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Ultrasound Guided Hematoma Block: A Novel Use of Ultrasound in the Traumatized Patient

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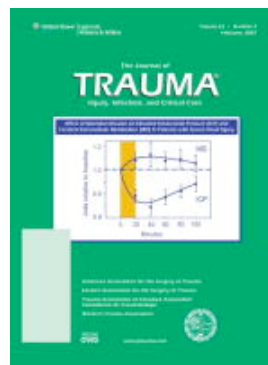
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Outline

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A 32-year-old woman presented to the emergency department (ED) after falling on her outstretched left hand 1 hour earlier. Physical examination was significant for tenderness and deformity of her distal left radius. The neurovascular examination was normal and no open wounds overlaid the fracture site. Radiographs revealed a distal radius fracture (Fig. 1). Closed reduction was successfully performed by the emergency physician after an ultrasound-guided hematoma block (Fig. 2). The patient tolerated the procedure well, without the need for intravenous sedation or pain control, and was referred to an orthopedic surgeon for follow up.

Graphics

- [Fig. 1](#)
- [Fig. 2](#)



Fig. 1. Anteroposterior radiograph of radius fracture.

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Fig. 2. Ultrasound of radius fracture site.

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The procedure is best performed with a high-frequency linear probe, such as the 5.0- to 10-MHz transducer used in this instance. The site is prepared in the usual sterile fashion. A generous amount of sterile conducting gel is placed over the suspected fracture site to allow the transducer to be gently placed upon it. We have found that laying the transducer sagittally over the long axis of the bone provides the best images. By placing the fracture site in the center of the image, one can easily place a needle into the hematoma by entering the skin in the middle of the transducer. Similar to ultrasound-guided venous access, the needle often will not be directly visualized.

The hematoma block is an effective and safe means to provide analgesia before the reduction of fractures.¹⁻⁴ Orthopedic surgeons and emergency physicians have long recognized its value in the management of fractures commonly seen in the ED. It has been used in a variety of fracture sites including wrist, forearm, ankle, and femur. It is safe and effective in both adults and children, with the typical injected dose of local anesthetic not resulting in toxic blood levels. Although it is usually a relatively simple procedure to perform, it may at times be difficult. In our experience, some of this difficulty occurs when body habitus or traumatic soft-tissue swelling precludes the accurate palpation of the exact fracture site.

Emergency physicians now recognize the utility of ultrasound in the emergency department. Recently, its use for fracture identification has been suggested.⁵ We could find no citations in the literature on its use in assisting with hematoma blocks. We have found that this technique has enhanced our ability to successfully perform this procedure. Our group has used this technique over 30 times, with many of us performing every hematoma block under ultrasound guidance. Our anecdotal experience suggests that although hematoma block is generally a very safe procedure, ultrasound provides a means to make it even safer because the procedure may be performed successfully on the first attempt, without the risk of placing the anesthetic in an incorrect location requiring repeated attempts with the concomitant risk of complications. Although further study is needed, this may be similar to other areas of medicine (e.g., central venous lines) where ultrasound guidance has been proven safer and more efficacious than a "blind" approach.⁶

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