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Scientific Resources

March 2022

The publications contained in this collection have been classified as below for your easy perusal.

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Safety and Diagnostic Yield of 68Ga Prostate-specific Membrane Antigen PET/CT-guided Robotic-assisted Transgluteal Prostatic Biopsy

Rajender Kumar | Shrawan Kumar Singh | Bhagwant Rai Mittal | Shelvin Kumar Vadi | Nandita Kakkar | Harmandeep Singh | Venkata Subramanian Krishnaraju | Santosh Kumar Anish Bhattacharya

Departments of Nuclear Medicine (R.K., B.R.M., S.K.V., H.S., V.S.K., A.B.), Urology (S.K.S., S.K.), and Pathology (N.K.), PGIMER, Chandigarh, India

Objective:
To evaluate the safety and diagnostic yield of 68Ga PSMA PET/CT-guided, robotic-arm assisted transgluteal prostatic biopsy.

Conclusion:
Transgluteal prostate-specific membrane antigen (PSMA) PET/CT-guided, robotic-targeted prostatic biopsy is safe with a high diagnostic yield of prostate cancer for PSMA-avid lesions.

https://pubmed.ncbi.nlm.nih.gov/35191735/

Clinical Publication – 2

Robot-assisted navigation system for CT-guided intervention procedures for percutaneous lesions: Our experience at BIR, Chennai

Dr Iyengaran H, Assistant Professor, BIR, Chennai
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Objective

To evaluate the new Robot-assisted Navigation System for CT guided lung procedures with the assessment of the accuracy of needle placement, radiation dose and performance level.

Conclusion

Our experience demonstrated the effectiveness of the Robot-assisted Navigation system for CT-guided percutaneous interventions (including FNA, Biopsy, RFA, abscess drainage) with a lower radiation dose compared with conventional CT-guidance procedures and similar radiation dose compared with CT fluoroscopy procedures. No radiation exposure to the interventional radiologists as compared with CT fluoroscopy procedures. The average Planning and Navigation time were 10 minutes and 8 minutes respectively, which was relatively not time-consuming. Performance level was excellent. The planning software was easy to learn and the robotic device was easy to handle. The targeting success rate for a satisfactory intervention was 100%. Robot-assisted Navigation system is potentially valuable for more technically demanding procedures, like Irreversible Electroporation (IRE).

https://www.worldwidejournals.com/indian-journal-of-applied-research-(IJAR)/recent_issues_pdf/2020/March/robot-assisted-navigation-system-for-ct-guided-intervention-procedures-for-percutaneous-lesions-our-experience-at-bir-chennai_March_2020_1582964261_8000503.pdf

Clinical Publication - 3

Robot-assisted radio frequency ablation of primary and secondary liver tumours: early experience at BIR, Chennai

Dr Iyengaran H, Assistant Professor, BIR, Chennai

Department of Radiology, Barnard Institute of Radiology, RGGGH, Chennai, Tamilnadu, India

Objective

To evaluate the technical success, radiation dose, safety and performance level of liver radiofrequency ablation using a computed tomography (CT)-guided robotic navigation system.

Conclusion

The system showed good accuracy for percutaneous needle placement for ablative therapy, with a radiation dose comparable to the historical controls. Even though these preliminary data were promising, the study was not randomized. A randomized controlled study with a larger sample size comparing robotic and non-robotic assisted
thermal ablation needs to be carried out to determine the outcomes. This clinical trial depicts that the robotic assisted planning and needle placement appears to be safe, with high accuracy and a comparable radiation dose to patients. Thus, making it acceptable for the routine clinical practice.

https://www.worldwidejournals.com/indian-journal-of-applied-research-(IJAR)/fileview/robotandndash-assisted-radio-frequency-ablation-of-primary-and-secondary-liver-tumours-early-experience-at-bir-chennai_February_2020_1580890401_7123567.pdf

Clinical Publication - 4

Preliminary clinical application of the robot-assisted CT-guided irreversible electroporation ablation for the treatment of pancreatic head carcinoma

Xiao F. He | Yue Y. Xiao | Xiao Zhang Xiao B. Zhang | Xin Zhang | Ying T. Wei
Zhong L. Zhang | Phiipp Wiggermann

Department of Diagnostic Radiology, Medical School of Chinese PLA, Beijing, China

Objective
To evaluate the feasibility and safety of a robot-guided irreversible electroporation (IRE) ablation system for the treatment of pancreatic head carcinoma.

