



Metal Artefact Reduction CT (MARS CT)



Fig 1 (A, B): Peri-prosthetic abscess. Axial (A) and coronal (B) DECT images in a 31-years old lady with dynamic hip screw who presents with pain and swelling along the lateral aspect of the thigh. There is good visualisation of the periprosthetic bone and soft tissue with a large periosteal soft tissue mass (arrows) seen along the lateral aspect suggestive of abscess.

Fig 2 (A-C): Benign fibrous histiocytoma recurrence. Sagittal (A) and axial (B,C) DECT images of the dorsal spine in a 26-years old lady operated for benign fibrous histiocytoma in the past with instrumentation. The recent axial CT scan (A,B) clearly shows progression of osteolysis and resorption of the sclerotic bone (arrows) surrounding the instrumentation when compared with the previous CT scan (C). The recurrence was confirmed on CT guided biopsy.

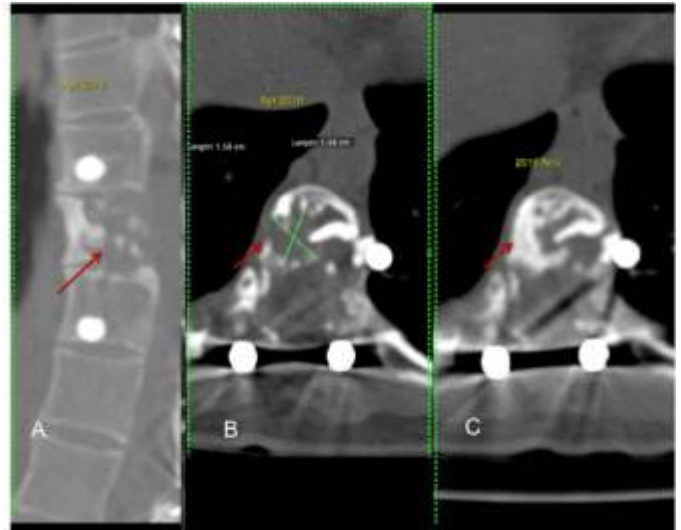
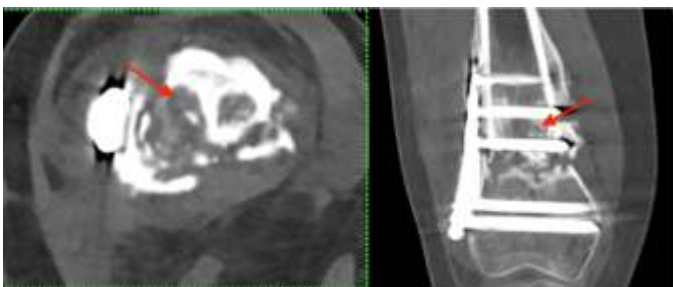


Fig 3 (A,B): Chondrosarcoma. Coronal (A) and axial (B) images in a 47-years old male with total hip replacement clearly show two non-contiguous lesion, one proximal with expansion and extra osseous extension (arrows), the other distal to the stem in the middle third of the femur (arrows) with a pathologic fracture and extraosseous extension of the lesion. A chondroid matrix is also seen.



Metal Artefact Reduction CT (MARS CT)

In the past, metal implants on CT scan have been a hindrance to local imaging due to artefacts. The new dual energy scanners (DECT) along with newer reconstruction protocols like iMAR have virtually eliminated metal artefacts, allowing excellent visualization of the implants and the bony and soft tissue structure.

This has proven to be of great advantage in diagnosing the cause of recurrent symptoms in patients with arthroplasties, including focal particle disease, periprosthetic fracture, infection, instability, malalignment, aseptic loosening, prosthesis fracture and osteolysis.



At a glance

- Metal in CT scans used to be a hindrance to evaluate adjacent soft tissues and bones
- DECT and protocols like iMAR now allow an

almost “zero” periprosthetic artefact

- This allows accurate evaluation of patients with prostheses and other metal implants in the body

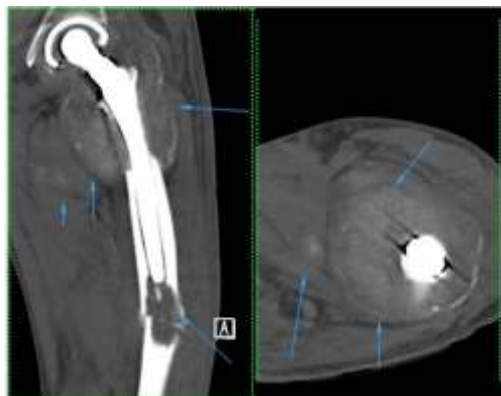
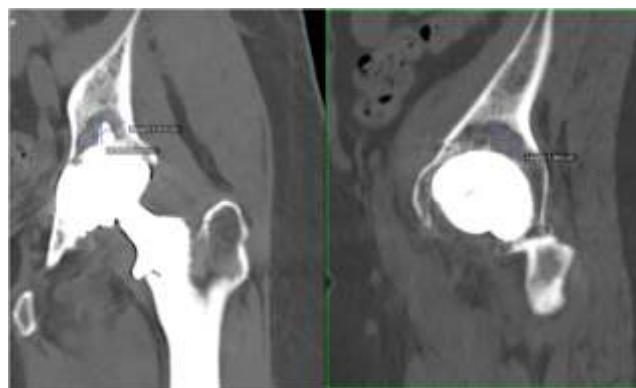


Fig 4 (A,B): Osteomyelitis. Axial (A) and coronal (B) DECT images in an 18-years old female with distal femoral osteotomy and persistent post-operative pain show non-union of the osteotomy with irregular margins and focal areas of osteolysis with sequestrum (arrows) proximal to the osteotomy suggestive of osteomyelitis.

Fig 5 (A,B): Coronal (A) and sagittal (B) DECT images in a 50-years old male with total hip replacement, show focal area of osteolysis (measured) consistent with focal particle disease in the superior acetabulum surrounding one of the superior acetabular screws. Such small areas of osteolysis are often missed on radiographs and not seen on MR due to artefacts.



The high resolution and absence of artefacts also enables early detection of tumor recurrence in patients with megaprosthesis.

Extent of fracture union / refracture in patients with open reduction and internal fixation can be commented on with greater confidence. Surrounding soft tissue abnormalities and complications like infection are also well seen.

DECT with metal artefact reduction has also shown good soft tissue resolution with patients with spinal instrumentation.

Dual energy CT scan with its excellent soft tissue resolution and almost 'zero' periprosthetic artefact, is therefore a time and cost effective modality for detection of complications which may otherwise go unnoticed with conventional radiography.

Subscribe to INNER SPACES : info@jankharia.com

Online version : <http://picture-this.in/index.php/inner-spaces/>

Main Clinic

383 | Bhaveshwar Vihar | Sardar V. P. Road | Prarthana Samaj | Charni Road | Mumbai 400 004 | T: 022 66173333 | F: 022 2382 9595

Cardiac, Chest & Interventional CT

461 | Nishat Business Centre | Arya Bhavan | Sardar V. P. Road | Mumbai 400 004 | T: 022 2380 2172 | 022 2389 3551 / 2

PET / CT, Organ Optimized 3T MRI

Gr. Floor | Piramal Tower Annexe | G. K. Marg | Lower Parel | Mumbai 400 013 | T: 022 6617 4444

Owner, Printer & Publisher: Dr. Bhavin Jankharia

Published at: Dr. Jankharia's Imaging Centre

Bhaveshwar Vihar, 383, S.V.P. Road, Prarthana Samaj, Charni Road, Mumbai 400 004.