Perfint™

MAXIO™

Integrated Planning, Navigation and Targeting for Interventional Procedures

MAXIO™

Integrated Planning, Navigation and Targeting for Interventional Procedures

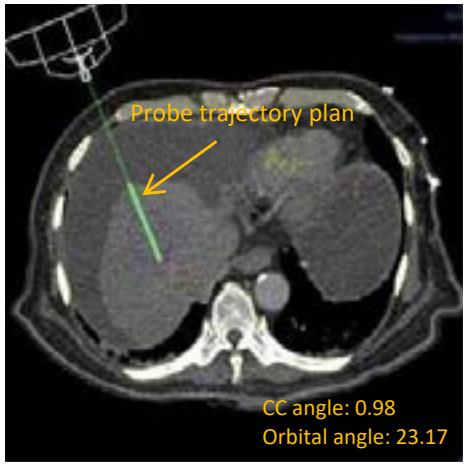
Clinicians benefit from MAXIO's intelligent planning suite and targeting...

- Registering pre-operative images and offline procedure plan with current CT/PET-CT images
- Organ specific tumor visualisation and segmentation
- Multiple VOI, Multi-probe placement plan for multiple procedures
- Accurate placement without fluoroscopic radiation
- Ability to treat hard to access and larger tumors
- Post procedure verification

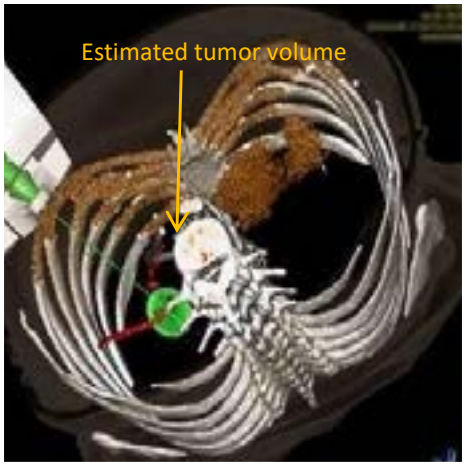
Tumor Ablation is heading in a whole new direction... And MAXIO is leading the way.

Ablation

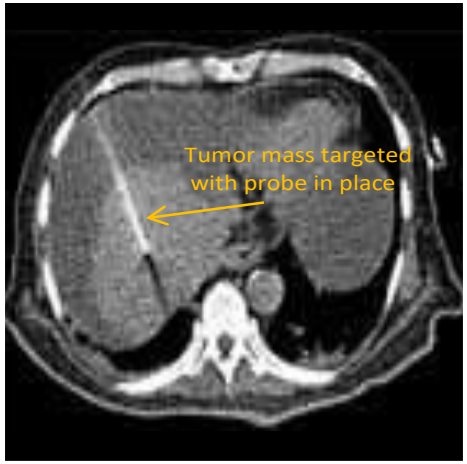
Radio Frequency Ablation of 1.8 cm HCC



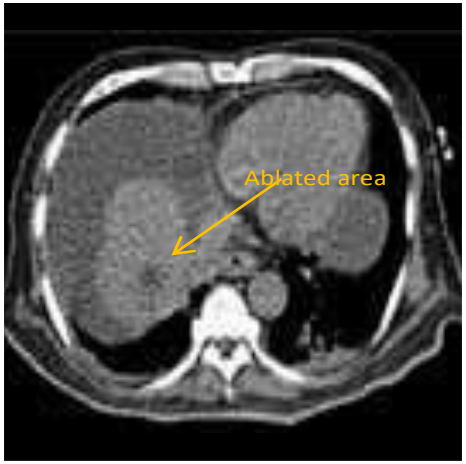
Planning in 2D



Planning in 3D



Registered image shows accurate needle placement as planned



Post RFA shows ablated area covering tumour

Case Summary

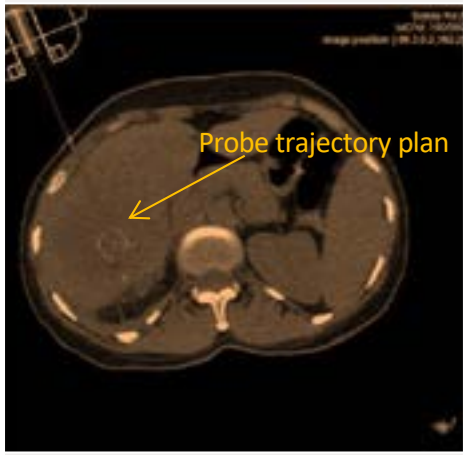
Liver HCC of size 1.8cm was present on the 7th segment of liver.

A deep seated lesion requires a short and safe trajectory, hence RFA treatment was challenging.

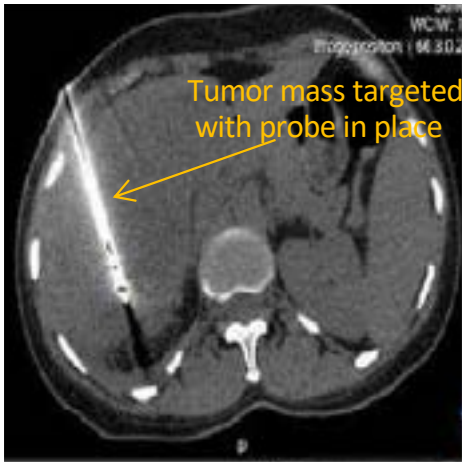
Treatment successfully finished with the aid of MAXIO

MAXIO helped in precisely targeting and ablating the lesion without any complications to the surrounding vital structures

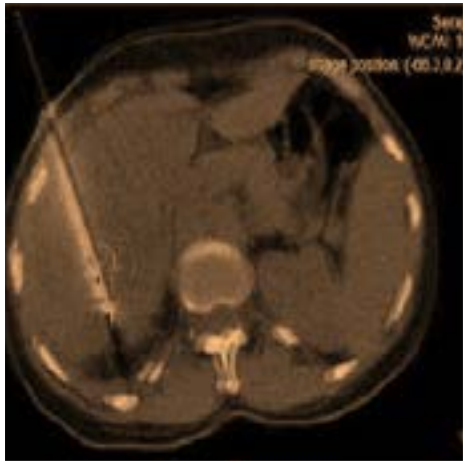
Liver – Microwave Ablation



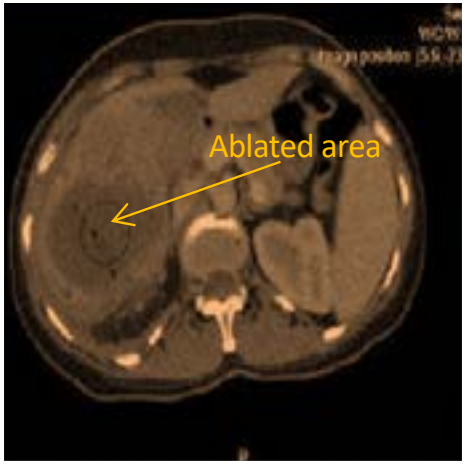
Planning in 2D



Planning in 3D



Registered image shows accurate needle placement as planned



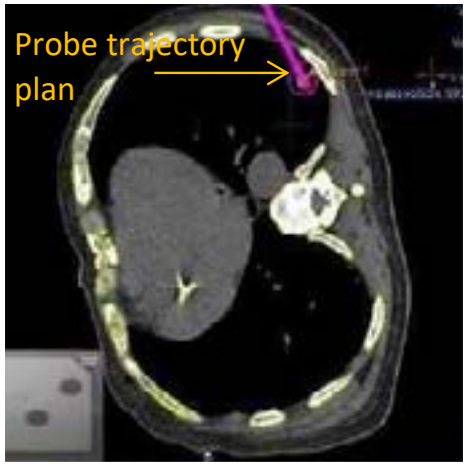
Post RFA shows ablated area covering tumour

Case Summary

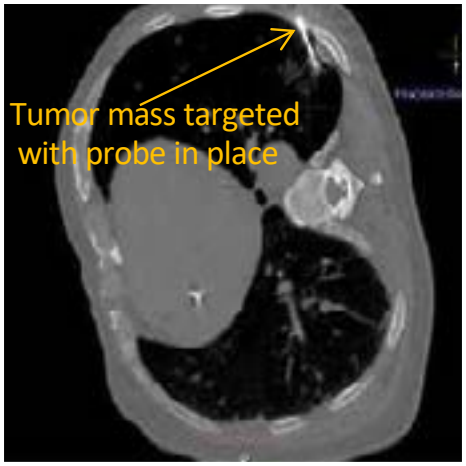
Liver tumor with dimensions of 9cmX7cm was present on the 5th and 6th segment.
Lesion was at 9cm depth.

