HSCI RESEARCH SEMINAR SERIES
SCHOOL OF HEALTH SCIENCES

IMAGING OF BONE PERFUSION: TECHNIQUES AND APPLICATIONS USING MRI AND PET

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Abstract:
Measurement of bone blood flow and perfusion characteristics in a noninvasive and serial manner would be advantageous in assessing revascularization after trauma and the possible risk of avascular necrosis. Many disease states, including osteoporosis, osteoarthritis, and bone neoplasms, result in disturbed bone perfusion. A causal link between bone perfusion and remodeling has shown its importance in sustained healing and regrowth following injury.

Measurement of perfusion within the bone was performed using dynamic contrast-enhanced magnetic resonance imaging (MRI) in femoral neck fractures and osteoarthritis. Bone blood flow and remodeling was estimated using 18F-Fluoride positron emission tomography (PET) in fracture healing, ankle replacement and osteoarthritis.

Multimodality assessment of bone blood flow and remodeling by using noninvasive imaging techniques may provide information essential in monitoring subsequent rates of healing and response to treatment as well as identifying candidates for additional therapeutic or surgical interventions.

Bio: Dr. Dyke obtained a M.S. degree in High Energy Physics and then completed a Ph.D. Degree in Biomedical Engineering in 1997 from the University of Tennessee at Knoxville. He followed with a Post-Doctoral Fellowship in MRI and Diagnostic Medical Physics at Memorial Sloan-Kettering Cancer Center in NYC until 2001. After which he crossed the street to Weill Cornell Medicine as Assistant Professor to help start the Citigroup Biomedical Imaging Center. He was then appointed to Associate Research Professor of Physics in Radiology. He is currently a Diplomate and Oral Board Examiner in MRI Physics with the American Board of Medical Physics and also holds a New York State license in Diagnostic Medical Physics.