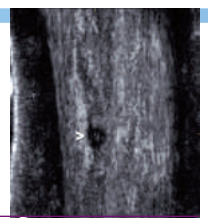
2009/1st edition **No.24**

www.gehealthcare.com

ultrasound post

technical development and medical research – news and facts



LOGIQ® E9 Scan Assistant – Fewer Keystrokes, Better Results

The medical ultrasound environment has changed. Due to its ability to view anatomical structures and processes clearly, in real time, and without radiation, ultrasound is now welcomed into reproductive medicine, cardiology, urology and the emergency room.

The increasing demand for ultrasound exams brings with it new challenges for sonographers, radiologists and administrators: increased workloads must be balanced against the need for diagnostic accuracy, stream-lined process documentation and positive returns on investment in ultrasound equipment. This is where GE's new Scan Assistant software on the LOGIQ E9 comes in.

Introducing ultrasound efficiency tools

Scan Assistant software was developed by the GE Healthcare development team together with users in multiple clinical settings, including a university hospital, a community hospital, and an imaging center. After noting their scanning processes and functional needs, the GE team then developed an intelligent algorithm that replicates the user's natural scanning sequence.

Scan Assistant software guides the sonographer through the entire exam, automatically invoking the correct mode and imaging parameters, advancing to the next step of the exam and guiding the user smoothly through the process with a one-button operation.

Features include:

- Automatic program selection, minimizing keystroke input.
- Faster flow of image capture, allowing sonographers to concentrate on important exam decisions.
- Built-in programs for all exam types, such as vascular, thyroid, abdominal, urology and OB/GYN.
- Automated common-scanning actions, ensuring consistency of imaging and measurement procedures.
- Customizable programs to meet specific user preferences and/or department protocols.

The benefits

User feedback for the Scan Assistant has been extremely positive. Direct comparison of thyroid, carotid, abdominal and lower extremity venous (LEV) exams indicate an average keystroke reduction of around 66% using Scan Assistant. By reducing keyboard entry, Scan Assistant helps ensure clear results communication. Jenelle A. Beadle, RDMS, of Inland Imaging in Spokane, Wash., says, *"I like not having to type my annotations. It promotes consistency within the department."*

Her colleague John S. Crowley is impressed with the Scan Assistant Creator tool which can customize imaging sequences, imaging parameters and re-

EDITORIAL – Heinz GLOOR

Vice President / General Manager GE Healthcare Systems Ultrasound & PCD Europe, Middle East & Africa

Dear Readers,

The theme of this edition of Ultrasound Post is focus. All we hear today is news of the current financial crisis, but at GE we are confident that there is a recipe for success in difficult times: by continuing to focus on creating breakthrough ultrasound technologies we will support healthcare practitioners, helping them boost clinical efficiency and generate synergies which contribute positively to their bottom line.

Take the new LOGIQ E9 with fusion and GPS, for example. For the first time, ultrasound examination becomes a completely integrated part of the radiology diagnostic and follow-up suite alongside CT and MR. Or our revolutionary new Agile Ultrasound architecture: intelligent beamforming which takes account of each patient's individual acoustic profile, thereby ensuring optimal image quality whilst reducing input times.

The medical world doesn't stand still, and here at GE Healthcare our focus is clearly on the long term. We intend to maintain our leadership position in ultrasound technologies, in spite of challenging market conditions. Our commitment to the future should mean peace of mind for you, our users, and the confidence that comes from knowing that GE ultrasound equipment will always be a sound investment.

This will be the last paper edition of Ultrasound Post. In true innovative GE style we are continuing to embrace the revolution in digital communications. Ultrasound Post will be giving way to three new online magazines – the **Voluson**Club Focus, **LOGIQ**Club Focus and **Vivid**-Club Focus – for members to download from each of our GE ultrasound community websites. Each club magazine will focus tightly on the specific needs of its readership group.

