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iSR'obot™
Mona Lisa

Robotic Prostate Biopsy

Navigation System

TARGETED BIOPSY WITH PRECISION AND EASE

The iSR'obot™ Mona Lisa is a robotic transperineal prostate biopsy system with MRI-ultrasound fusion capability. Designed with both physician and patient in mind, the system enables physicians to perform biopsy with precision and ease.

The software algorithm helps physicians to perform biopsy planning with flexibility, while the robotic needle guide allows automated positioning and depth control of the biopsy needle to the targeted biopsy core.

ROBOTIC NEEDLE POSITIONING AND DEPTH CONTROL

Based on the custom biopsy plan created, the robotic system guides the needle positioning and depth. This allows the planned cores to be collected with ease and accuracy, even at the apex, anterior and peripheral areas.

PROSTATE STABILITY USING ULTRASOUND PROBE SHEATH

Housed in the specially designed probe sheath, the ultrasound probe moves and scans unobstructed. The probe sheath prevents prostate deformation and additionally provides valuable stabilisation.

INNOVATIVE DUAL CONE APPROACH

Mona Lisa's transperineal dual cone approach creates a virtual pivot point ensuring multiple needle entry through the same channel. This approach is designed to minimise pubic arch interference and enable complete prostate coverage.
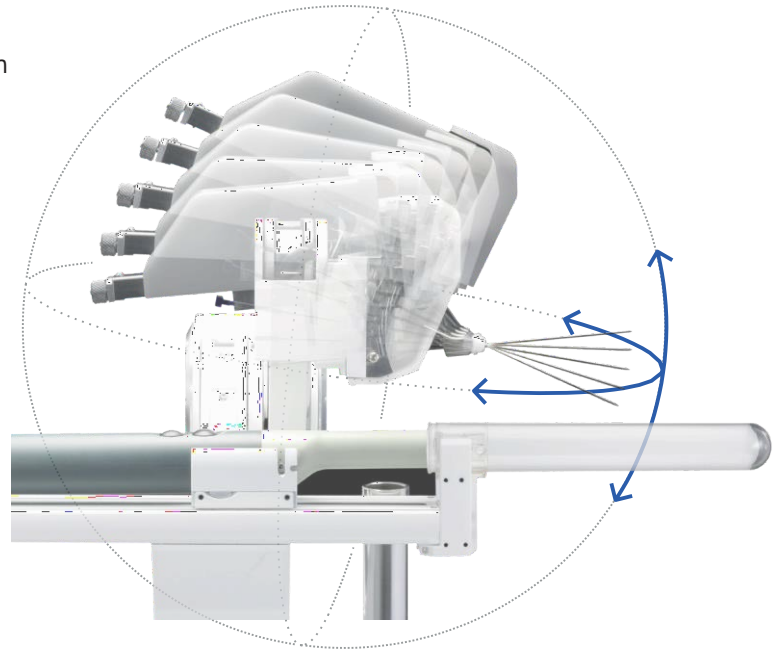
AUTOMATED YET FLEXIBLE BIOPSY PLANNING

The intuitive user interface allows mix and match from three biopsy plan options to create a custom biopsy plan. The physician has the flexibility to add, move or delete core location at any time.

ELASTIC MRI-ULTRASOUND FUSION

At one click, the MRI model and ultrasound model fuse instantly, providing 3D visualisation and enabling targeting of the region of interest (ROI).
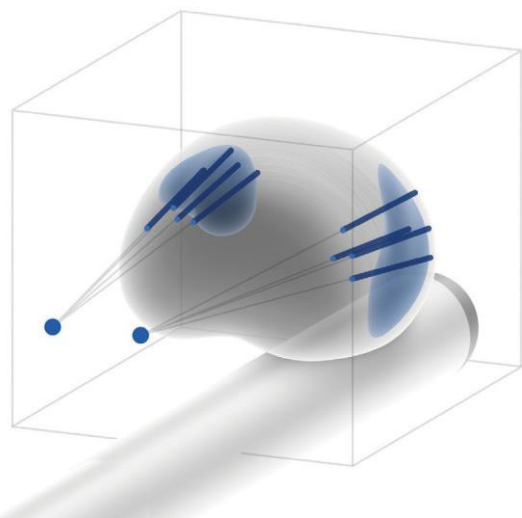
OTHER FEATURES

Needle Deflection Adjustment: To address needle deflection due to prostate tissue heterogeneity and needle tip design.

Patient Motion Adjustment: To address patient movement during procedure with fine adjustments of up to 0.2mm precision.

Comprehensive report: Reports are generated with 3D images and clinical data.

Reproducibility: Precise coordinates taken of each biopsy sample allows for accurate repeat procedures to be carried out, thus facilitating active surveillance.

IMPROVED CLINICAL OUTCOME

The targeted robotic biopsy system aims to set a new standard for accurate biopsy core collection. Not only helping physicians to detect prostate cancer in patients early, the accurate targeting also provides confidence to enrol patient in active surveillance program.

Using the transperineal approach together with Mona Lisa's innovative two needle entry points, the infection rate is close to zero[1].

