

## Radiographers

## SE 14

## C-0709

**Lower limb veins color and spectral Doppler ultrasonographic examination technique: An examination protocol presented as an educational poster for radiologists and vascular technologists**

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Lower venous limb's pathology was traditionally investigated by intravenous venography. Color Doppler flow imaging is nowadays widely accepted as a well established noninvasive method for the evaluation of deep pelvic and lower extremity's venous system. The vast majority of authors conclude that the method can safely replace diagnostic venography in all patients with venous thrombosis, thrombophlebitis and valve or communicating veins' insufficiency.

The aim of this exhibit is to give the participants the opportunity to study a pictorial, step by step, color and spectral Doppler examination protocol of lower limb's venous system. Optimal performance of Color Doppler flow imaging as a diagnostic tool for the whole lower limb's veins requires:

1. proper equipment specifications and settings,
2. knowledge of regional venous anatomy,
3. established examination protocol,
4. evaluation of morphological and functional findings,
5. documentation of the findings, and
6. efforts to avoid artifacts.

All these steps will be described as a sequence of guidelines with anatomical drawings and photographs, as well as with multiple ultrasonographic images. We believe that our exhibit could be a useful help for all physicians or sonographers involved in color Doppler studies, for the evaluation of lower limb venous diseases and abnormalities.

## C-0710

**Evaluation of image quality in digital radiography with a flat-panel detector**

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**Purpose:** The image quality of digital radiography (DR) with a flat-panel detector using a CsI scintillator and an amorphous photodiode array was measured and compared with those of a computed radiography (CR) system and conventional screen/film (S/F) system to determine the usefulness of the DR system.

**Materials and methods:** The DR system was a Digital DIAGNOST (Philips Medical Systems) with dry-type laser printer. An FCR5000 (Fuji Photo Film Co. Ltd) and Lanex400/MXG-1 (Kodak) were employed as CR and S/F systems respectively. The CR system used a wet-type laser printer. Modulation transfer function (MTF) were measured using a new method we developed for the DR system. Overall Wiener spectra (WS) of noise properties were measured at an optical density of 1.0. Imaging properties were acquired from printed film images in order to obtain them under the same condition as that of clinical images.

**Results:** The MTF of the DR system was almost the same those of the CR system and S/F system. Although the WS values of the CR system and S/F system were almost the same, the WS value of the DR system was lower than those of the other two systems at the same exposure level.

**Conclusion:** Overall image resolution properties of the three systems were almost the same. The noise properties of the DR system are better than those of the other two systems. Our experimental results suggested that the DR system holds promise in term of dose reduction, without loss of diagnostic accuracy.

## C-0711

**Kinematic MRI of the patellofemoral joint: Comparison with CT Goutallier method and conventional imaging**

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**Purpose:** Aim of this work was to assess the accuracy of CT and kinematic MR in the evaluation of patellofemoral malalignment and patellar recurrent dislocation.

**Material and methods:** 40 patients with known patellar recurrent dislocation or clinical diagnosis of patellar malalignment were examined. CT scans were performed following the Goutallier method. This method consist in measuring angles, distances and rotation between the patella and the femoral condyles on CT scans

obtained at 0°, 15° and 30°. Kinematic MR was performed on a dedicate Artoscan Esaote Equipment. Eight axial T1 weighted, spin echo sequences were obtained at the maximum amount of joint flexion and at fully-extended position.

**Results:** In all Kinematic studies, images were of good and diagnostic quality, and a patellar dislocation that was not seen on conventional radiographs was well demonstrated in 8 patients. CT and kinematic MR proved to be good and complementary techniques in the evaluation of patellofemoral malalignment and provided accurate measures of patellar tilting and lateral subluxation when compared with conventional imaging.

**Conclusions:** Kinematic MR imaging is a useful and sensitive method to evaluate patellofemoral joint providing both morphological and functional information about patellofemoral malalignment and patellar dislocation.

## C-0712

**The role of the radiographer/ultrasonographer in peroperative treatment of liver metastases**

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**Purpose:** To illustrate role of the technician/ultrasonographer in optimization of preoperative ultrasound in patients with liver metastases of colorectal cancer treated with cryosurgery or radio-frequency ablation.

**Materials and methods:** Surgical resection, cryosurgery and radio-frequency ablation of liver metastases requires accurate preoperative visualization. One of the most frequently used techniques is preoperative ultrasound (US). Knowledge and precise application of the accurate US techniques is of great importance, as this prevents false diagnoses. Also, correct guidance of the probe to the center of the metastases, and visualization of the cryo-effect is depending on the right US technique.

As both the surgeon and the radiologist are in "sterile" condition, the application of the correct parameters is a task of the technician/ultrasonographer. Parameters such as type of probe, used frequency, focus, total gain, TGC and depth are of utmost importance.

This exhibits shows, based on a two year experience in 120 patients, who were scanned with a 5 – 8 mHz 'T' transducer, how the image quality varies, when using different frequencies, focuses, total gains, TGC's and depths. Optimization, as performed by the technician/ultrasonographer will be demonstrated and discussed.

**Conclusion:** Optimization of preoperative ultrasound is very important, to enable adequate cryo-surgery or radio-frequency ablation. A well educated and experienced ultrasonographer is needed to acquire the best preoperative US images.