Tumor ablated by microwave.
Planning and targeting was carried out with the aid of MAXIO.

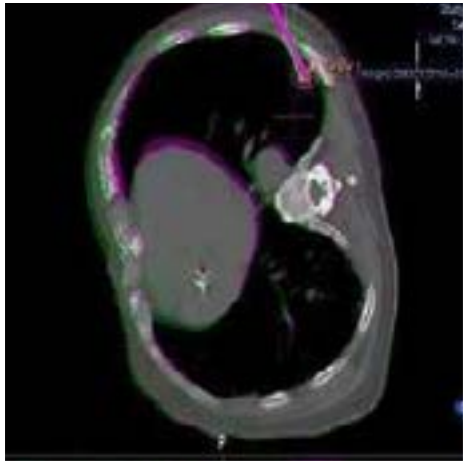
Lung - Radio Frequency Ablation



Planning in 2D



Planning in 3D



Registered image shows accurate needle placement as planned

Post RFA shows ablated area covering tumour

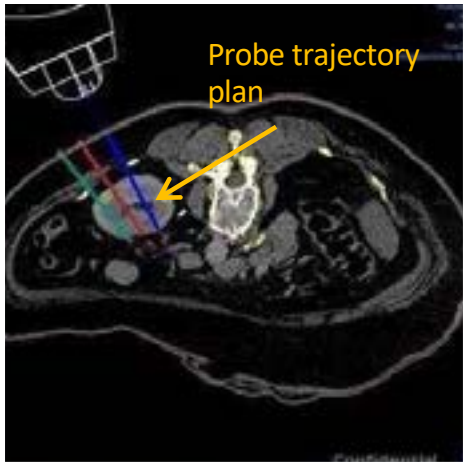
Case Summary

The patient had a 13 mm lesion on the right lung located near vessels and the rib cage. RFA was done, using a starbust probe, with the patient immobilized with an immobilizer bed.

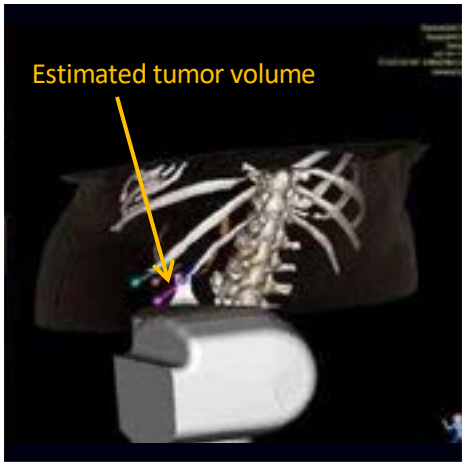
The lesion was accessed in a single pass. Precise planning and targeting with MAXIO avoided intra-procedural complications and it reduced the radiation dosage

Post-verification image shows complete tumor ablation.

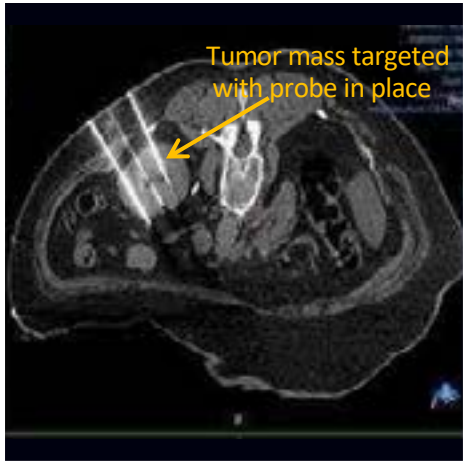
Renal-Irreversible Electroporation



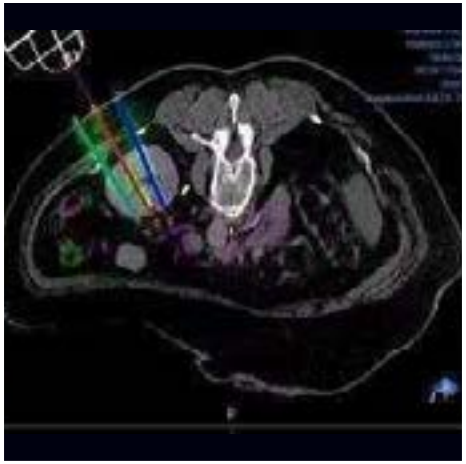
Planning in 2D



Planning in 3D



Probe validation scan



Registered image shows accurate needle placement as planned

Case Summary

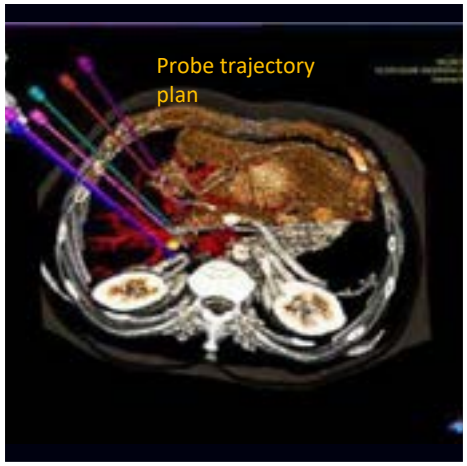
Tumor mass with dimensions of 24X30X30mm on the left kidney required multi-electrode IRE treatment.

Patient was treated in prone position.
Five IRE needles were used to cover the entire tumor mass.

Planning and targeting with MAXIO helped in arriving at complete tumor coverage.

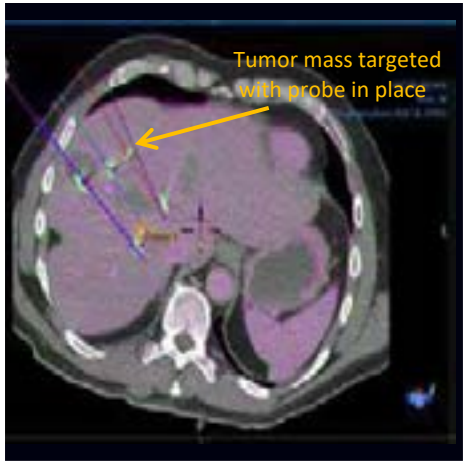
There was no procedure related complications.

Renal-Irreversible Electroporation

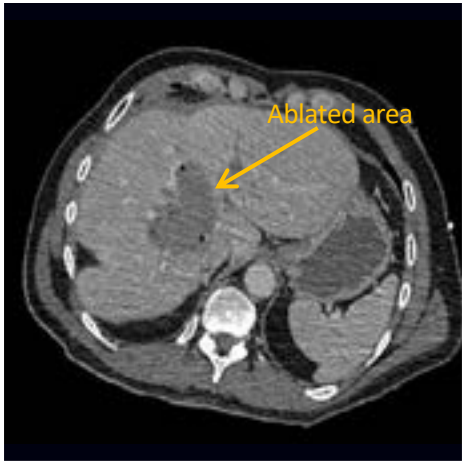


Planning in 2D

Needles in situ



Probe validation scan



Post IRE shows ablated area covering tumour

Case Summary

Metastatic lesion on the liver from primary colorectal cancer was treated by irreversible electroporation.

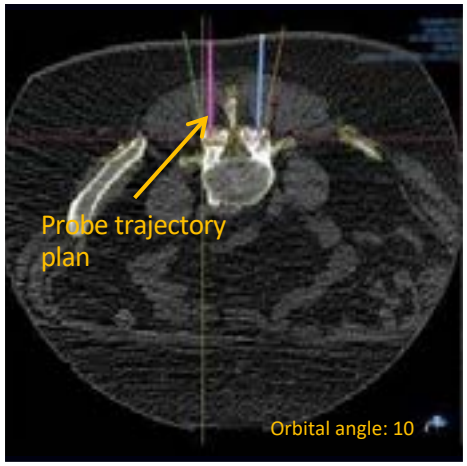
The lesion was deep, 20x30mm in size and was present on the left lobe of the liver near the portal vein.

Six needles were used for the IRE procedure so as to cover the entire mass of tumor.

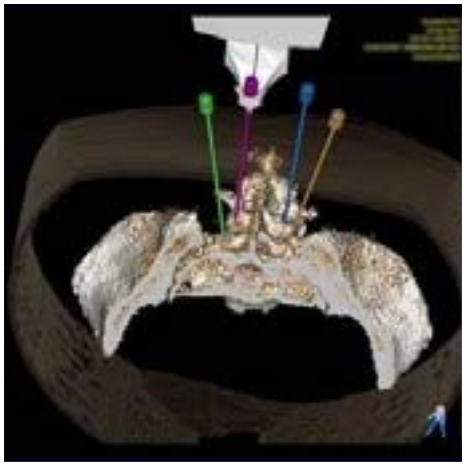
Multi-needle placement planning and targeting are done with the aid of MAXIO.

