Hernia through iliac crest defect post bone graft harvesting: a rare complication

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ABSTRACT

Bone graft harvesting from the iliac crest is a common procedure. However, this procedure may be associated with a number of minor and major complications leading to morbidity. Herniation through an iliac crest defect is a rare complication of this procedure. We report the case of a 65-year-old obese lady who developed hernia through the iliac crest defect after bone graft harvesting. This was managed by repair of iliac crest defect with a Titanium mesh and reinforcement of the abdominal wall defect with a synthetic mesh.

Keywords: Bone graft, iliac crest, complication, hernia, hernia repair

INTRODUCTION

Bone grafting is a common procedure performed in Orthopaedics and Maxillofacial surgery. The indications for bone grafting may be augmentation of bone regeneration or restoration of bone defects. The most common source for autologous bone graft is the iliac crest (ICBG). It may be harvested from the anterior or the posterior iliac crest. [1, 2] Complications of ICBG have been widely recorded and can be a cause of considerable morbidity. Hernia through an iliac crest defect following bone graft harvesting is a major but very rare complication. [1, 2]

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CASE REPORT

A 65-year-old obese lady presented with swelling over the left flank (Figure 1). This was associated with frequent abdominal pain and discomfort. The patient had undergone bone grating for a nonunion of the left proximal femoral fracture 4 months prior to the onset of complaints. The bone grafts were harvested from the left iliac crest.

On examination there was evidence of bowel herniation lateral to the left iliac crest. Plain radiograph confirmed herniation of bowel loops through the iliac crest bone defect created after bone graft harvesting (Figure 2a). A computed tomography (CT) scan of the pelvis confirmed the bone defect (Figure 2b).

At surgery the iliac crest defect was noted and repaired by use of titanium mesh

Fig. 1: Left flank swelling at presentation.

held in place by two screws inserted into the anterior and posterior edge of the defect. The defect in the abdominal wall was repaired and reinforced using synthetic mesh. Post-operative radiograph confirmed obliteration of the defect in the iliac crest with the titanium mesh (Figure 3).

At follow-up three years after the initial surgery, the patient had recurrence of hernia through the abdominal wall but this was not associated with any significant symptoms. Hence no further surgery was advised.

DISCUSSION

Minor complications of ICBG, which result in no long-term disability, include donor site pain, superficial sensory nerve injury, superficial haematoma and superficial infection. Major complications defined as those requiring repeat surgery, readmission or long-term disability include, deep haematoma, incisional hernia, permanent vascular or nerve injury, ureteral injury, donor site fracture, sacro-iliac joint injury and deep infection. [2] Recent reviews have reported the rate of major complications after ICBG between 0.76 to 25% [1] and 1.8 to 10%. [2]

The occurrence of hernia through iliac crest bone defect was first reported by Oldfield in 1945. [3] In a series of 414 cases it was seen in two patients (0.5%) [4], while an incidence of 5 and 9% has been reported by other authors.[5, 6] Most reports have been in the form of individual cases [7-15], or short case series. [4-6, 16-18]

The presenting symptoms include development of soft tissue swelling and pain. The content of the hernia is most often the bowel loops though liver herniation has also been reported. [12] The patients may present with volvulus or strangulation. [7, 14] The onset of symptoms is variable, between 24 days to 15 years. [14, 16]

Most authors have reported findings of plain radiograph and CT scan. Plain radiograph shows the bone defect and frequently

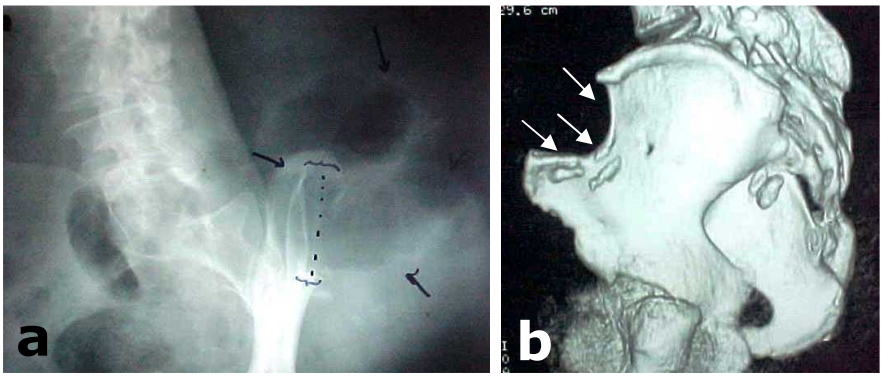

Fig. 2: a) Plain radiograph of pelvis confirming defect in iliac crest (Brackets with broken line) and bowel in hernial sac (arrows), and b) a reconstructed CT image of the pelvis showing the defect in left iliac crest (arrows).

Fig. 3: Post-operative radiograph of pelvis showing repair of iliac crest defect with titanium mesh.

intestinal loops outside the wing of ilium as was seen in this case. [16] CT scan is used to define the defect in the iliac crest and contents of the sac. [18]

A variety of procedures have been used to obliterate the defect in the iliac crest. [15] These include transfer of anterior superior iliac spine inferiorly and posteriorly with muscle and fascia, use of gluteal fascia and lumbar fascia. The most commonly used method is reinforcement by synthetic mesh. [6, 11, 15] Suture bone anchors have also been used to repair of the hernia. [15] The use of autogenous grafts reinforced by Titanium mesh was reported by Stevens and Banuls. [8] More recently laparoscopic repair of such hernias using polytetrafluroethylene mesh has been reported. [13]

Avoiding full-thickness graft harvesting, preservation of the inner table of iliac crest and secure reattachment of fascial layers and tendons is recommended to avoid development of hernia through the iliac crest defect. [11] In an obese patient with poor musculature and a large, full thickness defect, use of polypropelene mesh during primary surgery is advocated. [17]

In conclusion, we have reported a rare complication of bone graft harvesting. The bone defect can be successfully reconstructed using a Titanium mesh. Attention should be paid to repair of the associated abdominal defect particularly in obese and elderly patients.

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