocalcemic, epileptic, drug-induced or electrically induced convulsions (Powell 1960, Gerster et al. 1983, Taylor and Grant 1985, Madhok and Rand 1993). Osteoporosis, a well known risk factor for hip fractures, has not been reported as a cause of bilateral spontaneous femoral neck fractures.

Bone loss resulting in fractures of the axial and appendicular skeletons in patients receiving long-term glucocorticoid therapy is well-recognized (Lukert and Raisz 1994, Nevitt 1994). Osteopenia occurs in areas having a high content of trabecular bone, with a rapid turnover rate (Adinoff and Hollister 1983) and it results from a number of factors that adversely affect calcium homeostasis. Even low-dose steroids may have a deleterious effect on bone (Godschalk and Downs 1988).

Our patient demonstrates osteopenia and fragility of both hips after short-term high-dose steroids. Identification of high-risk individuals is important, so that these risk factors can be modified and fractures prevented.

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