Conclusion
The new robot can reduce the total operating time as compared to the manual probe placement with the same accuracy in the IRE of pancreatic head carcinoma.

https://pubmed.ncbi.nlm.nih.gov/32112493/

Clinical Publication – 5

Robotic-assisted computed tomography-guided ^{18}F-FDG PET/computed tomography-directed biopsy for diagnosis ofintra thoracic lesions: An experience from a tertiary care centre in North India.

Alok Nath | Arun Prashanth | Hira Lal | Sheo Kumar| Sukanta Barai | Sanjay Gambhir

Objective

The aim of this study was to assess the diagnostic yield of robotic-assisted computed tomography (CT)-guided 18F-FDG PET/CT-directed biopsy for the evaluation of intrathoracic space occupying lesions.

Conclusion

Robotic-assisted CT-guided 18F-FDG PET/ CT-directed biopsy is a useful and accurate technique for diagnostic evaluation of intrathoracic neoplasms with minimal complications rates as compared with conventional imaging techniques.

https://pubmed.ncbi.nlm.nih.gov/31939902/

Clinical Publication - 6

Positron emission tomography/computed tomography guided percutaneous biopsies of Ga-68 avid lesions using an automated robotic arm

R. Kumar | B.R. Mittal | A. Bhattacharya | S.K. Vada | H. Singh | A. Bal, J. Shukla | H. Singh V. Sharma | A. Stood | S.K. Singh

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Department of Surgery, PGIMER, Chandigarh, India
Department of Gastroenterology, PGIMER, Chandigarh, India
Department of Urology, PGIMER, Chandigarh, India

Objective

The purpose of this prospective study was to evaluate the feasibility of positron emission tomography/computed tomography (PET/CT)-guided biopsy of Ga-68 avid lesions using an automated robotic arm and determine the diagnostic yield of this technique.

Conclusion

A total of 25 patients (19 men, six women) with a mean age of 50.8 ± 17.3 (SD) years (range: 17-83 years) were included. The biopsies were performed after PET/CT using Ga-68.

https://pubmed.ncbi.nlm.nih.gov/31722844/

^{18}F-FDG PET/CT-Guided Real-Time Automated Robotic Arm–Assisted Needle Navigation for Percutaneous Biopsy of Hypermetabolic Bone Lesions: Diagnostic Performance and Clinical Impact

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Department of Hemato-Oncology, PGIMER, Chandigarh, India
Department of Pulmonary Medicine, PGIMER, Chandigarh, India

Objective
The purpose of this study is to establish the feasibility, safety, diagnostic performance, and clinical impact of real- time intraprocedural 18F-FDG PET/CT-guided auto- mated robotic arm–assisted biopsy of hypermetabolic marrow or bone lesions.

Conclusion
Automated robotic arm–assisted FDG PET/CT-guided real-time bone biopsy is a feasible and safe intervention with a very high diagnostic yield. It had a major clinical impact on patients with minimal residual FDG uptake on end-of- treatment PET/CT and isolated suspected metastatic lesions.

https://pubmed.ncbi.nlm.nih.gov/30383406/

Image guided robotic interstitial brachytherapy, a new innovative treatment for malignancies

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Introduction

The evolution of brachytherapy has been refined over years, but many of the techniques remain unchanged. The limited utilisation of brachytherapy in comparison to conformal external radiotherapy may be due to its invasive approach, operative risk, technical challenge, time consuming, long learning curve and poor technological advancements. However, there is growing evidence for practicing hypo-fractionated regimes in many solid malignancies. The present article focus on the similar roles of image guided - robotic interstitial high dose rate brachytherapy with hepatocellular carcinoma (HCC) as prototype.