Pain Management

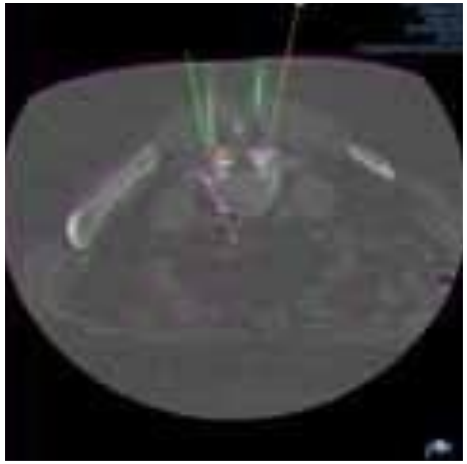
Multiple Facet Joint Injections at L4-L5 & L5-S1



Planning in 2D



Planning in 3D



Needle validation scan

Needles in situ

Case Summary

A patient with a degenerative lumbar spine is planned for facet joint injections at L4-L5 and L5-S1 on the right and left sides simultaneously.

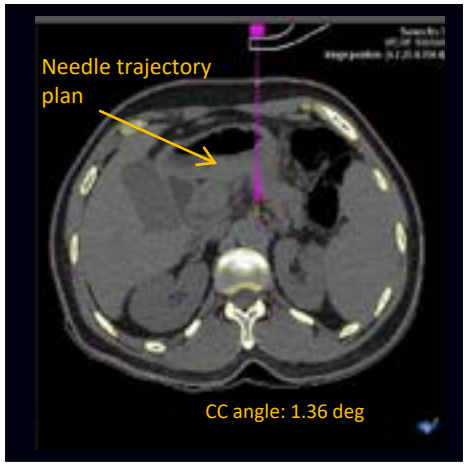
Needle insertion in facet joint at multiple levels was accomplished successfully with the guidance of MAXIO.

Multiple Facet joints at L4-L5 and L5-S1 on right side and left side to be targeted.

Each Facet joint injected with 1ml of Marcaine and 1ml of Celestone Chronodose.

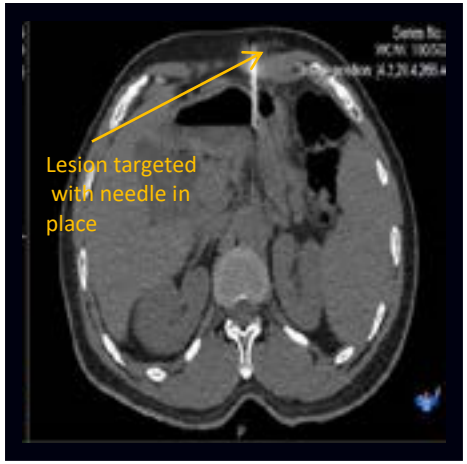
Procedure completed precisely.

Celiac Plexus Block

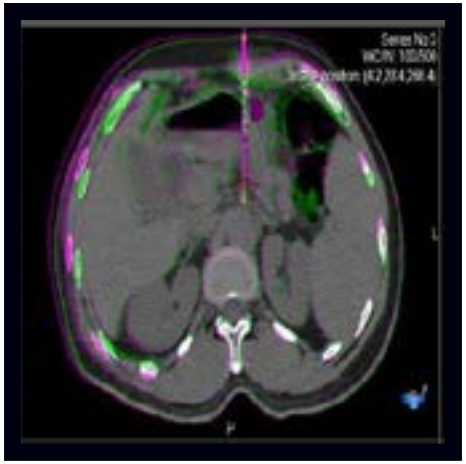


Planning in 2D

Planning in 3D



Needle validation scan



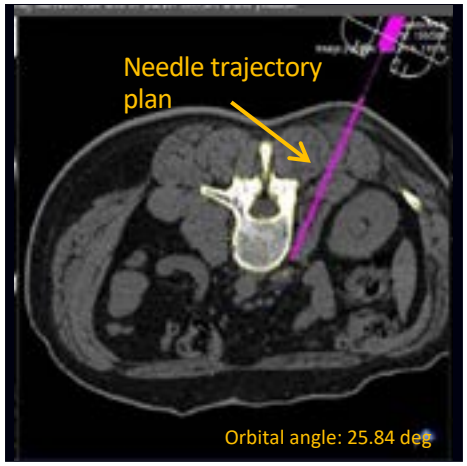
Registered image shows accurate needle placement as planned

Case Summary

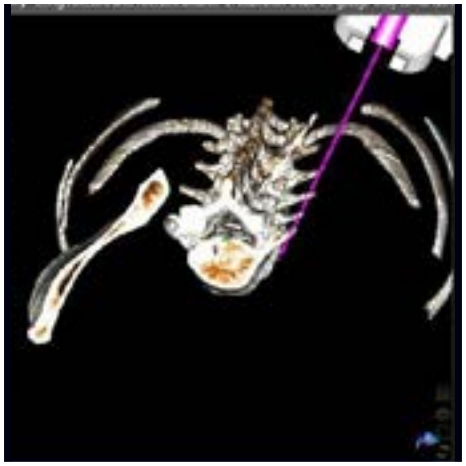
Celiac plexus block was done for refractory abdominal pain.

Through MAXIO V2.5.3, careful angulations were made and the target area was reached and the pain was treated successfully.

Lumbar Sympathectomy



Planning in 2D



Planning in 3D

Needle validation scan

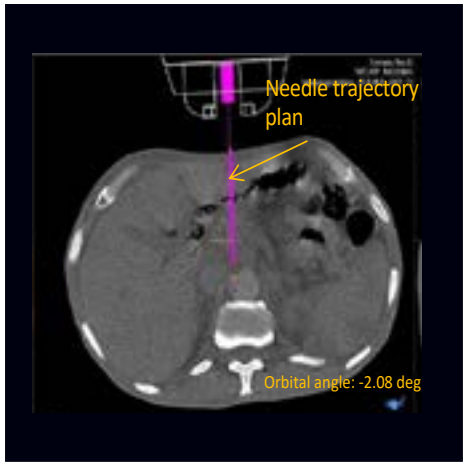
Registered image shows accurate needle placement as planned

Case Summary

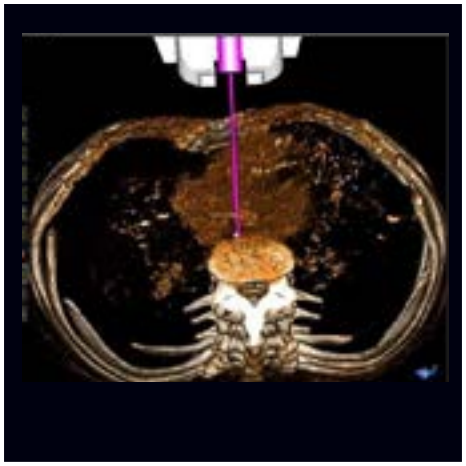
Right lumbar sympathectomy was done to alleviate the pain.

The target region was present at a depth of 112.66mm on the right side of the lumbar region. Planning and targeting was done with MAXIO V2.5.5.

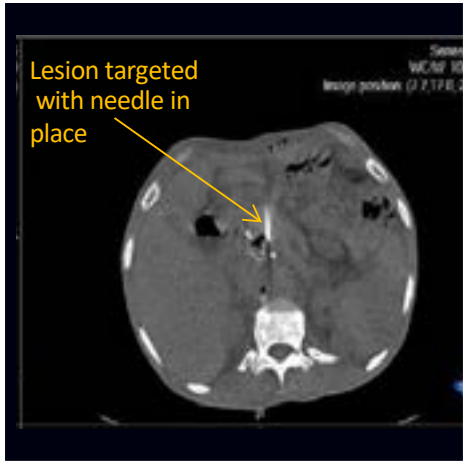
Pain Management – Abdomen



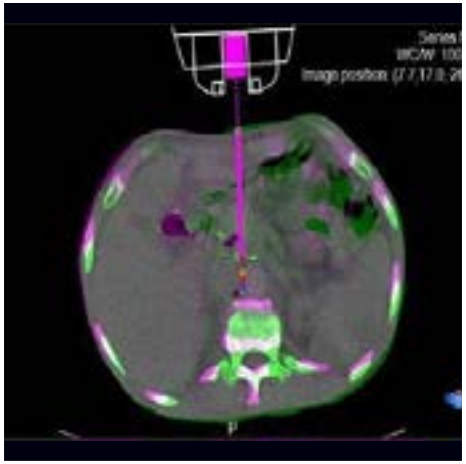
Planning in 2D



Planning in 3D



Needle validation scan



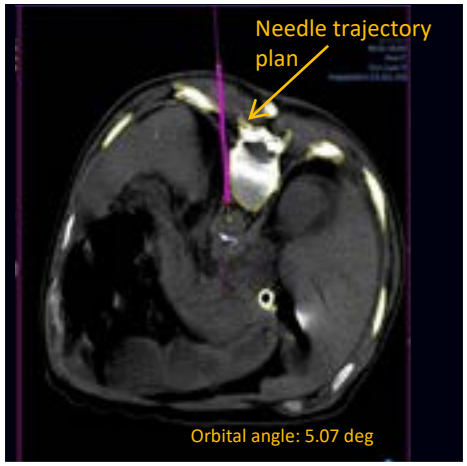
Registered image shows accurate needle placement as planned

