CT HIGH RESOLUTION TEMPORAL BONES

PROTOCOL FOR SIEMENS SOMATOM 16 SLICE SCANNER:

PATIENT POSITIONING:

The patient is lying in a head first supine position, in the centre of the gantry. The chin tucked in to avoid any artifacts which can arise from fillings etc. The inner ear structures must be parallel to the scan plane, for maximum resolution. Place immobilization structures, such as sponges and straps, to assure that there will be no movement artifacts on the images.

SCAN PROTOCOL:

Inner ear sequential scanning protocol is used on our Somatom Sensation 16slice scanner because we can obtain better spatial resolution on the small sectional scanning (0,6mm) combined with an ultra sharp, ultra high kernel (u90U).
It should be noted that the parameters will change for every vendor and machine. The patient orientation and reconstruction of images will be the same for all options.
40 and 128 slice parameters to be included as a separate addendum

TOPOGRAM;

- **Lateral topogram**
- **mA 50**
- **kV 120**
- **Slice thickness 0.6mm**
- **Length of topogram 256cm**
- **Scan direction craniocaudal**

TEMPORAL BONE SCAN;

- **On the topogram plan to scan from top of pinna of ear to below mastoid tip.**
- **Effective mAs 350**
- **kV 120**
- **Slice 0.6mm (Acq 2 x 0.6mm)**
- **Feed 1mm**
- **Cycle time 2sec**
- **Scan time 1sec**
- **Scan direction craniocaudal**
- **Multislice acquisition sequential mode.**

POST PROCESSING OF THE ACQUIRED VOLUME;

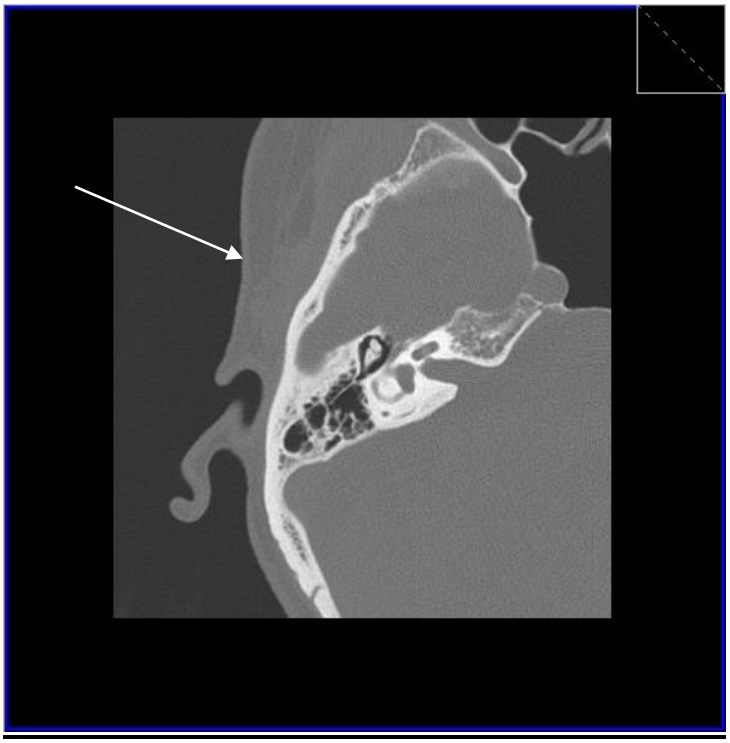
- **Reconstruction with slice width of 0,6mm**
- **Kernel u90U (ultra sharp, ultra high resolution)**
- **FOV +- 220mm (patient dependant)**

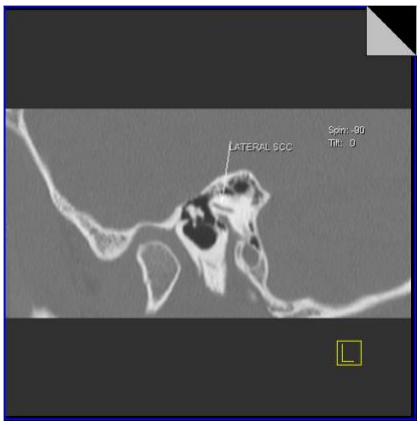
POST PROCESSING OF RECONSTRUCTED IMAGES

- **Images for interpretation – thickness of 1mm**
- **Windowing ww 4000HU and wl 200HU**
- **20 Axial and 20 coronal images of both ears together**
- **20 Axial and 20 coronal images of each ear separately in true planes.**

