ULTRASOUND NEWS

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Practice Parameter | Free Access

AIUM Practice Parameter for the Performance of Diagnostic and Screening Ultrasound of the Abdominal Aorta in Adults, 2025 Revision

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The American Institute of Ultrasound in Medicine (AIUM) is a multidisciplinary association dedicated to advancing the safe and effective use of ultrasound in medicine through professional and public education, research, development of clinical practice parameters, and accreditation of practices performing ultrasound examinations.

The AIUM Practice Parameter for the Performance of Diagnostic and Screening Ultrasound of the Abdominal Aorta in Adults was revised by the American Institute of Ultrasound in Medicine (AIUM) in collaboration with other organizations whose members use ultrasound for performing this examination(s) (see "Acknowledgments"). Recommendations for personnel requirements, the request for the examination, documentation, quality assurance, and safety may vary among the organizations and may be addressed by each separately.

This Practice Parameter is intended to provide the medical ultrasound community with recommendations for the performance and recording of high-quality ultrasound examinations. The parameter reflects what the AIUM considers the appropriate criteria for this type of ultrasound examination but is not intended to establish a legal standard of care. Examinations performed in this specialty area are expected to follow the Parameter with the recognition that deviations may occur depending on the clinical situation.

A. Diagnostic evaluation for abdominal aortic aneurysm (AAA)
   1. Palpable or pulsatile abdominal mass or abdominal bruit
   2. Unexplained lower back pain, flank pain, or abdominal pain
   3. Follow-up of a previously demonstrated AAA
   4. Recommendations for rescanning patients are as follows[4]:
      a. For AAA size 3.0–3.9 cm: follow-up ultrasound every 3 years
      b. For AAA size 4.0–4.9 cm: follow-up annually
      c. For AAA size 5.0–5.4 cm: follow-up every 6 months
   5. Follow-up of patients post-AAA repair, particularly after endovascular aortic aneurysm repair (EVAR)
B. Screening evaluation for AAA
   1. Men ages 65–75 who have ever smoked
   2. Women ages 65 or older with cardiovascular risk factors
   3. Individuals ages 50 or older with a family history of aortic and/or peripheral vascular aneurysmal disease
   4. Individuals with a personal history of peripheral vascular aneurysmal disease
   5. Individuals over age 75 with other risk factors for AAA[5]

There are no absolute contraindications to ultrasound of the aorta. If aortic rupture or dissection is clinically suspected, ultrasound is usually not the examination of choice.

Qualifications and Responsibilities of Personnel

Physicians not personally performing the examination must provide supervision, as defined by the Centers for Medicare and Medicaid Services Code of Federal Regulations 42 CFR §410.32,[9] which is available from the U.S. Government Publishing Office.

Request for the Examination

The written or electronic request for an ultrasound examination must originate from a physician or other appropriately licensed health care provider or under the provider's direction. The clinical information provided should allow for the performance and interpretation of the appropriate ultrasound examination and should be consistent with relevant legal and local health care facility requirements.

Specification of the Examination

A. Diagnostic Examination

The examination includes the following, when feasible:

1. Abdominal aorta
   a. Longitudinal images (along the long axis of the vessel)
      i. Proximal (below diaphragm, near the celiac artery)
      ii. Mid (near the level of the renal arteries)
      iii. Distal (through the iliac bifurcation)
   b. Transverse images (perpendicular to the long axis of the vessel)
      i. Proximal (below diaphragm, near the celiac artery)
      ii. Mid (near the level of the renal arteries)
      iii. Distal (through the iliac bifurcation)
   c. Measurements

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From smartphone to sonography: visualizing the 'text neck' epidemic