Case Summary

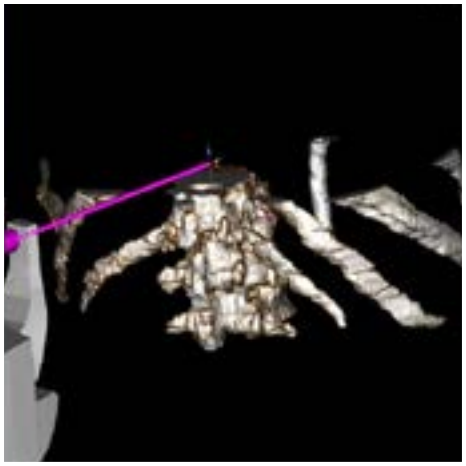
Palliative treatment for the deep abdominal mass completed with the assistance of MAXIO
The mass was present in the deep abdominal region.

Through MAXIO V2.5.5, careful angulations were made and the target area was reached successfully.
Necessary drugs injected to alleviate pain.

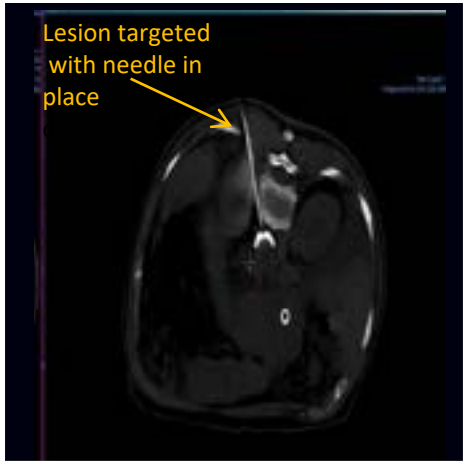
Celiac plexus Block



Planning in 2D



Planning in 3D



Probe validation scan

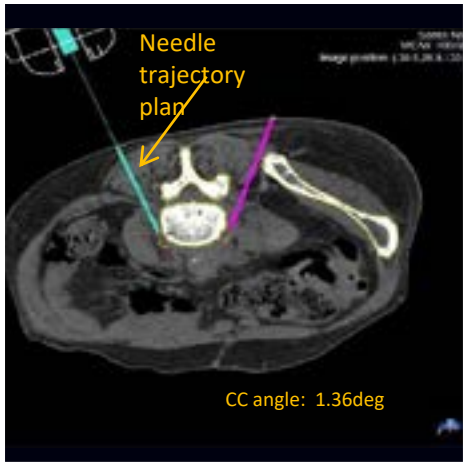
Case Summary

Celiac plexus block was administered successfully. The deep location of the celiac plexus, along with its proximity to the aorta requires precise targeting and accurate angulation to deliver drug safely to the plexus.

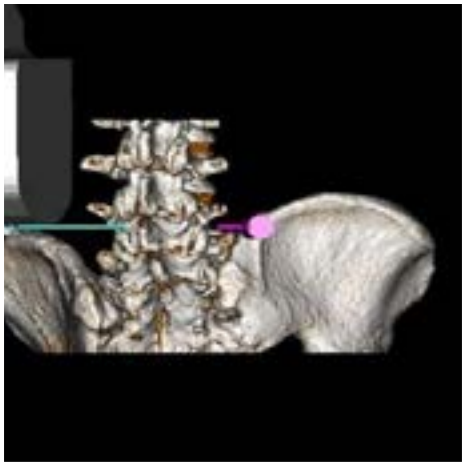
After needle insertion drug was delivered. Robotic guidance ensured that the needle followed the desired trajectory.

The procedure was executed with the guidance of MAXIO for planning and targeting

Lumbar Sympathectomy

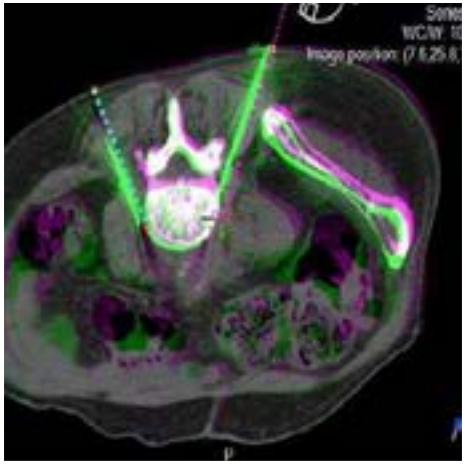


Planning in 2D



Planning in 3D

Needle validation scan



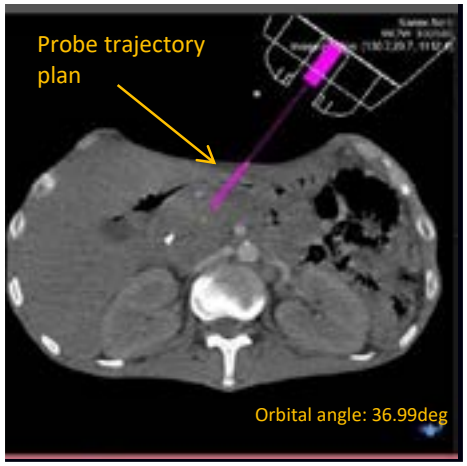
Registered image shows accurate needle placement as planned

Case Summary

Through MAXIO V2.5.3, careful angulations were made from both sides of the L3 spine region was targeted adjacent to the aorta and the drug was injected.

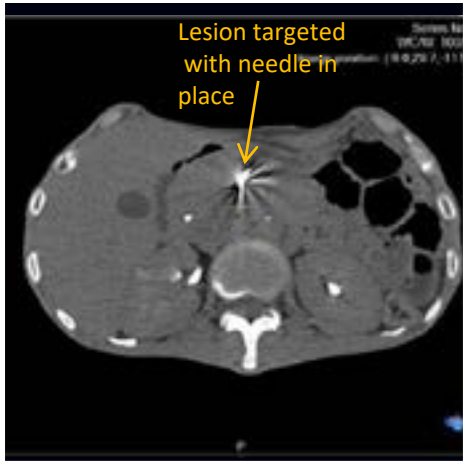
Biopsy

Pancreatic Head Biopsy

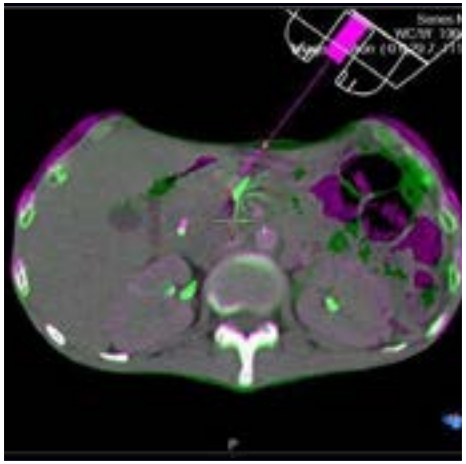


Planning in 2D

Planning in 3D



Needle validation scan



Registered image shows accurate needle placement as planned

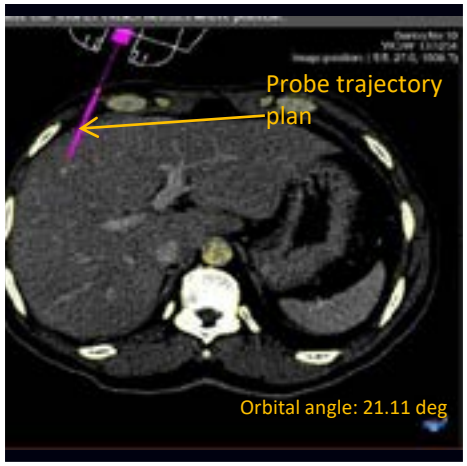
Case Summary

Trajectory plan was done with the help of MAXIO. The lesion was located on the left pancreatic head. Biopsy was done.

Gastro duodenal artery was located on the straight pathway adjacent to the lesion, so oblique planning was done.