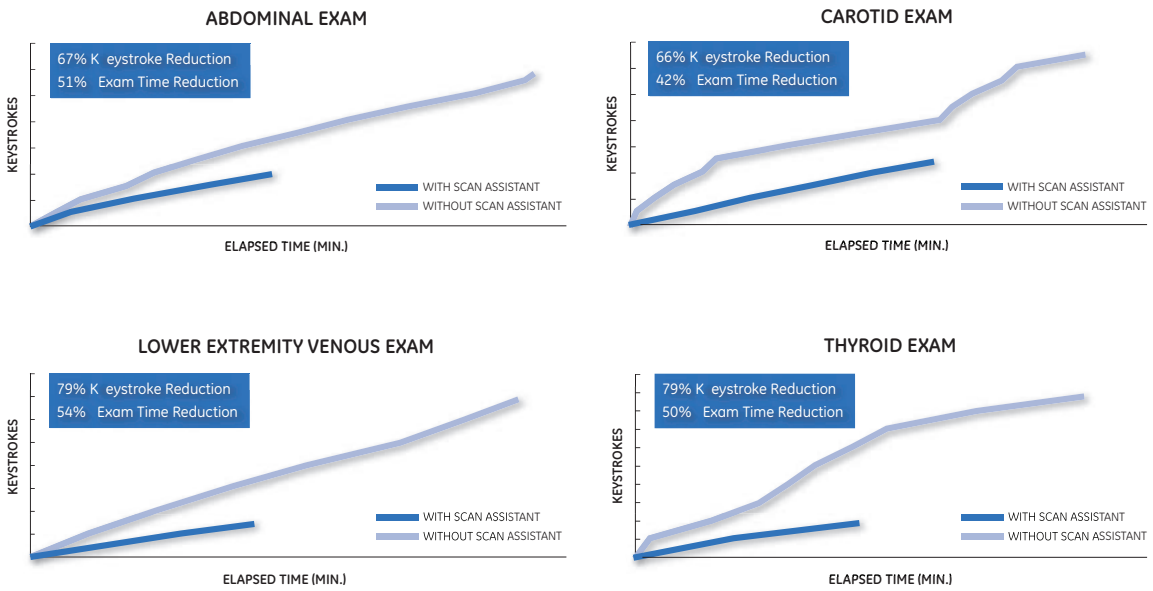
Read on to find out more.

Yours,
Heinz Gloor

quired annotations for any given care area, allowing for the creation of standardized, department-wide or user-specific programs. This feature has proven to be a vital teaching aid. He comments, *"Scan Assistant is a good training tool for new sonographers and new sonographers. It helps them learn department protocols.*

Standardizing scanning sequences improves workflow and the consistency of image capture. By using the program to establish department standards, the system can reduce patient callbacks due to missed images as well as help ensure adherence to department protocols that are key to accreditation.

GE Healthcare has again succeeded in creating an ultrasound software tool that increases user comfort, improves scanning workflow and increases department productivity, whilst maintaining the high-quality ultrasound images critical for accurate diagnosis and extraordinary patient care.



Ultrasound-Guided Nerve Block Demonstrations on DVD

The goal of regional anesthesia is to deliver the correct dose of anesthetic to the target nerve without damaging the nerve or the surrounding anatomical structures. As well as a solid knowledge of anatomy, backed up by nerve stimulators to locate the nerve and stimulate paresthesia, significant improvements in ultrasound technologies over recent years has made ultrasound a valuable part of the anesthetists' toolkit.

The advantages of using ultrasound guidance in placing nerve blocks are significant: Ultrasound gives physicians a real-time, visible guide for their needles, helping them to exactly locate anatomical structures, to avoid the accidental puncture of blood vessels and other structures which shouldn't be damaged, and to accurately deliver doses of anesthetic. Ultrasound also enables the physician to see the flow of the injectate from the needle tip, ensuring that the quantity is sufficient and distribution correct.


LOGIQ *e*.

Used together with a nerve stimulator to locate the nerve, ultrasound guided nerve blocks keep tissue displacement to a minimum, limit patient discomfort, avoid the need for local and general anesthetics, and reduce overall inpatient times. And by packing state-of-the-art ultrasound technologies into compact ultrasound systems, there is a room for ultrasound equipment in every clinical setting. The use of ultrasound in regional anesthesia is becoming routine.

In response, we are delighted to announce that a free educational DVD will soon be available to **LOGIQ**Club members, showing video demonstrations of ultrasound guided nerve blocks on a series of patients. The nerve blocks were performed earlier this year by Prof. Koscielniak-Nielsen, Head of Orthopedic Anesthesia at Rigshospital in Denmark, using a LOGIQ *e*. Prof. Nielsen is a key specialist in this field, a regular guest speaker at international congresses and a faculty member of the European Society of Anesthesiologists.