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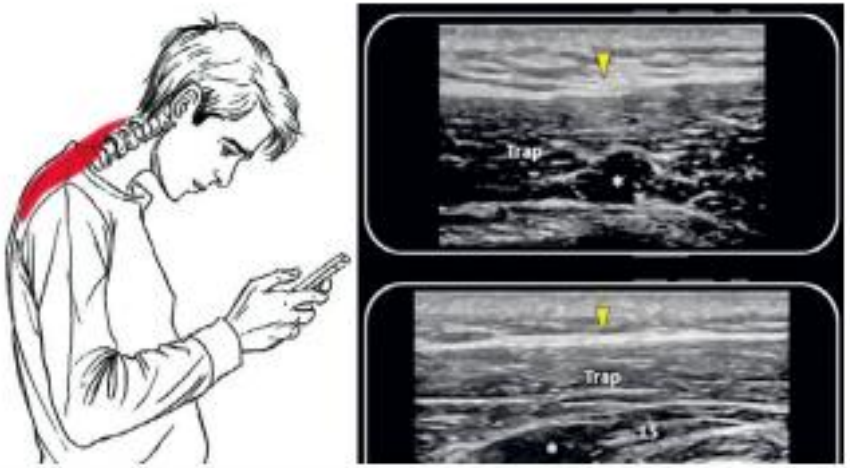
'Text neck' is one of the most biomechanically concerning conditions of modern clinical practice. This repetitive strain phenomenon occurs when everyday technology clashes with basic biomechanics, warranting attention from musculoskeletal medicine. In 2008, the term was first introduced by Fishman who had described the collection of symptoms arising from repetitive cervical flexion during smartphone use [1]. The stress on the cervical spine increases with forward head flexion at different angles, with 15 degrees of head flexion gener-



Hội chứng cổ do sử dụng điện thoại (Text neck) là một trong những tình trạng đáng lo ngại nhất về mặt cơ sinh học trong thực tiễn lâm sàng hiện đại. Hiện tượng căng thẳng lặp đi lặp lại này xảy ra khi công nghệ hàng ngày xung đột với cơ sinh học cơ bản, cần được y học cơ xương khớp quan tâm. Năm 2008, thuật ngữ này lần đầu tiên được Fishman giới thiệu, người đã mô tả tập hợp các triệu chứng phát sinh từ việc gập cổ lặp đi lặp lại trong khi sử dụng điện thoại thông minh [1]. Áp lực lên cột sống cổ tăng lên khi gập đầu về phía trước ở các góc độ khác nhau, với góc gập đầu 15 độ tạo ra lực khoảng 12 kg và tăng lên 27 kg ở 60 độ [2]. Sự gia tăng lực theo cấp số nhân này biến các thiết bị hàng ngày của chúng ta (điện thoại thông minh) thành các "bộ khuếch đại căng thẳng" về mặt cơ sinh học. Nhấn mạnh sự cần thiết phải giải quyết vấn đề này như một mối quan ngại về sức khỏe cộng đồng, một đánh giá hệ thống và phân tích tổng hợp gần đây đã xác nhận mối liên hệ đáng kể giữa việc lạm dụng điện thoại thông minh và tăng nguy cơ đau cổ [3]. Đáng chú ý là tư thế cổ không phù hợp khi đọc hoặc nhắn tin dẫn đến một nhóm phức tạp các triệu chứng lâm sàng bao gồm đau cổ, vai và lưng trên cũng như đau đầu và tê ở các chi trên [4].

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Original Article

Multimodal Ultrasound for Assessment of Renal Fibrosis in Biopsy-Proven Patients with Chronic Kidney Disease

Multimodaler Ultraschall zur Beurteilung der Nierenfibrose bei Patienten mit einer durch Biopsie bestätigten chronischen Nierenerkrankung

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Further Information

Abstract

Objectives

To establish a discriminant function model combining clinical data and multimodal ultrasound to predict the degree of renal fibrosis in patients with chronic kidney disease (CKD) and to explore the application value of the non-invasive assessment of renal fibrosis by new ultrasound techniques.

Methods

Clinical data and ultrasonography, shear wave elastography, and angio planewave ultrasensitive imaging characteristics of patients with CKD were collected. The significant indicators were screened to establish discriminant function models to distinguish the degree of renal fibrosis, and the diagnostic efficacy was evaluated.