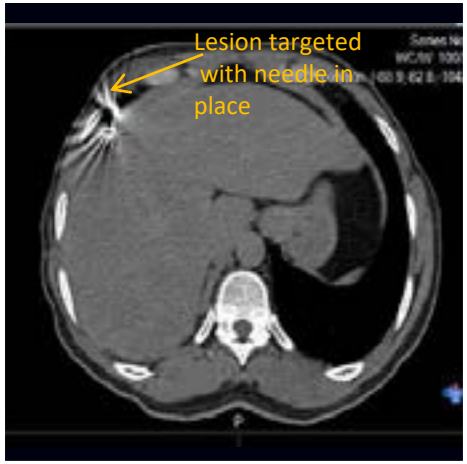
Through MAXIO V2.5.5, careful angulations were made and the target area was reached successfully without injuring the adjacent vessels.

Liver Biopsy



Planning in 2D

Planning in 3D



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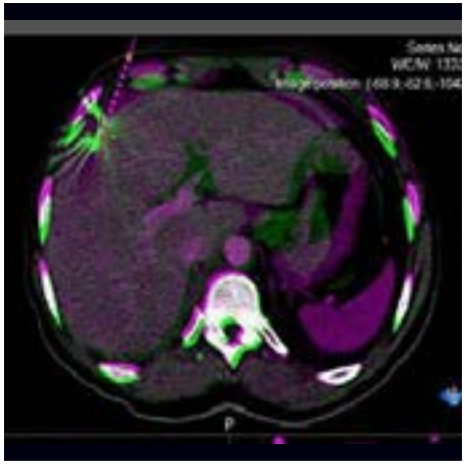
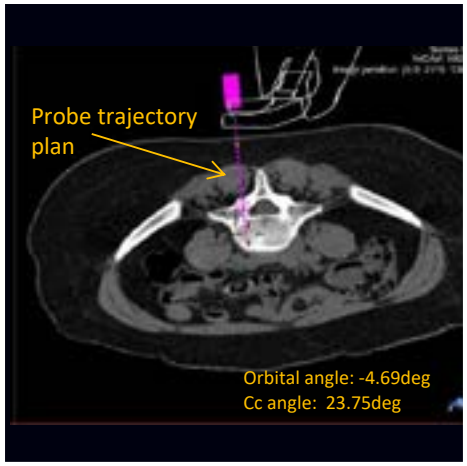


Registered image shows accurate needle placement as planned

Case Summary

Segment 8 liver lesion. Biopsy was done. Through MAXIO V2.5.5, careful angulations were made and the target area was reached successfully.

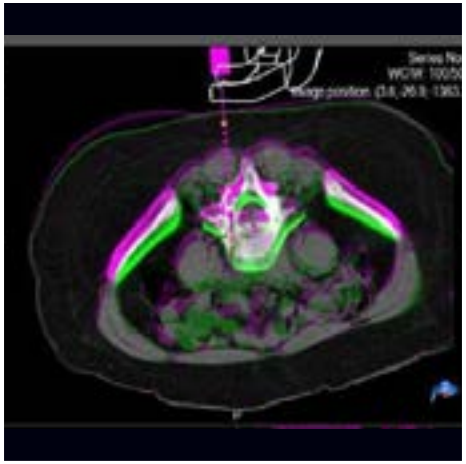
Bone Biopsy – L5 Vertebrae



Planning in 2D

Planning in 3D

Needle validation scan



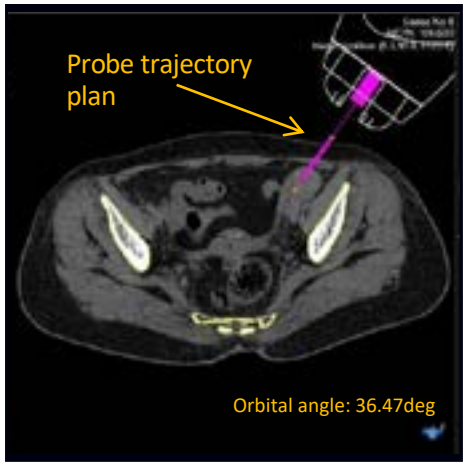
Registered image shows accurate needle placement as planned

Case Summary

The lesion was present on the left side of the L5 vertebrae.

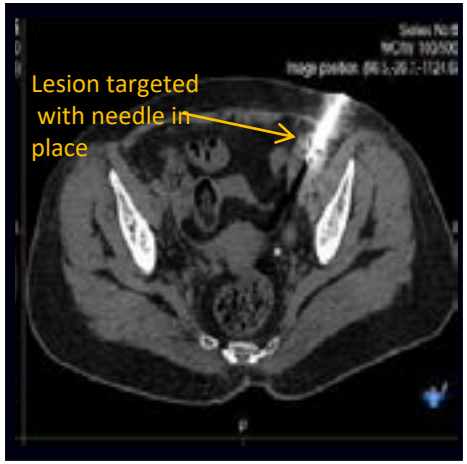
Biopsy sample collected by following the trajectory plan of MAXIO

Soft Tissue Biopsy – Iliac Lymph Node

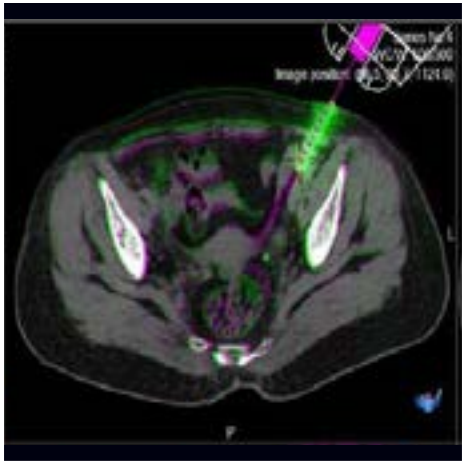


Planning in 2D

Planning in 3D



Needle validation scan



Registered image shows accurate needle placement as planned

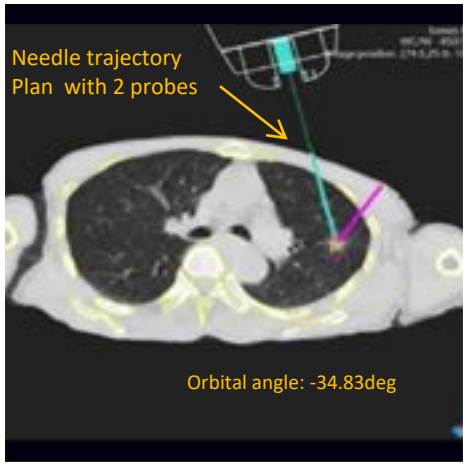
Case Summary

A biopsy sample collected from the left Iliac lymph node.

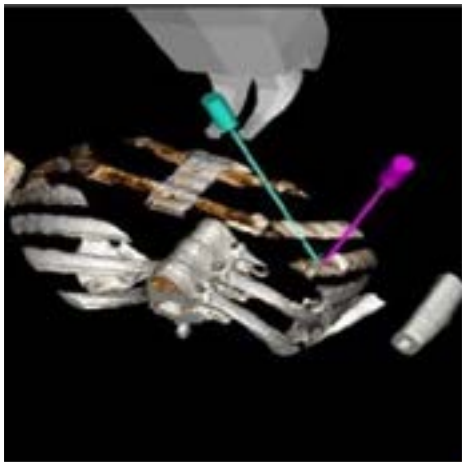
The target region was present in the left external iliac region at a depth of 43.67mm.

MAXIO was used to plan the probe trajectory and target the lesion.

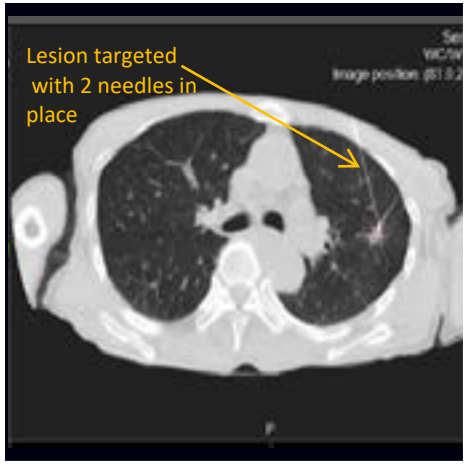
Centimeter Nodule - Lung Biopsy



Planning in 2D



Planning in 3D



Needle validation scan

Registered image shows accurate needle placement as planned

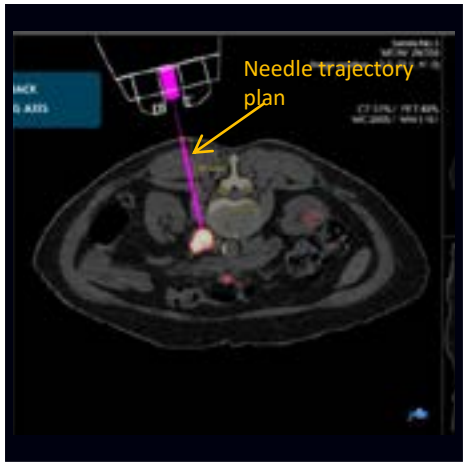
Case Summary

A lung nodule of size 1cm was present on the left lobe.