Conclusion

This is the first study in usage of image based robotic interstitial high dose rate brachytherapy for liver malignancies. The technique described is simple, safe, fast, precise and effective treatment modality for hepatocellular carcinoma. We also emphasis the image guided robotic interstitial brachytherapy as an exciting platform for its similar role to ablate liver metastases or other site malignancies.

https://www.oatext.com/image-guided-robotic-interstitial-brachytherapy-a-new-innovative-treatment-for-malignancies.php#:~:text=Image%20Guided%20%2D%20Robotic%20Interstitial%20Brachytherapy%2C%20a%20new%20innovative%20interstitial%20brachytherapy,thereby%20delivering%20high%20dose%20to

Clinical Publication – 9

Diagnostic performance of real-time robotic arm assisted ^{18}F-FDG PET/CT-guided percutaneous biopsy in metabolically active abdominal and pelvic lesions

Rajender Kumar | Bhagwant Rai Mittal | Anish Bhattacharya | Harmandeep Singh | Amanjit Bal | Shelvin Kumar Vadi | Ashwani Sood | Gaurav Prakash | Harjeet Singh | Aman Sharma

Objective

To evaluate the feasibility and diagnostic performance of 18F-FDG PET/CT-guided biopsy of abdominal and pelvic lesions with automated robotic arm (ARA) assistance.

Conclusion

Percutaneous biopsy of metabolically active abdominal and pelvic lesions with ARA assistance is a technically feasible, safe and accurate method for pathological diagnosis with high diagnostic performance. PET-guided biopsy is highly practical and useful in patients, especially in those with a previous inconclusive biopsy.

https://link.springer.com/article/10.1007/s00259-018-4133-x#:~:text=ARA%2Dassisted%2018F%2DFDG,with%20a%20previous%20inconclusive%20biopsy.

Short-Term Outcomes of Robotic v/s Open Transversus AbdominusRelease

Sophia H Roberts, BS, Cole P Rodman, MA, Michael P Meara, MD, MBA, FACS TheOhio State University Wexner Medical Center, Columbus, OH

Objective
To compare early postoperative outcomes after transversus abdominis release (TAR) for ventral hernia repair with open (oTAR) and robotic (rTAR) approach.

Conclusion
Robotic TAR is safe and feasible for ventral hernia repair. A robotic approach decreases LOS and reduces the need for drain placement, without increasing operative time or risk for surgical site occurrence or recurrent hernia.

https://www.researchgate.net/publication/336807836_Surgical_Complications_after_Pediatric_Kidney_Transplantation

Surgeons can quickly and accurately perform image guided needle placement using robotic assistance

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Objective
MAXIO is a FDA-approved image-guidance robot that performs physician controlled, CT guided needle placement (Perfint Healthcare, Redmond, WA). This technology can be used for surgical planning, biopsy, drug delivery or ablation. Potential benefits include improved accuracy, fewer needle passes, and reduced patient radiation. We sought to determine what surgeon learning and proficiency is using the robotic arm.

Conclusion
Surgeons with minimal training are able to place percutaneous needles under CT guidance quickly, accurately, and reproducibly using a robotic arm. This suggests that robotic technology can enhance adoption of CT-image guidance in surgery, and enable surgeons to perform percutaneous needle-based procedures safely and efficiently.

https://www.researchgate.net/publication/336807836_Surgical_Complications_after_Pediatric_Kidney_Transplantation

Clinical Publication – 12

Planning and guidance: New tools to enhance the human skills in interventional oncology

L.P. Beyer, P. Wiggermann

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Abstract

Navigation systems have the potential to achieve a high accuracy for percutaneous ablation of tumors even for those in difficult locations. In the last years, successful research has been conducted to make navigation devices applicable to percutaneous tumor ablation with special planning software that now allows high accuracy even for deep-located small lesions close to critical structures. Because of the high number of available navigation systems, this review focuses on those with preexisting clinical studies.