Results

The 158 patients were divided into 4 groups according to pathological results. The significant indicators among or within the 4 groups were mainly age, estimated glomerular filtration rate, serum creatinine, peak systolic velocity and resistance index of renal arteries, kidney elasticity, and arcuate artery vascular density ($p<0.05$). The discriminant function models exhibited good diagnostic efficiency and higher accuracy compared to any single indicator.

Conclusion

The SWE elasticity value of the kidney increases with the degree of fibrosis, while AP can visualize microvascular conditions qualitatively and quantitatively. Multimodal ultrasound combined with clinical data is a non-invasive strategy for the assessment of renal fibrosis.

A review of my history of research on ultrasound tissue characterization of chronic liver disease for developing ultrasound clinical technology

Review Article | Published: 07 January 2026
Volume 53, pages 129–138 (2026) Cite this article

Journal of Medical Ultrasonics

Abstract

Ultrasound echo signals from organs contain various physical information and numerous studies have been conducted to extract new diagnostic insights from these signals. This article reviews the research and development I have undertaken in diagnosing liver tissue characteristics, reflecting on its historical progression. Initially, texture analysis aimed to identify features of liver fibrosis, but it was found to be more effective for quantifying fatty liver. Consequently, the analysis algorithm and product specifications were refined to address this need. For fatty liver, the importance of early detection of non-alcoholic steatohepatitis (NASH) has grown, leading to investigations into quantifying the liver's attenuation coefficient. After several prototype trials, a real-time quantitative measurement function was achieved.

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BRIEF COMMUNICATION

Sonographic Assessments to Consider in Future Studies about Crystal-related Arthritis

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Author Information

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Abstract

Background:

Ultrasonography has shown a high sensitivity and specificity in the diagnosis of gout and chondrocalcinosis.

Methods:

The author considers it appropriate to discuss a new ultrasound technique and previous sonographic findings in crystal-related arthritis that are underexplored.

Results:

MicroPure seems to be a very attractive tool in gout due to its crystal detection with less margin of error from artifacts. Similarly, sonographic measurements, such as the minimal-crystal distance and the quantitative echogenicity of calcium aggregates, might help in those patients with small deposits of calcium undetected in radiographs. Ultimately, patients with mixed-crystal arthritis by gout and chondrocalcinosis show a characteristic “triple-contour” sign described over a decade ago.

Conclusion:

Studies to determine the usefulness of MicroPure, the minimal-crystal distance, and the quantitative echogenicity in crystal-induced arthritis are needed. “Triple-contour” sign should be considered as the best image in the screening of patients with suspected mixed-crystal arthritis by gout and chondrocalcinosis.