Model MRI prostate with UroFusion	*Model ultrasound prostate with UroBiopsy*	*Fusion of MRI and ultrasound models*
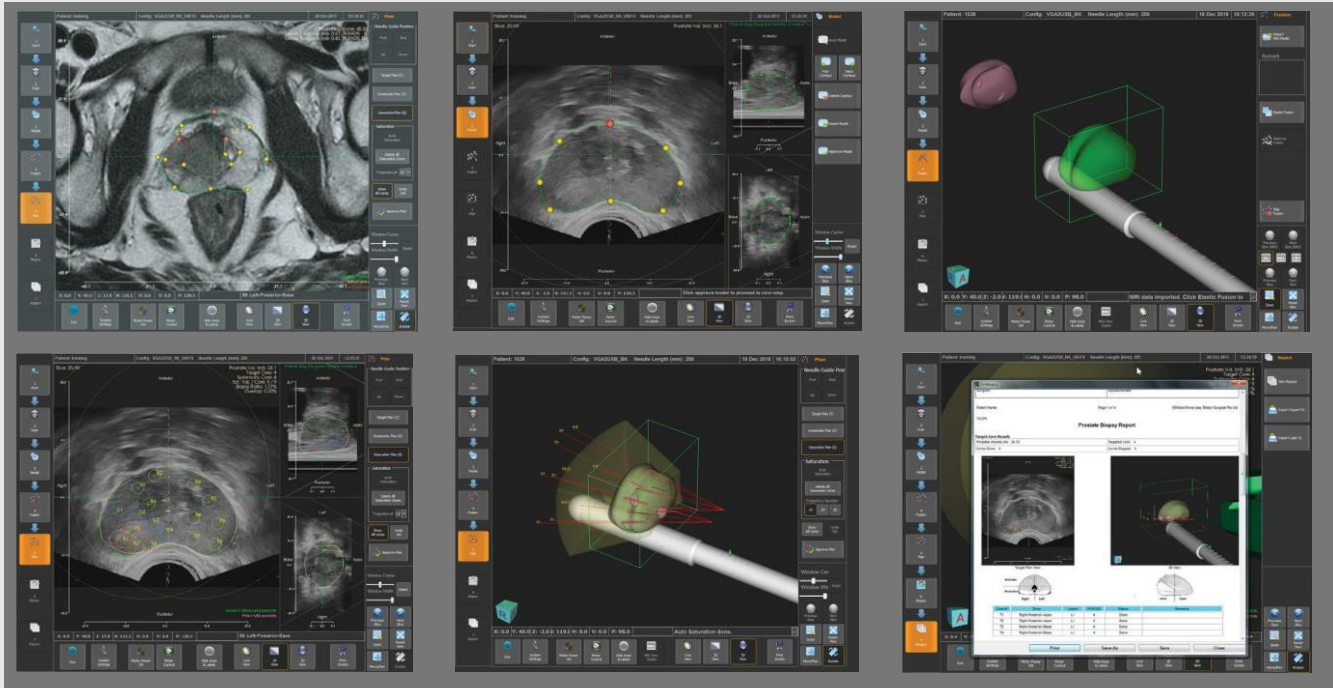
Biopsy plan with auto-targeting option	*3D view of biopsy plan*	*Biopsy report*

1.Grummet J, Pepdjonovic L, Huang S, et al. Transperineal vs. transrectal biopsy in MRI targeting. Transl Androl Urol. 2017 Jun; 6(3): 368–375.

SIMPLE WORKFLOW

1. SCAN & MODEL

> Mounted on the robot arm, the movement of the ultrasound probe is motorised to produce a series of 2D images.

> From the 2D images, the physician marks out the prostate boundaries to facilitate 3D model reconstruction.

2. FUSE & PLAN

> Before the biopsy, the radiologist performs MRI scan on the patient, and uses UroFusion to model MRI prostate to mark the ROI.

> The imported MRI model fuses with the ultrasound model instantly.

> The Target Plan and Saturation Plan options automatically generate core locations based on ROI and prostate 3D model established by the physician.

3. BIOPSY & REPORT

> Based on the biopsy plan established by the physician, the robotic needle guide and needle stopper are precisely positioned to the planned core locations.

> The physician manually inserts the biopsy needle through the robotic needle guide to obtain cores with speed and accuracy.

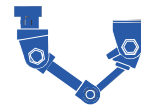> Comprehensive reports are automatically generated with clinical data and 3D images.

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iSR'obot™ MONA LISA

iSR'obot™ Mona Lisa

UroFusion Software

UroBiopsy Software

Bed Rail Stabilizer

Biopsy Kit

SPECIFICATIONS

SIZE AND WEIGHT

Overall Dimensions	560 mm (W) x 680 mm (D) x 1460 mm (H)
Weight of iSR'obot™ Mona Lisa	89.1kg
Weight of Robot Arm	4.7 kg approx.

RANGE / ACCURACY (BASED ON BENCH DATA)

Max Prostate Volume Coverage	100 ml
Mechanical Accuracy	Within 1.0 mm

OPERATING ENVIRONMENT

Temperature	+10°C to +35°C
Humidity	30% to 70% RH
Barometric Pressure	700-1060 HPa

ELECTRICAL INFORMATION

Voltage	110 to 240VAC
Frequency	50/60H

CERTIFICATIONS

- FDA (U.S.A)
- CE mark (Europe)
- TGA (Australia)
- HSA (Singapore)
- EN ISO 13485:2012

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ABOUT US

Biobot Surgical Pte Ltd is a Singapore based company that strives to be a global technology leader in minimally-invasive robotic healthcare solutions.

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