The DVD contains the following 3 demonstrations:

1. Ultrasound and nerve-stimulator guided axillary block on an elderly gentleman who is scheduled for elective hand surgery. The demonstration shows the anesthetization of the musculocutaneous, median, alner and radial nerves.
2. Ultrasound-guided lateral infraclavicular block on a 7 kg infant for a congenital anomaly syndactylly of the right hand. Using ultrasound to determine the correct depth of the block.
3. Ultrasound-guided femoral nerve block for a patient who has sustained a fracture of the right patella.

The DVD will be available, free of charge, to order from the **LOGIQ**Club website in the coming weeks. Check the **LOGIQ**Club website for further details.

Zbigniew J. Koscielniak-Nielsen MD, PhD, FRCA Ass. Professor, Head of Orthopaedic Anaesthesia Rigshospital, Copenhagen

Advantages of Volume Ultrasound **in Diagnosing Rheumatic Disorders**

Over the last decade, many studies have highlighted the value of ultrasound technology in rheumatology. Ultrasound is a non-invasive, inexpensive and non-ionizing radiation imaging technique providing quick and useful information, and with a proven role in the management of rheumatic diseases. This has generated the desire amongst many rheumatologists to learn more about this imaging technique.

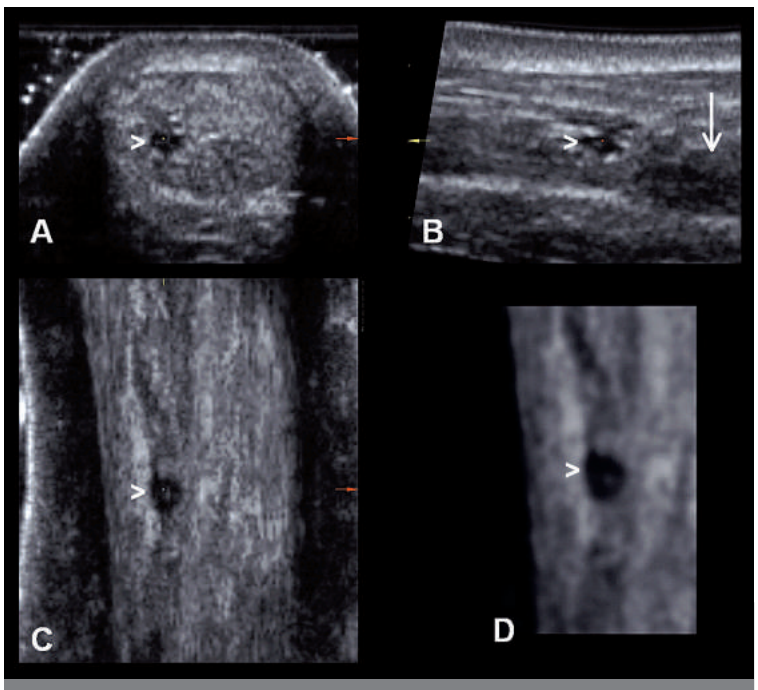
This article[1] focuses on two cases which demonstrate the tremendous potential for Volume Ultrasound in rheumatology in assessing tendon and joint damage.

The examinations were performed using a LOGIQ 9 equipped with a 4D16L volumetric transducer. The sonographic images shown here are the result of a single 3D dataset generated in 3-4 seconds, using LOGIQworks™ for image review and post-processing.

Case 1: Achilles tendon assessment using Volume Ultrasound.
A 56-year old Caucasian male patient complaining of a one-week history of left heel pain was presented to a rheumatology outpatient department. There was no past history of heel/ankle discomfort or arthropathy. The pain became acute during a tennis match. Clinical examination revealed no evidence of soft tissue swelling along the Achilles tendon, but there was an area of exquisite tenderness in the mid third of the tendon. Both active and passive ankle plantar and dorsiflexion were reduced on the symptomatic side.

Volume Ultrasound
A 59-year old Caucasian female patient with a 10-year history of rheumatoid arthritis, presented with a painful and swollen metacarpophalangeal (MCP) joint of the second finger of her dominant hand.