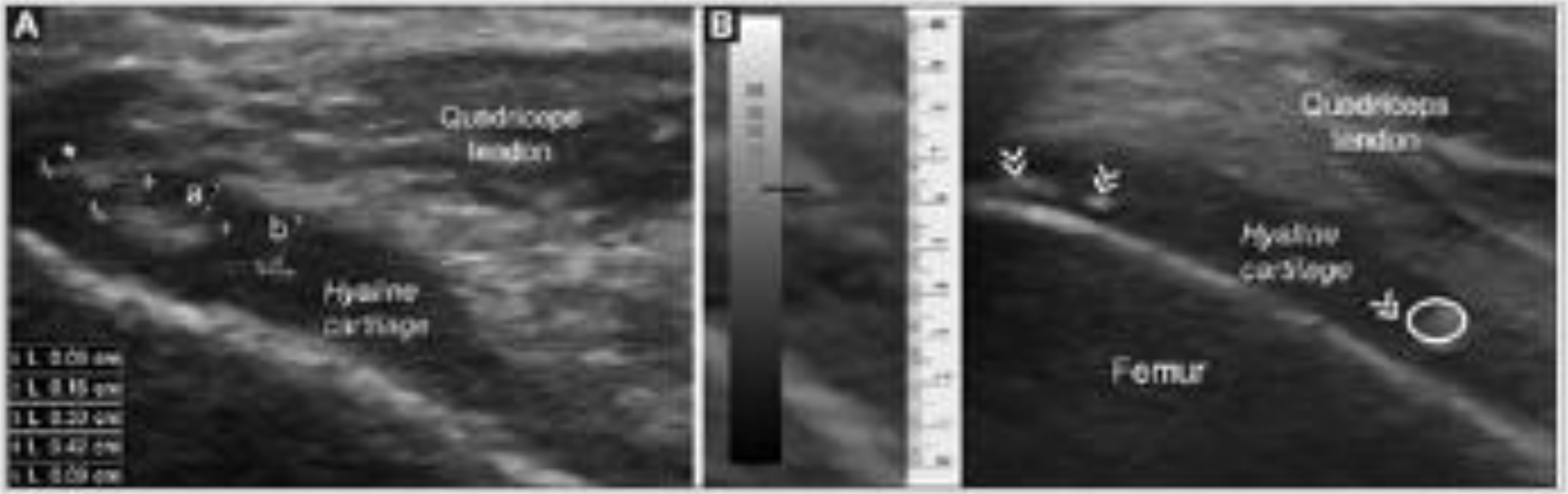
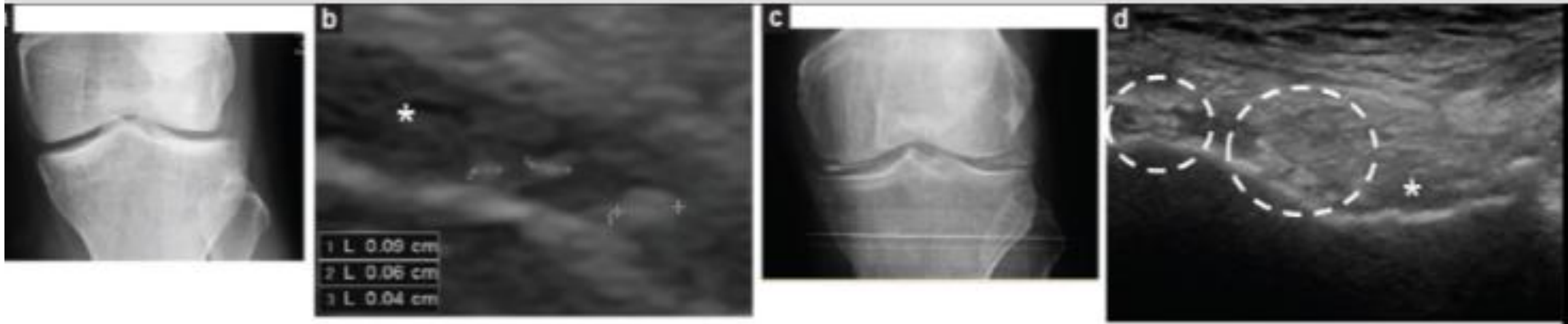


Figure 1: (A and B) Transverse sonographic views of the knee fully flexed. (A) The minimal-crystal distance (a = 0.08 and b = 0.15 cm) of two deposits of calcium. Notice the asterisk shows another small aggregate very close to the cartilage surface. (B) Several deposits of calcium (arrowheads) are showing. Also, a quantitative echogenicity assessment of a selected crystal aggregates (encircle area) using a scale of 0 to 10 cm is done



Sonomorphologic characteristics	Without x-ray chondrocalcinosis	Radiographic chondrocalcinosis	
Size of deposits	75% < 3 mm	Immeasurable	
Crystal distribution	Localized	Generalized	
Quantitative echogenicity	mean: 5.7	mean: 6.2	*p=0.16*
Meniscocalcinosis	21%	100 %	
Effusion	100%	88 %	
Synovitis	79%	88 %	
Cartilage thickness	mean: 2.0mm	mean: 1.96 mm	*p= 0.84*

Mapping of the location of calcium deposits in the knee joint revealed by ultrasonography

