Ultrasound diagnosis of the phalanx fracture not designated by plain radiographs.

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To the Editor,

A 19-year-old man was evaluated due to pain in his left index finger. Medical history yielded a roller press injury to his left hand three weeks previously. Physical examination revealed pain with the palpation and motions of the second proximal phalanx, swelling and normal range of motion. Plain radiographs were not remarkable (fig 1A,B). Longitudinal and axial ultrasound (US) images clearly designated cortical collapse at the dorsal surface of the proximal phalanx (fig 1C,D) compared with the other side (Fig 1E,F). Overall, the patient was diagnosed with non-displaced stable fracture of the proximal phalanx and he was treated with static splinting for three weeks.

As a rule plain radiographs are the initial imaging modality for the visualization of bone injuries [1,2]. Nonetheless, in case of high clinical suspicion – if the plain radiographs are normal –, advanced imaging modalities are usually required. Computed tomography and magnetic resonance imaging (MRI) are also utilized to provide a better evaluation of the fracture for optimal treatment planning when a more detailed evaluation of the fracture is needed. For instance MRI should be performed to provide the precise diagnosis of stress fractures in cases with normal radiographs [1]. On the other hand, US has become widely used and has increasingly gained importance for the injuries of the musculoskeletal sys-

Fig 1. Normal X-ray imaging of the second finger on anteroposterior (A) and lateral (B) views. Longitudinal (C) and axial (D) ultrasonographic views illustrate the cortical collapse at dorsal aspect of the proximal phalanx (arrow) when compared with the right side (E, F).

tem with several advantages (lack of ionizing radiation, patient friendly, ease of application, repeatable, cheaper than MRI and computed tomography, non-invasive, provides multi-planar and dynamic imaging). Likewise, US is very likely to detect cortical lesions of the bone [3].

Accordingly, we suggest that US is a convenient imaging modality to visualize bone injuries for the initial evaluation if the plain radiographs are normal or not available.

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Received 10.08.2015 Accepted 21.08.2015

Med Ultrason

2015, Vol. 17, No 4, 566-569, DOI: 10.11152/mu.2013.2066.174.mty

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Ultrasound assist devices – are they useful for interventions?

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To the Editor,

Interventional procedures performed using real time ultrasound (US) guidance have improved safety and outcomes in a variety of medical specialities. There are variations in technical and accuracy aspects despite using US. US assist devices are suggested to improve these individual variations [1-4]. Each assist device is designed to reduce technical variability, help in rapidly delivering accuracy, and provide clinical confidence in hitting the target area by increasing stability. It works as a vital component for guiding a needle or catheter during ultrasound procedures in order to perform a block or precise needle placement. However, the use of US assist devices and efficacy in anaesthesia has not yet been investigated. We carried out a survey on the usage of US assist devices and their efficacy for interventional procedures. Our aim through this survey was to establish views and practice regarding the usage of US assist devices and quantify efficacy among the users.

A survey questionnaire was sent out to over 500 doctors via the survey monkey website. It consisted of a qualitative part to establish the demographics of the setting of the hospital, speciality using US and indications of US interventions, and awareness of US assist devices. For the respondents who had experience of using US assist devices, further questions quantified the efficacy and usefulness of such devices. We received 302 responses. Analyses of responses are detailed in figure 1-3.

Received 10.08.2015 Accepted 02.09.2015

Med Ultrason

2015, Vol. 17, No 4, 567-569, DOI: 10.11152/mu.2013.2066.174.uad

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Fig 1. Setting of Hospital

Fig 2. Indications of USG interventions in clinical practice

Fig 3. Has use of USG assist device influenced or altered the outcome in your practice?

The survey showed that good awareness of ultrasound assist devices exists amongst the users of US; however, only a small proportion used it for clinical purposes. The users of the assist devices found that they increased the ease of interventional procedures and reduced complications.

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Education in musculoskeletal ultrasonography: training in interventional procedures on a swine model

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To the Editor

Ultrasonography is of great help in performing invasive procedures in rheumatic patients. Unfortunately the technique is recognized for its long learning curve – at the top of this curve are interventional ultrasound procedures. The procedures are reserved for advanced sonographers implying an increased risk of traumatic lesions or an inappropriate delivery of the therapeutic agent due to a needle malposition. This is especially true in narrow areas like small joints or tendon sheaths. To improve the accuracy of their maneuvers, interventional sonographers

need to practice on models that recreate as accurately as possible the real world conditions in terms of consistence, resistance at needle penetration of the tissue and structural diversity. The turkey breast or mozzarella based models are widely used but their structure has a poor similarity with the human tissue. Commercial phantoms are available but they are expensive and limited in options. Swine models are largely used in other instances and some trainers use them for teaching surgical techniques.

We developed and tested an inexpensive swine foot model in a large interventional teaching exercise aimed to prepare intermediate level musculoskeletal sonographers for their first guided maneuvers. The pig foot was selected for its admirable similarity in terms of structure and consistency with human hand. The model offers a dorsal “carpal” zone with similar small joints, at least two tendons surrounded by a fibrous tunnel (located on the ventral side) that create a tendon & synovial appear-

Received 05.10.2015 Accepted 10.10.2015

Med Ultrason

2015, Vol. 17, No 4, 568-569, DOI: 10.11152/mu.2013.2066.174.emk

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Fig 1. a) Swine longitudinal tendon insertion resembling extensor elbow insertion in the lateral compartment; b) Swine transverse tendons surrounded by separate fibrous tunnels resembling hand flexor tendons; c) Swine metacarpal bones in transverse plane resembling human acromio-clavicular joint; d) Aspect of cement solid deposit created in swine tendon model (arrow). This deposit was used for tenofenestration and barbotage practicing

ance, several small interphalangeal joints guarded by tendons and even sesamoid bones. In addition we prepared the swine feet for barbotage training by injecting in their tendon and muscular part two different cement based suspensions in order to recreate the “tooth paste” and “solid block calcification” appearance. For solid block

deposits a waterproof, rapid setting assembly cement was used (Ceresit™ CX5). This cement has a fast application time of about 4 minutes and needs to be placed in the selected position within this interval. For “tooth paste” appearance we mixed half CX5, 30% medical not-hydrated gypsum and water – this composition is less waterproof.