Conclusion

Navigation device	Tracking and registration method	Respiratory gating	Ablation technique/ Organ	No. of patients/ ablated tumous	Effectiveness and recurrence rates	Technical accuracy
Own development	Optical (skin fiducials)	Tube disconnection	RFA/liver	90/177 (72 HCC, 105 metastases)	Technical effectiveness: < 3 cm: 95.9%; 3—5 cm; 100%; > 5 cm: 87.5% 1-year local recurrence: 2.0%	N/A
Own development	Optical (skin fiducials)	Tube disconnection	RFA/liver	63/189 (CRC metastases)	Local recurrence: < 3 cm: 17.7%; 3—5 cm; 11.1%; > 5 cm: 17.4%	N/A
Own development	Optical (skin fiducials)	Tube disconnection	RFA/liver	11/36 (cholangiocarcinoma)	Technical effectiveness: 92% Local recurrence: 8%	N/A

Own development	Optical (skin fiducials)	Tube disconnection	RFA/liver	20/75 (melanoma metastases)	Technical effectiveness: 89.3% Local recurrence: 13.3%	N/A
CAS-One I	Optical (skin fiducials)	HFJV	MWA/liver	17/25 (17 HCC, 8 metastases)	N/A	Lateral error: 5.8 ± 3.2 mm Depth error: 3.4 ± 3.2 mm Total error: 5.8 ± 3.2 mm
CAS-One I	Optical (skin fiducials)	Tube disconnection	MWA/liver	7/14 (8 HCC, 6 metastases)	N/A	Lateral error: 5.8 ± 3.2 mm Depth error: 3.4 ± 3.2 mm Total error: 5.8 ± 3.2 mm
CAS-One I	Optical (skin fiducials)	Tube disconnection	IRE/liver	7/14 (8 HCC, 6 metastases)	Technical effectiveness: 100%	Lateral deviation b: 6.4 ± 2.6 degrees of arc
AcuBot	Laser alignment	NA	RFA/liver	14/NA	Technical effectiveness: > 90% 6-month local recurrence: 0%	N/A
ROBIO™ EX	Docking	Tube disconnection	RFA/liver	11/17 (10 HCC, 7 metastases)	Technical effectiveness: 100%	Readjustments: 0.4
MAXIO™	Docking	Breath Hold	MWA/liver	30/85 (33 HCC, 29 CCC, 23 metastases)	N/A	Readjustments: 1.1. AAD: 5.3 ± 1.8 mm

MAXIO™	Docking	Tube disconnection	RFA and MWA/liver	30/85 (33 HCC, 29 CCC, 23 metastases)	Technical effectiveness: 100%	Readjustments: 0.8
MAXIO™	Docking	Tube disconnection	MWA/liver	22/34 (24 HCC, 10 metastases)	Technical effectiveness: 94% (32 of 34)	Readjustments: 0.4 (14 of 34). AAD: 3.1 ± 2.5 mm
MAXIO™	Docking	Tube disconnection	IRE/liver	17/21 (7 HCC, 14 metastases)	Technical effectiveness: 100% (21 of 21)	Lateral deviation a: 4.2 ± 1.9 degrees of arc

https://pubmed.ncbi.nlm.nih.gov/28818346/

Clinical Publication – 13

PET/CT-guided biopsy using automated robotic biopsy arm Post- therapy lesions in patients with non-Hodgkin's lymphoma characterized by ^{18}F-FDG

Renjith K. Radhakrishnan | Bhagwant R. Mittal | Rajender K. Basher

Gaurav Prakash | Pankaj Malhotra | Naveen Kalra | Ashim Das

Objective

The aim of this study was to analyse the positive predictive value (PPV) of post-therapy fluorine- 18- fluorodeoxyglucose (18F-FDG) PET/CT performed for response or recurrence evaluation in patients with non- Hodgkin's lymphoma (NHL) and to appraise the diagnostic utility of 18F-FDG PET/CT-guided biopsy in this setting.