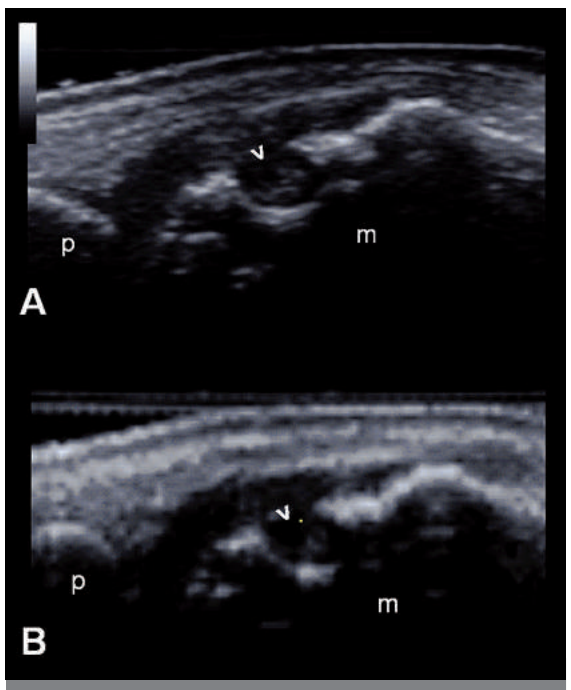
Ultrasound vs. Volume Ultrasound



Achilles tendon rupture (arrowhead). Multi-planar ultrasound imaging of Achilles tendon rupture in (A) transverse view; (B) longitudinal view, high-lighting the presence of a focal area of tendon thickening, distal to the rupture, due to an ill-defined hypoechoic area (arrow); (C) coronal view showing a circumscribed hypo-echoic area within the tendon structure depicted on three perpendicular scanning planes (arrowhead); (D) volume rendered sonographic image confirming the spherical nature of the tendon rupture.

Case 2: Metacarpophalangeal joint assessment using

In rheumatology, ultrasound is used in the evaluation of patients with regional pain syndromes and chronic arthritis, short-term therapy monitoring and guidance for invasive procedures such as joint aspiration, intra-articular injection therapy, synovial biopsy etc. Ultrasound is a sensitive imaging tool enabling rheumatologists to examine early undifferentiated arthritic conditions, by revealing sub-clinical synovitis and bone erosions undetected by radiography. Current research focuses on the role of ultrasound in short term therapy monitoring and in predicting radiological progression in patients with early rheumatoid arthritis.



Images A and B were obtained at the MCP joint of the dominant hand using the same volumetric transducer (4D16L). Image A was obtained using the volumetric transducer as a 2D and freezing the image during real time ultrasound examination of the longitudinal aspect of the lateral side of the MCP joint. Image B represents one of the virtually infinite number of 2D images that can be visualized by exploring the 3D dataset after its generation, which lasted only 3-4 seconds. The independent assessment of the two images allows the acquisition of the same findings, which can be described as follows: The arrowhead indicates an interruption of the bone profile of the metacarpal head (bone erosion) together with hypoechoic material within the erosion cavity indicating pannus. Image A was obtained by a skilled operator while image B was obtained from a 3D dataset acquired by an unskilled operator. (m = metacarpal head; p = proximal phalanx).

However, ultrasound is regarded as the most operator-dependent imaging modality. Despite its many advantages, several issues still need to be adequately addressed, including the standardization of ultrasound examinations and guidelines for ultrasound training in rheumatology.

But ultrasound is a continuously evolving technique. Volume Ultrasound heralds an ultrasound revolution in rheumatology. Not only do volumetric images provide a spectacular and in-depth view of small joints, but they are easier to understand and clearly illustrate several anatomical details that are undetectable using conventional ultrasound.

The main clinical indications for Volume Ultrasound in rheumatology could include the early detection of bone erosions in small joints and a more careful assessment of tendon pathology.

It seems reasonable to predict that as technical advances continue to improve image quality, the use of Volume Ultrasound in the diagnosis of musculo-skeletal disorders will grow quickly. A single volumetric image can provide information of the extent of the lesions spatially. Other benefits include the coronal view, reduced image acquisition time, and the relatively non-operator dependant nature of the image acquisition process.

