# INTRODUCTION

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Computed tomography has played a promininte role in the evaluation of muscloskeletal pathology .With the advent of multi slice CT ,the quality of data sets available for image analysis , post processing and display .Concurrent with this advance in image quality has been continued in development. The result is that patient able to tolerate examinations and the quality & flixability of examinations is siginficantly broadened in single breath hold ***(Eliott .,et al 2002).***

Multislice CT was introduced in 1992 with the dual-section capable scanners and was improved in 1998 following the development of quad-section technology. With a recent increase in gantry speed from one to two revolution per second. They include improved temporal resolution, improved spatial resolution, increased concentration of intravascular contrast material, decreased image noise, efficient x-ray tube use, and longer anatomic coverage ***(Rydberg et al.,2000).***

The recent introduction of of MCCT in the 1990s has had a profounded impact on the utilization of CT scanning to solve diagnostic problems .The earlier introduction of helical (spiral CT ) had a similar impact over conventional step and shoot CT when introduced by virtue of its ability to dramatically increase the speed of CT examination (***Eliott .,et al 2002)***.

Multislice CT has brought about major advances in bone and joint imaging. A volumetric image set with isotropic properties can be obtained in a single acquisition with a 0.5 mm slice width. Multislice CT

allows extended anatomic coverage with thin slices, large patients and patients with metal hardware in their bodies now can be scanned without sacrificing diagnostic quality ***(Buckwalter et al.,2001).***

Multislice CT has made it possible to obtain thinner images with extended anatomic coverage at higher speeds than single-slice CT and has vastly improved the imaging of musculoskeletal diseases. It is easy to take multiplanar reconstruction and three-dimensional CT images of bone and joint through the three-dimensional isotropic data sets that MSCT yields. Most patients with metal hardware in their bodies now can be scanned without sacrificing diagnostic quality ***(Tatsuno et al ,2007).***

The development of multislice CT, which has enabled the acquisition of isotropic imaging data, has been the cause of some confusion in the use of CT and MRI in certain clinical settings. It is, therefore, necessary to establish an appropriate guideline for the correct use of multislice CT and MRI following routine radiographs in the musculoskeletal systems. Multislice CT with multiplanar reconstruction is more suitable in the detection and evaluation of fractures than MRI. Multislice CT is also useful in the detection of fine calcification, which is particularly important in the diagnosis of cartilage or bone forming tumors and myositis ossificans. MRI is considered to be more valuable than CT in other musculoskeletal disorders due to its higher contrast resolution, even in this era of multislice CT ***(Fukuda et al .,2000).***

CT is commonly used to delineate the presence and severity of degenerative disease as part of the work up prior to joint replacement surgery. While cartilage is better assessed directly with high performance

MR, CT is superior, particularly to conventional radiography, in displaying the full extent of secondary changes of degenerative disease such as joint space narrowing, osteophyte formation, cortical eburnation and subchondral cystic change ***(Tanenbaum ., 2004).***

The combination of subsequent Multislice computed tomography (CT) and three-dimensional (3D) reconstruction with volume rendering allows rapid and detailed examination of the musculoskeletal system. Multislice CT combined with volume rendering has proved valuable in diagnosis of subtle abnormalities and in planning patients therapy. In a substantial number of cases, management is altered because of findings seen only on the 3D images or better demonstrated on these images, subtle fractures, complex injuries, and pathologic conditions masked by metallic streak artifact. In addition, volume rendered images can display complex spatial information and are useful for conveying complicated anatomic information ***(Watura et al.,2004).***

## AIM OF THE WORK:

The aim of this work is to collect data and demonstrate the different application of Multislice Computed Tomography as a diagnostic method in the evaluation of different musculoskeletal system disorders including bones, joints and soft tissues.