Two thin needles were used simultaneously to collect the sample.

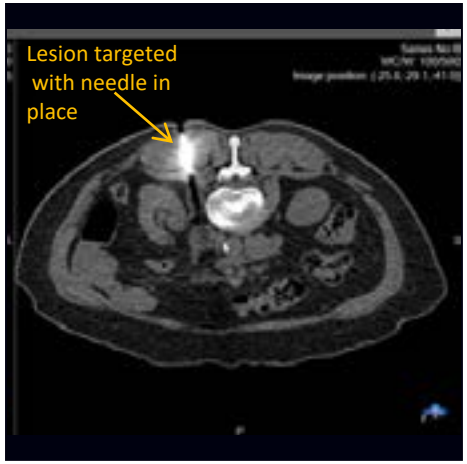
It was challenging to place two thin 22G needles simultaneously to target the lung nodule without causing pneumothorax as the patient's general health condition was not favorable. With precise angulation and depth control from MAXIO along with a breath hold monitor system, the needles reached the target in a single pass.

CT Guided Retro Peritoneal Biopsy

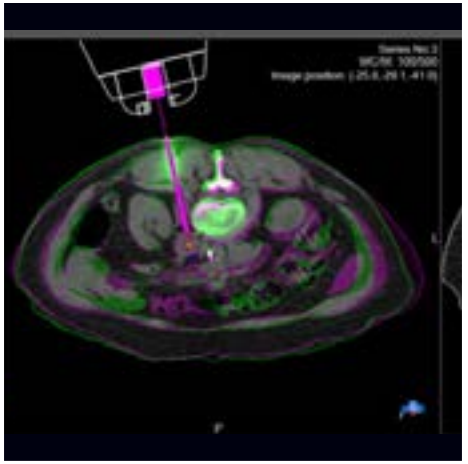


Planning in 2D

Planning in 3D



Needle validation scan



Registered image shows accurate needle placement as planned

Case Summary

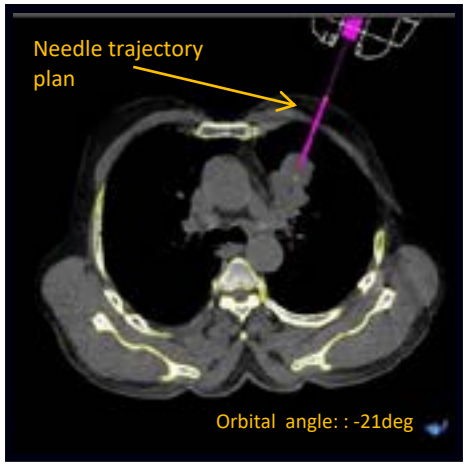
Retro Peritoneal node was present at a depth of 84.17cm.

It was adjacent to critical structures such as ureter, aorta and IVC.

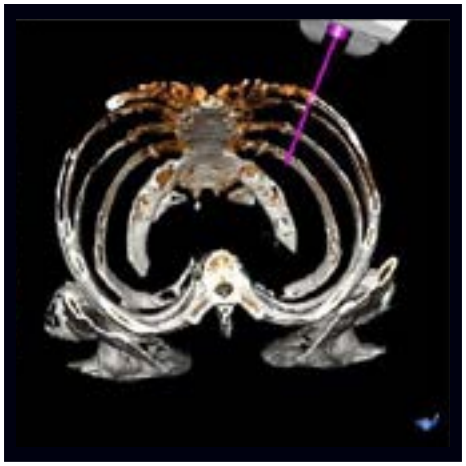
Retro peritoneal biopsy done under CT guidance and MAXIO support.

With the help of MAXIO's precise planning and guidance, the predefined location of the target was determined.

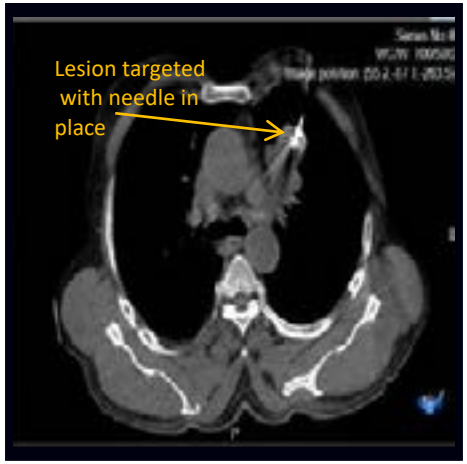
Left Lung Biopsy



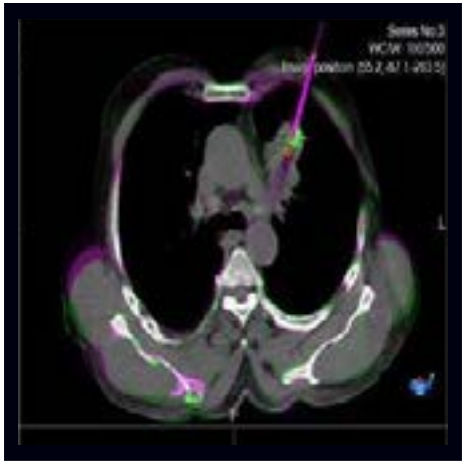
Planning in 2D



Planning in 3D



Needle validation scan



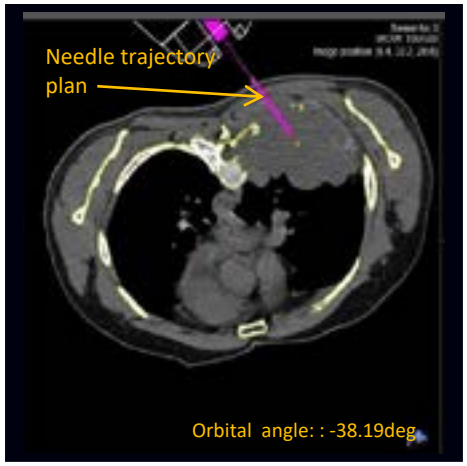
Registered image shows accurate needle placement as planned

Case Summary

The mass was present on the upper lobe of left lung.

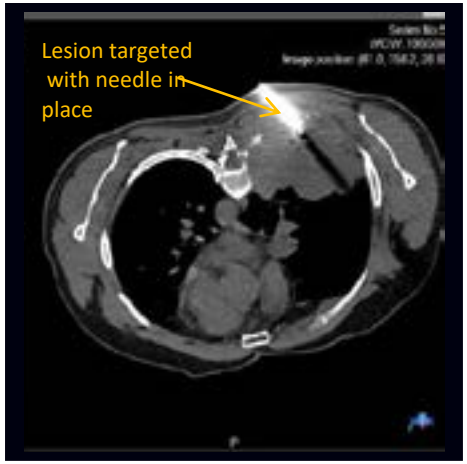
The lesion was biopsied successfully with the support of MAXIO V2.5.3.

Right Lung Biopsy

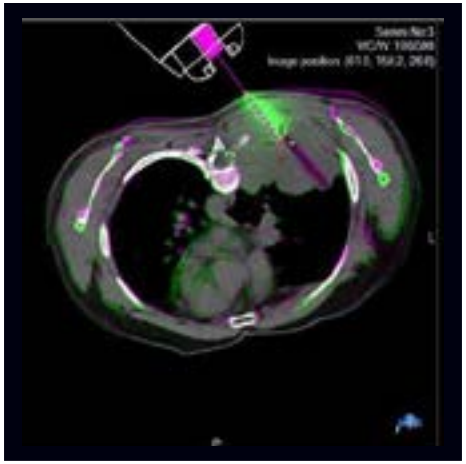


Planning in 2D

Planning in 3D



Needle validation scan



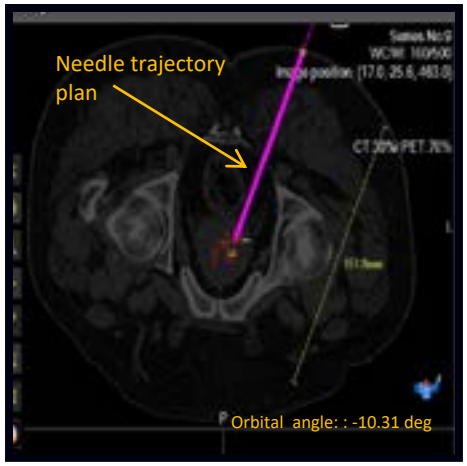
Registered image shows accurate needle placement as planned

Case Summary

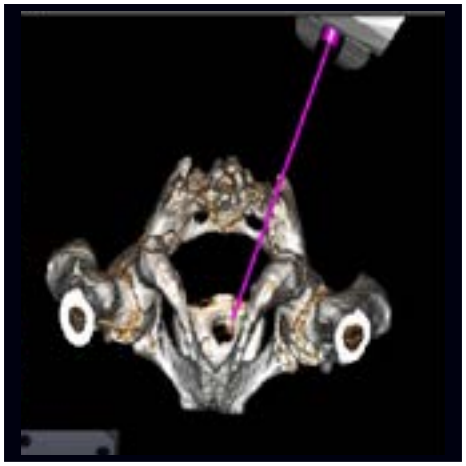
The mass was present on the right lung.
Biopsy sample collected from a solid portion of a lesion without necrosis.