[1] This article is a summary of a white paper by Emilio Filippucci, MD and Walter Grassi, MD, both at the Cattedra di Reumatologia, Università Politecnica delle Marche Hospital in Italy, and Gary Meenagh, MD, of the Rheumatology Department, Musgrave Park Hospital, in Belfast, Northern Ireland.

GE Ultrasound Post Goes Digital

The internet has revolutionized the world of business communications, providing companies like GE with the tools to provide our customers with highly specialized, time-sensitive information, targeted to meet highly specific interests and needs. As a result, we have decided that it is time for GE Ultrasound Post - the hard-copy newsletter you are currently reading - to make way for three separate ultrasound club magazines which will be available for members to download in digital form from each of the three club websites.

In addition to news and developments from the world of GE ultrasound, each new club magazine – the **Voluson**Club Focus, **LOGIQ**Club Focus and **Vivid**Club Focus - will contain information targeted specifically at each club member's professional interests, focusing on clinical applications for ultrasound imaging technologies and systems in each specialist medical field.

"These club magazines will serve to meet our goal of supporting healthcare professionals – our customers - by providing relevant and practical information, helping them to boost efficiency and performance in clinical practice," explains Pierre Radzikowski, Marketing Manager Ultrasound Europe, Middle East and Africa.

Club Membership Brings Dividends!

As the owner or user of a GE ultrasound system you know that under the sleek and ergonomically-friendly exterior of your ultrasound unit lurk "hidden depths". Each ultrasound system in the Voluson, LOGIQ and Vivid ranges is packed with state-of-the-art ultrasound imaging technologies, providing healthcare professionals with huge imaging potential and increased diagnostic confidence.

The application of computer technologies in the field of medical diagnosis has both revolutionized the quality of diagnostic imaging and created more areas of professional specialization. At GE we realize that healthcare professionals who specialize in ultrasound diagnostics - whether OB/Gyn, radiology, cardiology or other fields - are constantly looking to improve their performance. And - quite apart from staying ahead of medical advances in their field - this means knowing exactly how to get the most out of their ultrasound equipment.

And this is where the GE Healthcare clubs come in.

Each of the three GE Healthcare clubs – **Voluson**Club, **LOGIQ**Club and **Vivid**Club - is dedicated to helping ultrasound professionals leverage on the investment they have made in GE ultrasound equipment. Each club has its own dedicated website which serves as an information platform, providing users with back-up support targeted at their medical specialization and specific ultrasound unit.

Each club website is divided into several sections. Under "Tips and Tricks" you'll find a section providing application news, updated monthly and available for you to download, with advice on getting the most from your specific ultrasound unit (e.g. **Voluson**Club: "How to import E8 patient data into 4D view 6.x and 7.x", or **Vivid**Club: "Optimize your stress-echo Template (Vivid *i*, Vivid S6)"). The "Ask the Expert" section allows you to post your own questions on using your unit directly to one of our experts.

Add to this the new club magazines, giving a broader view of developments in ultrasound diagnostics in your field, as well as selected White Papers and educational lectures on DVD and CDs, and it's clear that club membership brings professional dividends. You'll find the club websites under the following addresses:

VolusonClub (OB/Gyn):
www.volusonclub.net

LOGIQClub (General Imaging):
www.logiqclub.net

VividClub (Cardiology):
www.vividechoclub.net

You will be requested to log in to access member benefits on your club website. Membership is free to all GE ultrasound system owners (individuals and groups) and you can register online. (Have the serial number of your ultrasound unit and the year of purchase at hand).

CONGRESSES 2009

TOPIC	LOCATION	DATE
ISICEM	Brussels, B	24 - 27 March
Deutscher Kardiologiekongress	Mannheim, G	16 - 18 April
World Congress on IVF/IVM	Geneve, CH	19 - 22 April
PCR	Barcelona, S	19 - 22 May
ECOA (orthopaedic anaesthesia)	Dresden, G	21 - 24 May
EuroAnaesthesia ESA	Milan, I	6 - 9 June
EuroPace	Berlin, G	21 - 24 June
Echocardiography Today and Tomorrow	St. Wolfgang, A	22 - 26 June
8th World Congress in Fetal Medicine	Riviera Portorose, SI	28 June - 2 July
ESHRE	Amsterdam, NL	28 June - 1 July

IMPRINT:

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Printed in Austria - 300-09-U005E