Pelvic fracture: A complication of iliac crest bone grafting

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FACS

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PN Lammens, RS Richards, JH Roth. Pelvic fracture: A complication of iliac crest bone grafting. Can J Plast Surg 1995;3(2):93-95. The iliac crest is a common site for harvesting bone grafts. This paper describes an iliac wing fracture after bone graft was harvested from the iliac crest. The patient was treated nonoperatively with a good result. With minimization of the depth of the osteotomy cuts this complication may be avoided.

Key Words: *Bone graft, Complications, Iliac crest*

La fracture du bassin, un complication de la greffe osseuse à la crête iliaque

RÉSUMÉ : La crête iliaque est l'un des sites de prélèvement privilégiés pour la greffe osseuse. Cet article présente un cas de fracture de l'aile iliaque consécutive à un tel prélèvement pour greffe osseuse. La patiente a été traitée avec succès sans intervention chirurgicale. En réduisant la profondeur de l'ostéotomie, il est possible d'éviter ce genre de complication.

The iliac crest is a common site to harvest cancellous or cortical bone graft. Described complications include: pain at the operative site, nerve and arterial injury, peritoneal perforation, sacroiliac joint instability, herniation of abdominal contents through the defect in the ilium, and false aneurysms of the superior gluteal artery (1,2). Stress fractures of the ilium have also been described. This paper describes an unusual complication in which the iliac wing fractured two weeks after graft harvesting.

CASE REPORT

An 88-year-old female fell onto her outstretched hand and sustained an intra-articular, dorsally displaced left distal radius fracture with apex volar angulation (Figure 1). She underwent arthroscopic assisted reduction and internal fixation with K-wires and application of an external fixator (Figure 2). Cancellous bone graft was harvested from the left iliac crest and placed in the fracture through a limited open approach to the dorsum of the wrist.

Two weeks postoperatively, the patient was rising from a chair at home and experienced a feeling of motion in her gluteal region and intense pain was felt over the left hemipelvis. She had difficulty ambulating and a minimally displaced left iliac wing fracture was diagnosed (Figures 3,4). This healed in six weeks and the patient continues to ambulate normally.

Figure 1) Preoperative posterior-anterior (PA) (top) and lateral (bottom) radiographs show the dorsally translated, apex volar angulated, shortened, distal radial fracture

Figure 2) Postoperative PA (top) and lateral (bottom) radiographs show restoration of the tilt of the articular surface to neutral and restoration of radial length with establishment of negative ulnar variance

Figure 3) *AP pelvic radiograph of patient. The fracture through the ilium is seen (small arrows). The propagation of the fracture from the posterior osteotomy site is marked with the large arrow.*

Figure 4) *Diagram of the radiograph in Figure 3 showing the fracture (small arrows) and the propagation from the osteotomy site (large arrow)*

Figure 5) *Method of harvesting iliac crest bone graft. The cortical cap is hinged on the inner table and reflected to expose the cancellous bone to be harvested*

DISCUSSION

Our method of harvesting cancellous bone graft involves an incision made parallel to the iliac crest starting 2 cm posterior to the anterior superior iliac spine. Dissection is carried down to the periosteum. Using straight osteotomes, a cortical cap is made in the crest and retracted to expose cancellous bone (Figure 5). After harvesting the graft, the cortical cap is replaced and periosteum repaired. A drain is placed and the wound is closed. This technique is well described in the literature (3).

The most common reported complications of iliac crest bone grafting include: pain in up to 15% of patients, lateral femoral cutaneous nerve injury in up to 10% of patients, hematoma formation in up to 10% of patients, gluteal gait in up to 3% of patients, and infections in less than 1% (4,5). Fracture of the iliac wing has not been reported before. The mechanism of the fracture appears to be propagation from the osteotomy site (Figures 3,4). The fracture did not extend into the acetabulum. This patient did have impaired bone structure which possibly contributed to the fracture of the iliac wing.

We recommend minimizing the depth of the osteotomy cuts to decrease the stress riser produced.

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