Planning and targeting done with the aid of MAXIO V2.5.5.

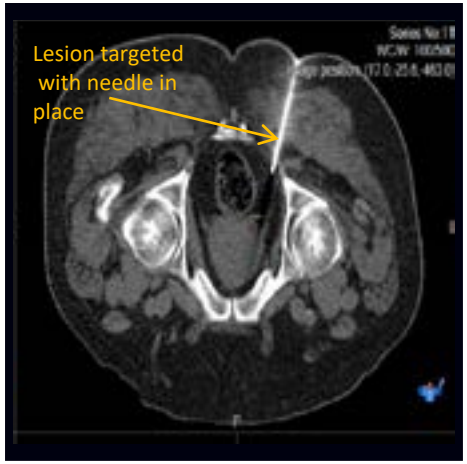
Prostate Biopsy



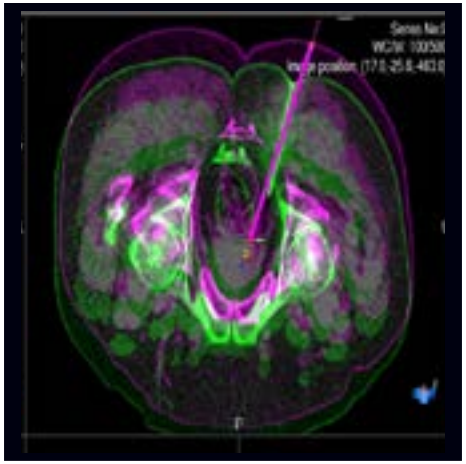
Planning in 2D



Planning in 3D



Needle validation scan



Registered image shows accurate needle placement as planned

Case Summary

A very small prostate mass was present at a depth of 151mm.

Biopsy sample collected from a solid portion of a lesion without injuring rectum and urethra.

Precise planning and guidance of MAXIO helped in achieving the correct angulation and high accuracy.

Winning with Customers Globally

FDA CFDA China Food and Drug Administration Health Canada

Some of Our Key Users

- Postgraduate Institute of Medical Education and Research
- Sanjay Gandhi Postgraduate Institute of Medical Sciences
- Dr. Ram Manohar Lohia Hospital, Delhi, India
- Bernard Institute of Radiology, Madras Medical College, India
- Cancer Institute WIA, Adayar, Chennai
- Rabindranath Tagore International Institute of Cardiac Sciences
- Gleneagles Global Health City Chennai
- All India Institute of Medical Science - Rishikesh
- Tamilnadu Government Multi Super Speciality Hospital Chennai
- NIMHANS Bangalore, India (National Institute of Mental Health and Neurosciences)
- All India Institute of Medical Science - Raipur
- Regional Cancer Centre, Thiruvananthapuram
- Technical University of Braunschweig - Germany
- The Royal Marsden London
- Colegio Ramón y Cajal Spain
- Puerta de Hierro Majadahonda University Hospital, Spain
- Central Clinical Hospital Moscow, Russia
- Saint Luke Clinical Hospital Russia
- St.Petersburg Oncology centre, Russia
- Yantai Affiliated Hospital of Binzhou Medical University - China
- Inner Mongolia Medical University China
- Second Affiliated Hospital of Fujian Medical University, China
- 108 Military Hospital Vietnam
- 175 Military Hospital Ho Chi Min City, Vietnam

* This is a partial list of customers world wide, using Perfint's assistance solutions.

Perfint™

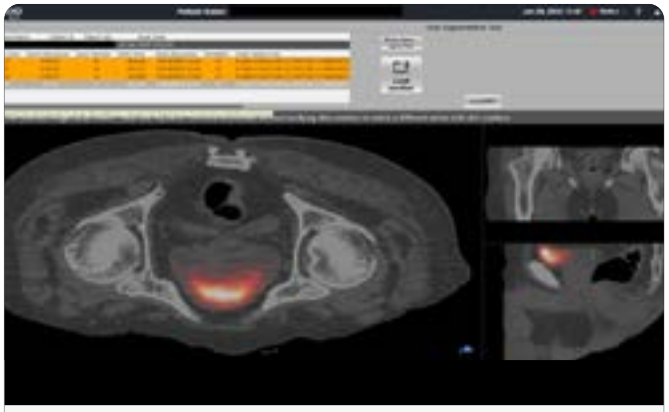
MAXIO ™

Integrated Planning,
Navigation and Targeting
for Tumor Ablation

NAVIOS ™

Visualization, planning
and navigation for
interventional oncology

MAXIO™ Features



Multi-modality image guidance

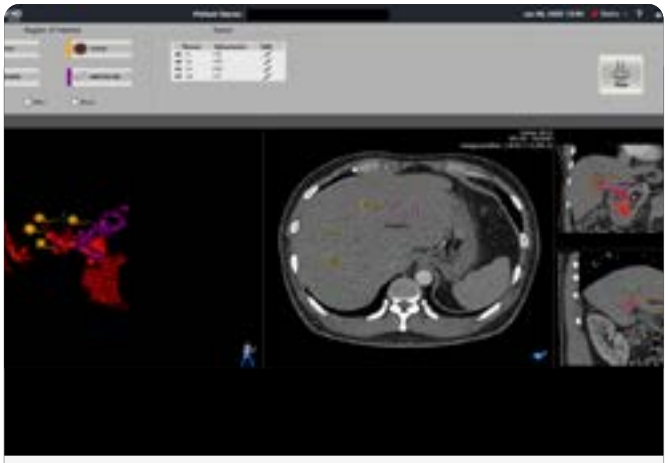
MAXIO™'s treatment planning and robotic assistance combine well with the versatility of CT for various IR procedures.

Pre-operative MRI information can also be used in combination with current CT for visualisation and planning using MAXIO's image registration tools (1) .

MAXIO™ assisted PET-CT guided procedures are useful especially for those FDG-avid foci that do not show corresponding lesions on the CT scan.

Pre-operative image registration

MAXIO™'s In-room registration of current images with & prior contrast studies allow users to visualise the tumour well whilst conserving contrast for post ablation visualisation



Tools for volumetric visualisation and segmentation of multiple VOI

MAXIO™'s single touch segmentation and volumetric reconstruction allow the physicians to analyze the size and shape of the tumour and surrounding structures prior to treatmentconserving contrast for post ablation visualisation

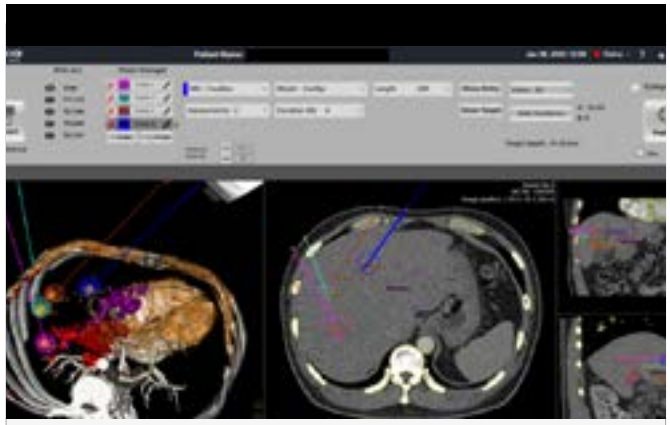
MAXIO™ Features

Oblique angle view

MAXIO™ 's oblique angle reconstruction helps physicians better visualize anatomical structures traversed by the needle path, especially when out of plane

In-room and remote planning for Ablation Treatment

MAXIO™'s software helps the physician to determine a patient specific ablation plan to achieve complete tumour coverage. It also allows for multiple plans to be created and compared and saves CT time by registering current CT images with remotely created plans.the needle path, especially when out of plane



Stereotactic assistance for multi-probe placement, without fluoroscopic radiation

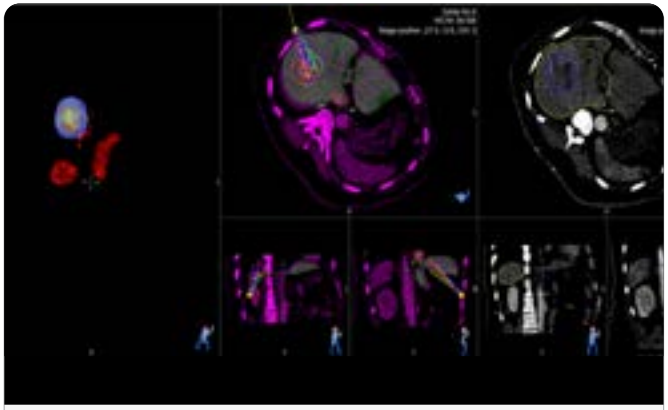
MAXIO™'s robot helps physicians perform compound angle placement of up to 6 applicators needles on up to 4 targets, using a single plan, without using external tracking devices or fluoroscopic guidance.