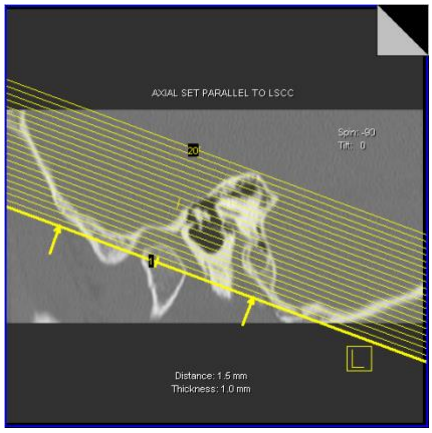
TRUE PLANES:

Find the lateral semi-circular canal on the axial image (arrow), move the sagital line towards it and watch for the lssc on the sagital image.

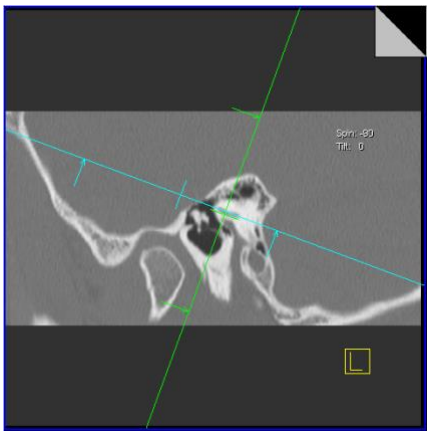




On this image rotate the axial line through the posterior and anterior limbs of the canal as well as the coronal line, perpendicular to the axial line-as demonstrated



Place parallel ranges on the axial line in the sagittal image to produce 20 true axial images.



Repeat with coronal parallel ranges.

Well done, now continue to image inner ear structures as follows:

AXIAL IMAGES:

1. BASAL TURN

2. MALLEUS/INCUS

3. IAC

CORONAL IMAGES:

1. MALLEUS/INCUS

2. OVAL WINDOW

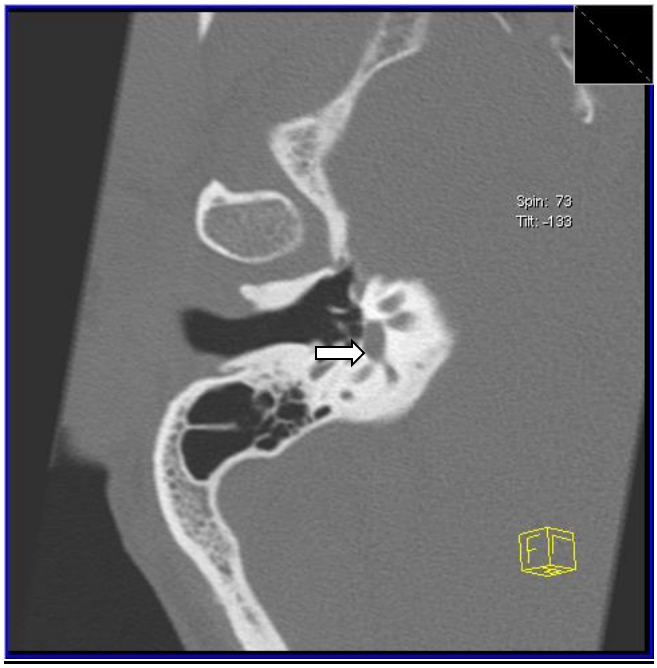
3. ROUND WINDOW

SAGITTAL IMAGES

1. SAGITTAL ROUND WINDOW

Specialized reconstructions are done to best visualize the coronal basal turn,

the stapes and footplate,(arrow below)



as well as the superior semi-circular canal,