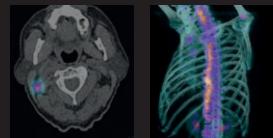


# THE CLINICAL UTILITY OF HYBRID SPECT-CT IMAGING

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## Improved Sensitivity and Specificity

Hybrid molecular imaging with SPECT-CT combines high resolution multislice CT with 3-D nuclear imaging (SPECT). The combination has been shown to significantly increase both sensitivity *and* specificity in a wide range of clinical scenarios.

In this article, we highlight a few clinical areas in which this rapidly emerging technology is significantly improving the diagnostic pathway.

## Spinal Imaging

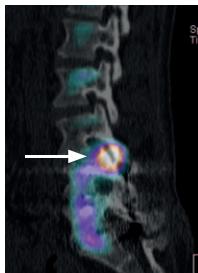
SPECT-CT is increasingly becoming a vital tool in the management of patients with back pain. In patients with non-radicular pain, it is often difficult to accurately pinpoint the source of osseous pain generation. In these situations, SPECT-CT often adds significant valuable information highlighting the sites of active bone turnover within arthropathic facet joints or at the site of instability at a given disc level.

Evaluating the stability of lumbar spondylodesis with metallic fixation devices is another area in which SPECT-CT demonstrates distinct advantages over conventional imaging methods such as radiography or magnetic resonance imaging.

## Patient with recurrent lower lumbar pain following spinal fusion



Post fusion lumbar X-ray appears unremarkable



SPECT-CT reveals abnormal junctional uptake in facet joint

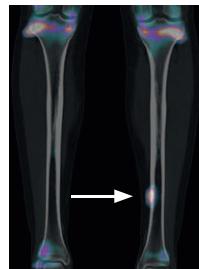
## Orthopaedics and Sports Medicine

In musculoskeletal imaging, the use of SPECT-CT permits accurate evaluation of a wide variety of conditions including painful joint prostheses, determination of occult cortical injury, avascular necrosis and the evaluation of osteomyelitis.

## Dancer with persistent lower leg pain



Normal tibial CT scan

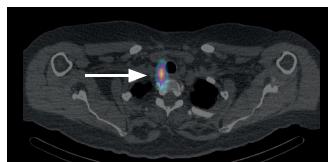


SPECT-CT reveals a cortical stress fracture

## In Vivo Granulocyte Labelling in the Detection of Bone Infection

SPECT-CT is being increasingly utilised for detection of active osteomyelitis.

One of the techniques comprises *in vivo* radiolabelled antigranulocyte monoclonal antibodies (MAbs) using technetium-99m. The MAb we use is an IgG antibody directed against normal cross-reactive antigen-95. (Besilesomab).



## Parathyroid Adenoma Localisation

SPECT/CT is highly effective in localising ectopic hyper functioning gland (arrow).

## Oncology – Staging and Lymphoscintigraphy

In cancer patients in general and in Prostate and Breast cancer in particular, SPECT-CT enhances both sensitivity and specificity for the detection of bone metastases. The combination of a contrast enhanced diagnostic CT scan, and a SPECT bone scan allows both imaging procedures to be performed simultaneously.

In cases of Melanoma and Breast Cancer, SPECT-CT also allows much more accurate determination of the sentinel node, resulting in reduced operating time.