



Clinician-Performed Point-of-Care Ultrasound in Hyperbaric & Wound Care Practice

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BACKGROUND

- Goal-directed limited ultrasound is standard of care in a growing number of non-radiology clinical disciplines.
- The performing clinician...
 - Knows the patient
 - Knows what's he's looking for
 - Obtains an immediate answer
 - Avoids patient radiation
 - Improves patient satisfaction
 - Bills for the study
- Portable technology facilitates utilization.
- The learning curve for the novice is "reasonable."
- Many clinical questions in HBO and Wound Care can be resolved by goal-directed bedside ultrasound.



Cutaneous Cyst/Abscess Assessment

Fluid collections yield a predictable dark homogenous sonographic appearance distinguishing them from surrounding soft tissue.



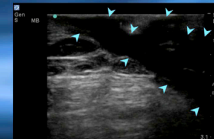
Nonhealing draining incisional wound demonstrating fluid collection on point-of-care ultrasound. Bedside aspiration followed by I&D yielded > 50 cc of thin cloudy fluid. En bloc excision of cyst pannus was later performed in the O.R.

Assessment of tunnels and their treatments

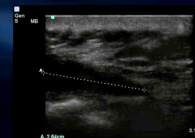
Imaging principles are similar to those for abscesses. Tunnel resolution can be followed in three dimensions with less disruption than with blunt probing. Inappropriate cavitation can be diagnosed.



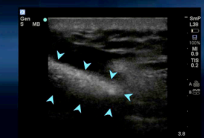
Superiorly directed left buttock wound tunnel



Size, shape, and course of tunnel is demonstrated



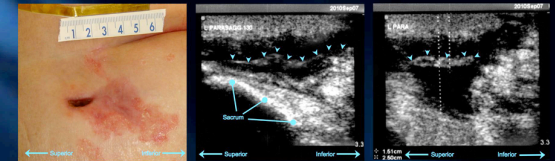
Tunnel terminus is located



V.A.C. foam placement is optimized

Assessment for Retained Foreign Bodies

The Wound Care service was consulted 6 weeks after hospital discharge for the following left side non-healing sacral decubitus ulcer (SDU).



SDU on initial consult. Saggital ultrasound views reveal a superiorly directed tunnel containing a serpingous atypical echo with echodensity similar to soft tissue

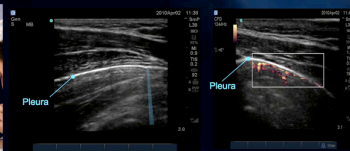


Using Noyes forceps under sonographic guidance, a substantial length of retained gauze ribbon was removed. By patient report, such was last utilized when he was on the inpatient unit. The wound healed unevenly thereafter.

SELECTED EXAMPLES

HBOT Pneumothorax (PTX) Assessment

Normal respiratory sliding of visceral on parietal pleura reliably produces characteristic sonographic findings. An interposed PTX will reliably quash these findings.



High risk pt: Child with CO-toxicity, burns, (& occult trauma?) after interhospital transfer

Pleural-based migratory vertical "comet tails" [left image] and "power slide sign" on Doppler [right image] rule out PTX in a given chest region

Child proceeds to HBO chamber without repeat CXR

CONCLUSIONS

- Point-of-care ultrasound has many applications in current hyperbaric and wound care practice.
- Potential future uses under investigation include elastography and microbubble contrast sonography for assessment of angiogenesis and new tissue deposition.