

# Massive Bleeding During Open Biopsy of a Pelvic Plasmacytoma

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**M**assive bleeding can occur during open biopsy of a vascular bone tumor. Solitary and multiple myelomas are plasma cell malignancies characterized by a high capacity to induce osteolytic bone lesions caused by increased osteoclast formation and activity.<sup>1</sup> Multiple myeloma and solitary plasmacytoma of bone might bleed extensively given the vascular pattern of these lesions.

Here we present the case of a man who experienced massive bleeding during open biopsy of a solitary pelvic plasmacytoma. The authors have obtained the patient's written informed consent for print and electronic publication of the case report.

## CASE REPORT

A man in his mid-30s was admitted to our hospital because of left groin pain of 6 months' duration. The pain initially was mild (rated 2-3 on a 10-point scale) and occurred nightly but worsened and became constant; it was not exacerbated by activity. The man had lost 3 kg of weight over 6 months and had generalized fatigue. On physical examination, there was tenderness over the superior pubic ramus and the symphysis pubis. There was no palpable mass or lymphadenopathy. Neurologic examination and circulatory status of the lower extremities were normal. Laboratory results included hematocrit of 40.1% and thrombocyte count of 285/mm<sup>3</sup>. Bleeding time was 5.4 minutes (normal range, 2-6 minutes), partial thromboplastin time was 31.5 seconds (normal range, 27-32 seconds), prothrombin time was 11.4 seconds (normal range, 9.5-13 seconds), and international normalized ratio was 1.11 (normal range, 0.8-1.2). The other biochemical parameters were within normal limits.

A pelvic radiograph showed a large lytic lesion of the left superior pubic ramus with extensive destruction of the cortex (Figure 1). Magnetic resonance imaging (MRI) showed a malignant-looking lesion infiltrating the soft tissues (Figures 2A, 2B). T<sub>1</sub>-weighted images showed a large destructive lesion of the left superior pubic ramus presenting an isointense hyperintense signal with respect to the skeletal muscles and heterogenous structure. The

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lesion included areas of signal hypointensity. Technetium-99 (<sup>99</sup>Tc) bone scan revealed relative photopenia at the left superior pubic ramus (Figure 3). Bone survey and <sup>99</sup>Tc bone scan revealed no further lesions. Computed tomography and abdominal ultrasonography findings were also normal. The Tumor Council at our hospital decided on needle biopsy for the patient. A core needle biopsy was performed with a Tru-Cut 18-gauge biopsy needle (Gallini Medical, Mantova, Italy) with the patient under local anesthesia. He had no bleeding during or after the biopsy. Unfortunately, the Pathology Department was unable to make a diagnosis with the biopsy material, so we decided to perform an open biopsy.

Given the definitive surgery being considered, a short suprainguinal transverse incision was planned to expose the left pubic bone. We thought the incision would be in continuity with that of the definitive surgery that might be needed. Initially, the external oblique aponeurosis was incised and the left spermatic cord and round ligament identified. On exposure, the superior pubic ramus was almost absent, and the aponeurotic insertion of the rectus abdominis was easily separated from the remaining pubic bone. The anterior portion of the soft-tissue mass was easily exposed without any bleeding. When a piece of the soft-tissue mass was removed, the mass bled profusely under pressure. Bleeding was controlled with pressure and packing but recurred when the packing was removed 30 minutes later. To control the bleeding, we had to change plans and extend the biopsy incision toward the external iliac vessels (we used an oblique incision similar to an ilio-



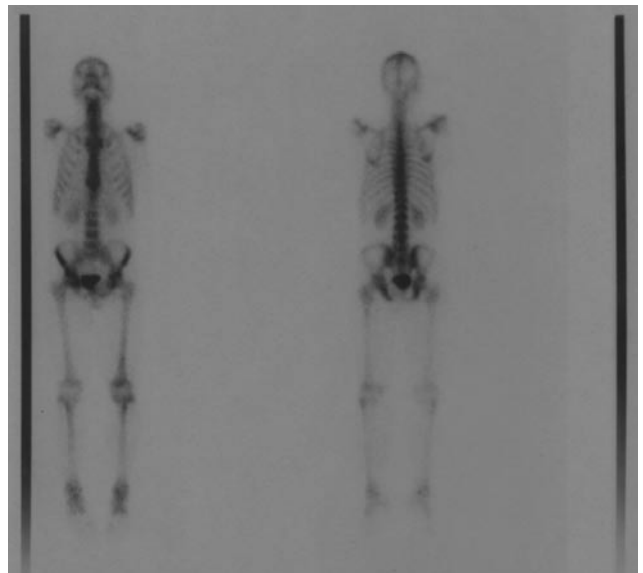
**Figure 1.** Radiograph shows lytic bone lesion of left superior pubic ramus.