This reduces avoidable needle manipulations, punctures and trauma and radiation to the patient while reducing procedure time.anatomical structures traversed by the needle path, especially when out of plane

MAXIO™

Tools to verify patient position and respiratory levels

MAXIO™'s optional target stabilization accessories help in reducing patient and respiratory motion.



Intra-operative verification and post-ablation assessment

MAXIO™ allows physicians to register pre and post images to verify needle placement and tumour coverage and extend treatment if needed.

Procedural efficiency

MAXIO™'s customizable workflow involving smart features help physicians plan and execute IR procedures efficiently.

- Cumulative ablation volumes or ice-ballinvolving multiple probes
- Simultaneous or sequential ablation of large tumours
- Parallel probe placement for IRE
- Safety alerts to prevent needle and thermal injury to critical structures
- Auto-sequencing to avoid needle collision
- Intra-op estimation of tumour coverage

Wide variety of intervention

MAXIO™ is routinely used to plan and perform procedures ranging from complex biopsies and drainages to multi-needle-based procedures such as

- Tumour ablation (RFA, MWA, Cryo, IRE, PEI etc)
- Pain management and Brachytherapy
- Difficult to access lesions in Thorax, Abdomen and Pelvis

TUMOR ABLATION
Current Practice

Today, clinicians plan their interventional oncology procedures by viewing 2 dimensional CT /PET-CT slices, and combining what they see with their understanding of human anatomy, to determine the optimal approach to target the tumor. They must determine the probe trajectory path and the amount of energy needed to destroy the tumor, while sparing healthy tissue.

Multiple energy probes must be manually advanced into the tumor one at a time, without coming in contact with one another, and without damaging vital organs.

All this while factoring in the potential for organ
movement during patient respiration. It's not surprising the procedure is performed by only the most skilled and practiced clinicians.

MAXIO ™
New Approach

Clinicians can now visualize and plan an entire ablation procedure in 3D - pre-operative registration, segmentation and visualization of multiple VOI, multi probe placement planning, estimated ablation volume* visualization, probe placement sequence, all before advancing a single probe into the patient.

Once the plan is confirmed, MAXIO's targeting system combined with adaptive intra-operative registration provides spatial positioning and orientation for a probe guide, through which the clinician then carefully advances each probe and performs the ablative procedure.

Once ablation has been completed, MAXIO's visualization tool allows the clinician to verify if the procedure was executed as planned and determine whether additional treatments may be required. MAXIO's reporting tool then generates the required reports.

Tumor ablation made easier and more predictable.

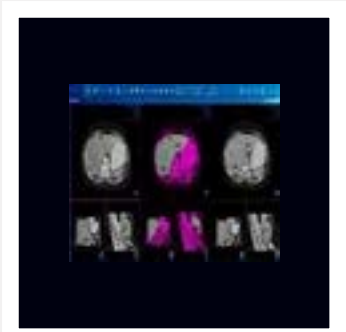
* as provided by the device manufacturer or as determined by the clinician.

MAXIO™

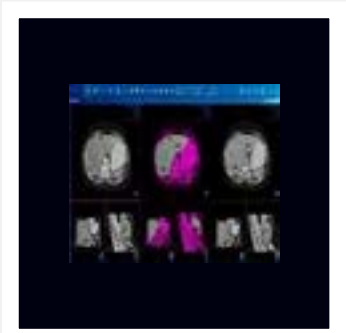
Tumor Ablation is heading in a whole new direction... And MAXIO is leading the way.

Clinicians benefit from MAXIO's intelligent planning suite and targeting...

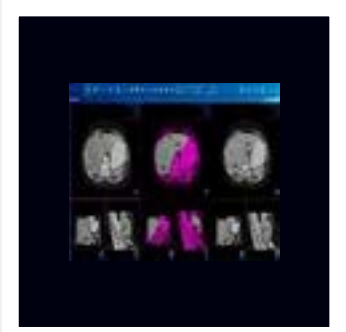
- Registering pre-operative images and off-line plan with current CT/PET--CT images
- Organ specific tumor visualization and segmentation
- Multiple VOI, multi-probe placement plan for multiple procedures
- Accurate placement without fluoroscopic radiation
- Ability to treat hard to access and large tumors
- Post procedure verification



Multi phasic contrast image of liver co registered prior to procedure planning on MAXIO suite



Intuitive one touch segmentation helps segment organs & tumor



Multiple probe / multiple VOI planning

- Works with all DICOM3 CT images
- Supports RF, MW, IRE, Cryo ablation
- Patient and Respiratory motion management.
- Sterile disposable kit* to enhance clinical efficiency

With MAXIO ™ everyone benefits

Clinicians

Clinicians are better able to plan interventional oncology procedures with the help of MAXIO's visualization and planning software, then successfully perform the procedure with the help of MAXIO's targeting system.

Hospitals

Hospitals are looking for effi ciency and it's the goal of MAXIO to make interventional procedures faster and more predictable, a key challenge to scheduling of the CT suite.

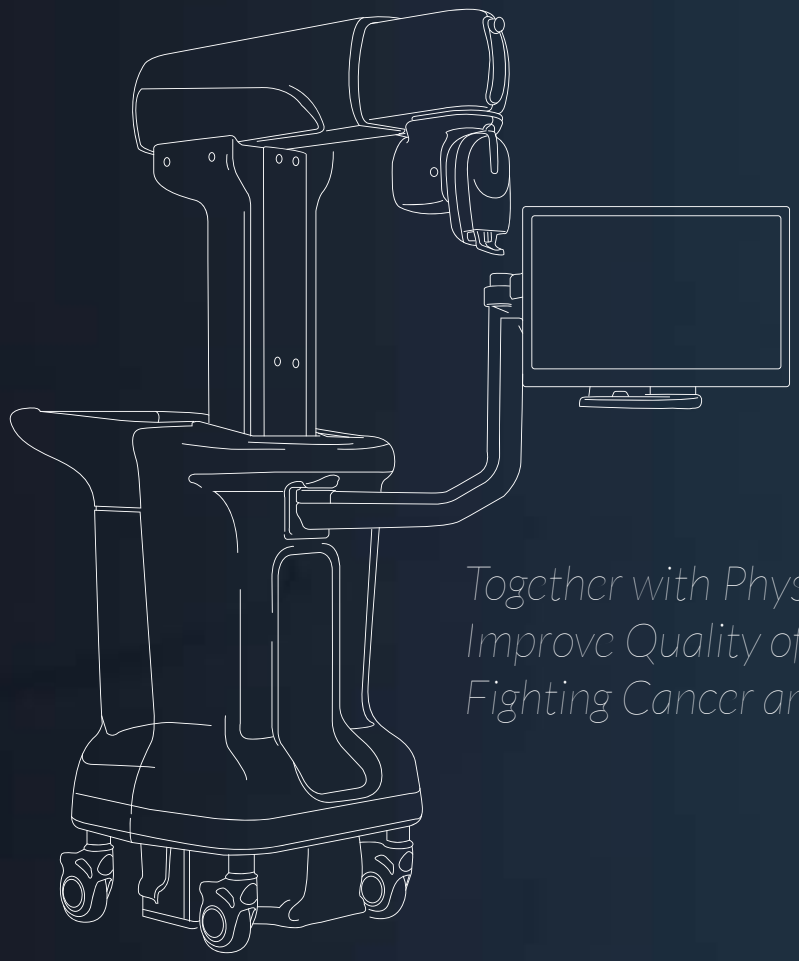
Patients

Patients deserve access to life-saving treatments that are safe and effective. MAXIO strives to reduce the potential for unintended organ damage due to repeat punctures and is likely to reduce the need for repeat scans which would mean less radiation exposure for the patient.ss

* Please contact your Perfint representative for details

MAXIO

Perfint™



Together with Physicians,
Improve Quality of Life of those
Fighting Cancer and Pain

Contact your local sales representative to learn more about MAXIO.

Perfint Healthcare Pvt Ltd
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