Case Study

OSTEOMYELITIS OF SACRUM

Patient Age / Gender . 80 y/o black male
Ulcer / Wound Type . Stage IV Pressure Ulcer
Location . Sacrum
History . Patient has a history of a non-healing pressure ulcer of the sacrum. Patient had been treated for over two years using numerous wound dressings, an off loading wheelchair cushion, and specialized beds. Patient was sent for evaluation and management of the pressure ulcer.

DIAGNOSIS

Wound-Mapping® Ultrasonic Scan of the pressure ulcer revealed some superficial undermining in and around the wound surface. A sinus tract was noted running from the right side of the wound down and to the left side of the sacrum. The sinus track could be seen leading to bone where a broached and invaded perosteal surface was clearly visible. The patient had a positive osteomyelitis of the sacrum that was not diagnosed until viewed using the Wound-Mapping® scanning method. It is also of note that probing of the wound using standard technique (sterile Q-Tip) did not reveal the sinus tract presence let alone the length and course of its path down to bone.

TREATMENT

Once evidence of osteomyelitis was discovered using the Wound-Mapping® technique, an ultrasound guided aspiration in the region of interest was performed. The sampled aspirate was sent to the lab to be cultured so that the bacteria causing the infection could be identified. Ultrasound guidance allowed a needle route that was not through the wound but via a clean entry point and through healthy tissue. This allowed a single strain of bacteria to be cultured and sensitivities to antibiotic therapy to be obtained. The infection was successfully treated using oral antibiotics and the patient went on to full closure. Discovery of the infection and subsequent treatment were only made possible using the Wound-Mapping®.
The Hitachi Aloka Noblus is a premium portable ultrasound system that supports multiple applications over a wide range of clinical environments.

All circuits related to image quality are fully digital which allows for high spatial resolution, high contrast resolution and a wide dynamic range. The removable console contains an internal battery allowing examinations to be performed even when an external power source is not available. Noblus also supports wireless LAN for DICOM communication.

A full complement of linear, convex and phased array transducers are available for Noblus allowing the ultimate in clinical flexibility.

**CLINICAL USES**
- Shared Services
- Emergency Medicine
- Pain Management
- Wound Care

**APPLICATIONS**
- Radiology
- Interventional Radiology
- Obstetrics, Gynecology
- Abdominal
- Peripheral Vascular
- Urology
- Musculoskeletal
- Pediatrics
- Cardiology
- Small Parts

**POWER REQUIREMENTS**

<table>
<thead>
<tr>
<th>Input</th>
<th>240/120 V @ 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Consumption (Standard Components)</td>
<td>250W</td>
</tr>
<tr>
<td>Power Consumption (Using Cart)</td>
<td>550W</td>
</tr>
</tbody>
</table>

**ENVIROMENT**

| Temperature | 10 ~ 35°C |
| Relative Humidity | 30 ~ 85% (No Condensation) |
| Atmospheric Pressure | 700 ~ 1060 hP |

**PHYSICAL DIMENSIONS**

- **CONSOLE**
  - Weight: 19.9lbs (9kg)
  - Dimensions: 13.8” x 20.2” x 15.0”
  - Display: 15” Non-interlaced HD LCD
  - Pixels: 1,024 x 768
  - Display Range of Motion:
    - Swivel Angle: +/- 90 deg.
    - Tilt Angle: -90 ~ +30 deg.

- **CONSOLE WITH CART, PROBE EXTENSION UNIT AND B&W PRINTER**
  - Weight: 88.2lbs (40kg)
  - Dimensions:
    - 20.5” x 20.4” x 44.3” (Height is 52.2” in fully raised position)

**STANDARD IMAGE QUALITY FEATURES**

- **HI Definition Tissue**
  - Harmonic Imaging (HdTHI)
  - Extends penetration and increases resolution by transmitting a wide band pulse and receiving the second harmonic and sub-harmonic signals across the entire spectrum of the probe bandwidth.

- **HI Compound Imaging (HI Com)**
  - Is especially beneficial for improving the visibility of luminal structures. HI Com transmits and receives ultrasound beams in various directions and superimposes the resultant images in real time.

- **Adaptive Imaging (HI REZ+)**
  - Utilizes Hitachi Aloka’s high speed digital processing engine to extract structures and emphasize tissues without reducing frame rate.

- **Fine Flow**
  - Displays high-definition, high frame rate color doppler images down to fine vessels with minimal blooming.

**STANDARD WORKFLOW EFFICIENCY**

- **HI Support**
  - Reduces examination time by allowing time gain compensation, B mode gain, base line, pulse repetition frequency and doppler gain, etc. to be adjusted with a single touch.

- **On-Board User Manual**
  - User Manual is integrated with the application allowing for convenient user guidance.

- **Examination Data Management and Storage**
  - Noblus stores full-fidelity images, measurements, and other data internally and can also copy information to USB and USB HDD.

- **Auxiliary Monitor Support**
  - Noblus includes a DVI-D connector for auxiliary monitor attachment.

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