Conclusion

^{18}F-FDG PET/CT for response evaluation in NHL possesses a low PPV and hence warrants histopathological correlation when 18F-FDG PET/CT findings influence management decision. Diagnostic yield of 18F-FDG PET/CT-guided biopsy is high and has the potential to reduce sampling errors.

https://pubmed.ncbi.nlm.nih.gov/29189443

Real-time intraprocedural [18] F-FDG PET/CT-guided biopsy using automated robopsy arm (ARA) in the diagnostic evaluation of thoracic lesions with priorinconclusive biopsy results: initial experience from a tertiary health care centre

Renjith Kalathoorakathu Radhakrishnan | Bhagwant Rai Mittal | Arun Kumar Reddy Gorla
Rajender Kumar Basher | Ashwani Sood | Amanjit Bal | Naveen Kalra | Niranjan Khandelwal
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Department of Radiodiagnosis, PGIMER, Chandigarh,India
Department of Pulmonary Medicine, PGIMER, Chandigarh, India

Objective
The aim of this study was to assess the feasibility and appraise the diagnostic utility of real time 18F-FDGPET/CT-guided biopsy under auto-mated robopsy arm (ARA) guidance for the evaluation of thoracic lesions with prior inconclusive biopsy results.

Conclusion
Real time 18F-FDG PET/CT guidance for percutaneous biopsies of lung and mediastinal lesions is afeasible technique with potential utility in patients with previous inconclusive biopsy results.

https://pubmed.ncbi.nlm.nih.gov/28937268/

Clinical Publication – 15

Evaluation of a robotic system for irreversible electroporation (IRE) of malignant liver tumors:initial results

L.P Beyer | B. Pregler | K. Michalik | C.Niessen | M. Dolliger | M. Muller | H.J. Schlitt
C. Stroszcynski | P. Wiggermann

Objective
Comparison of conventional CT-guided manual irreversible electroporation (IRE) of malignant liver tumors and a robot-assisted approach regarding procedural accuracy, intervention time, dose, complications, and treatment success.

Conclusion
Robotic assistance for IRE of liver tumors allows for faster procedure times with higher accuracy while reducing radiation dose as compared to the manual placement of IRE probes.

[Evaluation of a robotic system for irreversible electroporation (IRE) of malignant liver tumors: initial results | SpringerLink](#)

Robot-assisted microwave thermo ablation of liver tumors: a single-center experience

L.P Beyer | B. Pregler | C.Niessen | M. Dolliger | B.M Graf | M. Muller | H.J. Schlitt | C. Stroszcynski | P. Wiggermann

Objective
To evaluate and compare the needle placement accuracy, patient dose, procedural time, complication rate and ablation success of microwave thermo ablation using a novel robotic guidance approach and a manual approach.

Conclusion
Robotic assistance for liver tumor ablation reduces patient dose and allows for fast positioning of the microwave applicator with high accuracy. The complication rate and ablation success of percutaneous microwave thermo ablation of malignant liver tumors using either CT fluoroscopy or robotic guidance for needle positioning showed no significant differences in the 6-week follow-up.

[Robot-assisted microwave thermoablation of liver tumors: a single-center experience - PubMed (nih.gov)](nih.gov)

Image-guided microwave thermo ablation of hepatic tumours using novel robotic guidance: an early experience

Emmanuel C. Mbalisike | Thomas J. Vogl | Stefan Zangos | Katrin Eichler | Prakash Balakrishnan
Jijo Paul

Objective
To evaluate and compare novel robotic guidance and manual approaches based on procedural accuracy, procedural time, procedural performance, image quality as well as patient dose during image-guided microwave thermo ablation.

Conclusion
The novel robotic guided approach improved the accuracy of targeting the target
tumour, reduced patient dose and increased procedural performance (which influences
the procedural safety) during ablation.

[Image-guided microwave thermoablation of hepatic tumours using novel robotic guidance: an early experience | SpringerLink](#)

Robotic-assisted thermal ablation of liver tumours

Basri Johan Jeet Abdullah | Chai Hong Yeong | Khean Lee Goh | Boon Koon Yoong
Gwo Fuang Ho | Carolyn ChueWai Yim | Anjali Kulkarni

Objective
This study aimed to assess the technical success, radiation dose, safety and performance level of liver thermal ablation using a computed tomography (CT)- guided robotic positioning system.