Figure 2

Sonomorphological characteristics of calcium deposits in patients with anteriorposterior radiographs of the knee showing no evidence of chondrocalcinosis (a) and patients with radiographic chondrocalcinosis (c). Several very small aggregates of calcium are observed within the hyaline cartilage (*) in a transverse sonographic view of one patient without radiographic chondrocalcinosis (b). Large calcium aggregates (encircled area) within hyaline cartilage (*) are observed in a transverse sonographic view of one patient with radiographic

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TECHNICAL NOTE

The Effects of Subacute Sunlight Exposure on Skin Thickness: A Pilot Sonographic Study

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Abstract

We investigated the effects of sunlight exposure on dermis and skin thickness. High-frequency ultrasound (US) was used to assess changes over 3 weeks of natural sunlight exposure. For intra- and inter-rater reliabilities, repeated dermis/skin thickness measurements on two consecutive days in 11 healthy adult subjects were assessed independently by two physiatrists. In the second part, seven adult volunteers were examined before and after a 3-week seaside vacation to evaluate the effects of subacute sunlight exposure on dermis/skin thickness. Measurements were taken over the forehead, forearm, and umbilicus. Intra-rater intraclass correlation coefficients (ICCs) were good to excellent (0.871–0.998) for nearly all measurements, except forehead total dermis/skin thicknesses for both raters. Inter-rater ICCs were also good to excellent (0.796–0.995), except for forehead dermis/skin and forearm dermis/skin thicknesses on the 1st and 2nd days. Following sunlight exposure, significant decreases were observed in forehead upper dermis/skin and soft tissue, forearm skin, and umbilicus dermis/skin thicknesses (all $P < 0.05$). Our preliminary results suggest that subacute sunlight exposure appears to decrease skin thickness. High-frequency US proved to be a reliable noninvasive tool for skin assessment.

Ultrasound assessments

Dermis/skin and soft tissue thicknesses were measured at the forehead, forearm, and umbilicus using an 8–20 MHz linear probe (Clarius L20 HD3, Vancouver, Canada) with sufficient gel to avoid compression [Figure 1].

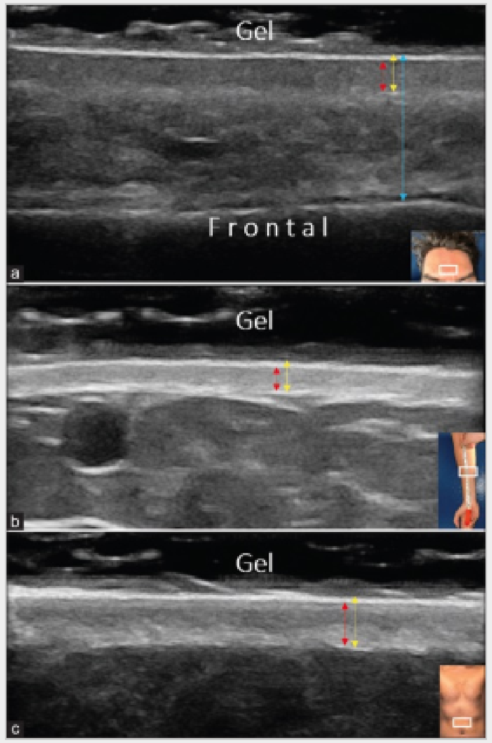

Figure 1: Short-axis ultrasonographic thickness measurements from the forehead (just above the glabella) (a), forearm at the midpoint between the antecubital fossa and the wrist (b), and the umbilicus (just above the navel) (c). Red arrow: Dermis thickness, Yellow arrow: Skin (epidermis and dermis) thickness, Blue arrow: Soft-tissue thickness (from the upper layer of the epidermis to the frontal bone). Note that insets show the probe position with a blanked box. Note that the red arrow represents only the upper dermis in the forehead. Note that the lower dermis is identified as the hyperechoic layer located just below the upper dermis in the forehead

- Forehead: Measurements were obtained just above the glabella
- Forearm: Measured at the midpoint between the antecubital fossa and wrist
- Umbilicus: Measured just above the navel.