**Figure 2.** (A) T<sub>1</sub>-weighted axial image (repetition time/echo time = 498/7 ms) shows infiltrating mass of isointense signal with respect to skeletal muscles. Arrow shows focal area of decreased signal within mass, representing heterogenous nature of lesion. (B) Fat-suppressed T<sub>2</sub>-weighted coronal image (repetition time/echo time = 2500/80 ms) shows heterogenous mass of markedly increased signal. Focal hypointense signal area is visible within lesion.

inguinal incision). Abdominal muscle fibers were bluntly divided near the iliac crest, and the peritoneum was incised. Two small femoral artery branches supplying the tumor site were ligated, and the external iliac artery was clamped for a while to control the bleeding. During surgery, blood pressure was very unstable, and hematocrit was below 20% before a massive blood transfusion. Hemostasis could be obtained only after subtotal resection of the tumor. Surgery lasted approximately 3 hours. The patient was given 16 units of blood and 2 units of fresh-frozen plasma during the operation. The wound was closed after drain placement.

For 3 days, the patient was followed up in the intensive care unit, where he was transfused 8 extra units of blood and 4 units of fresh-frozen plasma. In the 24 hours after surgery, blood totaling 1000 mL was collected in the abdominal drain. The drain was then closed to evaluate whether a tamponade effect would reduce drainage. Subsequently, each time the drain was occasionally opened, there was no sign of additional drainage from the tumor site. The patient's



**Figure 3.** Anteroposterior and posteroanterior technetium-99m images (late static) show relative photopenia at left superior pubic region.

vital signs were stabilized on postoperative day 2. Even though prophylactic antibiotic (cefazolin 1 g) was administered after surgery, drainage was prolonged because of a wound infection. The wound culture samples revealed *Acinetobacter* infection, which responded well to parenteral sulperazone treatment. There were no complications of the massive blood transfusion or wound problems. The patient was followed up by the Hematology and Radiation Oncology Unit at our hospital.

## DISCUSSION

This unusual case of pelvic solitary plasmacytoma draws attention to the massive, life-threatening bleeding that can occur during an open biopsy. The coagulation abnormalities resulting from suppression of clotting factors (II, V, VII, VIII) are well documented in myelomas, but the excessive vascularity of these lesions is underreported.<sup>1-4</sup> Presenting a case similar to ours, Wright<sup>2</sup> described an old man who experienced massive bleeding during biopsy of a pelvic plasmacytoma. Wright recommended aortography before biopsy for patients with large solitary lytic pelvic lesions. Rubins and colleagues<sup>3</sup> reported on 2 patients with osseous plasmacytoma of sternum and sacrum, respectively. These patients bled massively after biopsy. Our case report confirms Wright's contention that radiologic evaluation must be supported with routine aortography for pure lytic lesions of the pelvis before any surgical intervention. Despite significant advances in imaging techniques in recent years, biopsy is still warranted for accurate diagnosis of most lytic bone lesions.

Biopsy for musculoskeletal tumors should be performed only after clinical, laboratory, and radiographic examinations. MRI is very important in evaluating the possibility that a tumor lesion is vascular and thus subject to devastating complications during biopsy. T<sub>1</sub>-weighted images that

show persistent signal hypointensity, heterogenous structure, and areas of decreased signal intensity within the tumor site are clues to the extent of vascularity, as in our patient's case. MRI can also assist in biopsy planning by distinguishing hemorrhagic areas within tumor lesions.

Other bone lesions, such as aneurysmal bone cysts, metastatic carcinomas (renal cell carcinomas), and hemangiomas, also might cause serious bleeding during surgery (biopsy or excision).<sup>4</sup> We think that biopsy of pure lytic lesions of pelvic bones should not be underestimated and that surgeons must prepare for extensive surgery, which might include ligation of major arteries. Fortunately, tumor site bleeding responded well to pressure and packing in reported cases of plasmacytomas.<sup>3</sup> Therefore, we suggest taking these actions rather than extending surgery when a tumor first starts to bleed excessively. With pressure and packing, it is possible for the patient to be stabilized and intubated. Alternatively,

the patient might be sent to interventional radiology for embolization of the lesion.

### AUTHORS' DISCLOSURE STATEMENT

The authors report no actual or potential conflict of interest in relation to this article.

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