Conclusion
This study revealed that robotic-assisted planning and needle placement appears to be safe, with high accuracy and a comparable radiation dose to patients.

https://pubmed.ncbi.nlm.nih.gov/25149298/

Robot-assisted radiofrequency ablation of primary andsecondary liver tumours: early experience

Basri Johan Jeet Abdullah | Chai Hong Yeong | Khean Lee Goh | Boon Koon Yoong
Gwo Fuang Ho | Carolyn Chue Wai Yim | Anjali Kulkarni

Objective

Computed tomography (CT)-compatible robots, both commercial and research-based, have been developed with the intention of increasing the accuracy of needle placement and potentially improving the outcomes of therapies in addition to reducing clinical staff and patient exposure to radiation during CT fluoroscopy. In the case of highly inaccessible lesions that require multiple plane angulations, robotically assisted needles may improve biopsy access and targeted drug delivery therapy by avoidance of the straight-line path of normal linear needles.

Conclusion

Robotic-assisted planning and needle placement appears to have high accuracy, is technically easier than the non-robotic-assisted procedure, and involves a significantly lower radiation dose to both patient and support staff.

https://pubmed.ncbi.nlm.nih.gov/23928933/

Robot-Assisted Navigation System for Percutaneous CT Guided Biopsies with a Comparison of Conventional Manual Technique

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Tamil Nadu Government Multi Super Specialty Hospital

Objective
To evaluate the performance of a robotic system for CT-guided biopsy in comparison to theconventional manual technique.

Conclusion
Robot-assisted CT-guided biopsy can be performed safely, with high diagnostic accuracy thereby reducing procedure duration and radiation dose in comparison to the conventional manual technique.

https://www.iosrjournals.org/iosr-jdms/papers/Vol16-issue12/Version-11/A1612110106.pdf

Clinical Publication - 21

Preliminary clinical experience with a dedicated interventional robotic system for CT-guided biopsies of lung lesions: a comparison with the conventional manual technique

Michele Anzidei |Renato Argirò | Andrea Porfiri | Fabrizio Boni | Marco Anile | Fulvio Zaccagna | Domenico Vitolo | LucaSaba | Alessandro Napoli | Andrea Leonardi | Flavia Longo | Federico Venuta | Mario Bezzi | Carlo Catalano

Objective
Evaluate the performance of a robotic system for CT-guided lung biopsy in comparison to the conventional manual technique.

Conclusion
Robot-assisted CT-guided lung biopsy can be performed safely and with high diagnostic accuracy, reducingprocedure duration and radiation dose in comparison to the conventional manual technique.

https://pubmed.ncbi.nlm.nih.gov/25417130/

Clinical Publication - 22

Robot-assisted navigation system for CT- guided percutaneous lung tumour procedures: our initial experience in Hong Kong

CM Chu , SCH Yu From International Cancer Imaging Society (ICIS) 14th Annual Teaching Course, Heidelberg, Germany. 9-11 October 2014
Department of Imaging and Interventional Radiology The Chinese University of
Hong Kong, Prince of Wales Hospital, Shatin, N.T., HongKong

Objective

To evaluate the new robot-assisted navigation system for CT-guided lung tumour procedures.

Conclusion

Our initial experience demonstrated effectiveness of the robot-assisted navigation system for CT-guided lung tumour interventions with lower radiation dose compared with conventional CT-guided procedures. Radiation doses were similar to CT-fluoroscopy without radiation exposure to interventional radiologists. Targeting success rate for satisfactory intervention was 100%.

https://cancerimagingjournal.biomedcentral.com/articles/10.1186/1470-7330-14-S1-S5

Comparison of CT Fluoroscopy-Guided Manual and CT-GuidedRobotic Positioning System for In Vivo Needle Placements in Swine Liver

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Department of Radiology, Pellegrin Hospital, Place Amélie Raba Léon, Bordeaux, France Perfint Healthcare Inc, Chennai, Tamil Nadu, India

Objective
To compare CT fluoroscopy-guided manual and guided robotic positioning system (RPS)-assisted needleplacement by experienced IR physicians to targets in swine liver.

Conclusion
CT-guided RPS-assisted needle placement reduced radiation dose, number of confirmatory scans, and needle manipulations when compared to manual needle placement by experienced IR physicians, with equivalent accuracy.

Comparison of CT-Fluoroscopy Guided Manual and CT-Guided Robotic Positioning System for In-Vivo Needle Placements in Swine Liver (nih.gov)

Technical note: CT-guided biopsy of lung masses using an automated guiding apparatus

Amarnath Chellathurai | Saneej Kanhirat | Kabilan Chokkappan | Thiruchendur S Swaminathan
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Objective

CT-guided lung biopsy is a usually done manually, using a standard technique. For some years now, automated systems have been available to guide biopsies. [1,2] We discuss our experience with a newly developed indigenous system.

Conclusion

In our opinion, such automated systems can be extremely useful when the radiologist doing the biopsy has limited experience or when the lesion is situated in difficult locations. Larger trials are required to assess the usefulness and cost-effectiveness of such automated systems in different clinical environments.

Perfint_PIGA.pdf (perfinthealthcare.com)

Computed Tomography Guided Percutaneous Liver Biopsy Using a Robotic Assistance Device—A Corpse Study

Boris Schulz | Katrin Eichler | Firas Al-Butmeh | Claudia Frellesen | Christoph Czerny
Thomas Vogl | Stephan Zangos

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Theodor -Stern-Kai Clinic of the Goethe University, Department of Trauma Surgery,
Theodor-Stern-Kai 7, Frankfurt, Germany

Objective
To investigate a robot assistance device for CT-guided percutan liver biopsy.

Conclusion
The proposed robotic assistance device may be superior for angulated interventions regarding accuracy and timely effort. Furthermore, the zero-radiation exposure is a significant benefit for the interventional radiologist.

https://www.researchgate.net/publication/279244114_Computed_Tomography_Guided_Percutaneous_Liver_Biopsy_Using_a_Robotic_Assistance_Device-A_Corpse_Study

Robot assisted percutaneous placement of K-wires duringminimal invasive spinal interventions

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Ingo Marzi | Stephan Zangos

Department of Trauma Surgery, University Hospital Frankfurt, Goethe-University Frankfurt,
Frankfurt am Main, Germany, Department of Diagnostic and Interventional Radiology

Objective
To report our experience using the new robot assistance device MAXIO for needle
guidance duringspine interventions.

Conclusion
Our results demonstrate the potential of MAXIO for a safe and accurate percutaneous
placement of K-wires in spine interventions without radiation exposure to the
attending staff.

https://pubmed.ncbi.nlm.nih.gov/30428741/

Accuracy of Tumour Targeting Using A CT-CompatibleRobotic System - A Phantom Study

B. J. J. Abdullah, C. H. Yeong, K. H. Ng; Kuala Lumpur/M Y

University of Malaya Research Imaging Centre and Department of Biomedical Imaging, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

Objective
A new CT-compatible robotic system, MAXIO was developed by Perfint Healthcare, USA to assist tumour targeting in biopsy and interventional procedures. This study aimed to evaluate the accuracy of the robotic system in tumour targeting.

Conclusion
The MAXIO robotic system achieved high accuracy of ±2 mm in tumour targeting. It showed great potential to improve accuracy and minimize radiation exposure during CT-guided biopsy or interventional procedures.

Phantom Study_MAXIO_UMMC.pdf (perfinthealthcare.com)

Accuracy and efficacy of percutaneous biopsy and ablation using robotic assistance under computed tomography guidance:a phantom study

Yilun Koethe | Sheng Xu | Gnanasekar Velusamy | Bradford J. Wood | Aradhana M. Venkatesan

Objective

To compare the accuracy of a robotic interventional radiologist (IR) assistance platform with a standard freehand technique for computed-tomography (CT)-guided biopsy and simulated radiofrequency ablation (RFA).

Conclusion

Improved needle accuracy and optimised probe geometry are observed during simulated CT-guided biopsy and percutaneous ablation with use of a robotic IR assistance platform. This technology may be useful for clinical CT-guided biopsy and RFA, when accuracy may have an impact on outcome.

MAXIO_NIH paper.pdf (perfinthealthcare.com)