MRIdian® LUNG Bibliography

FDA-cleared since 2012, ViewRay's MRIdian is actively being used to treat cancer patients at leading cancer centers worldwide. This bibliography has been prepared by ViewRay to highlight the capabilities of ViewRay's innovative MRIdian radiation therapy technology.

In this bibliography, we list peer-reviewed publications that have been published by members of the radiation oncology care teams who have pioneered the use of MR image guidance in Radiation Therapy using ViewRay's MRIdian technology.

MRIdian Clinical Studies

Lung

Chuong, M.D., Kotecha, R., Mehta, M.P., Adamson, S., Romaguera, T., Hall, M.D., et al. (2021). Case report of visual biofeedback-driven, magnetic resonance-guided single-fraction SABR in breath hold for early stage non-small-cell lung cancer. *Medical Dosimetry*, S0958-3947(21)00012-1.

Eze, C., Lombardo, E., Nierer, L., Xiong, Y., Niyazi, M., Belka, C., et al. (2022). MR-guided radiotherapy in node-positive non-small cell lung cancer and severely limited pulmonary reserve: a report proposing a new clinical pathway for the management of high-risk patients. *Radiation Oncology*, 17(1):43.

Finazzi, T., Haasbeek, C. J. A., Spoelstra, F. O. B., Palacios, M. A., Admiraal, M. A., Bruynzeel, A. M. E., et al. (2020). Clinical outcomes of stereotactic MR-guided adaptive radiation therapy for high-risk lung tumors. *International Journal of Radiation Oncology*Biology*Physics*, 107(2):270-278.

Finazzi, T., van Sörnsen de Koste, J.R., Palacios, M.A., Spoelstra, F.O.B., Slotman, B.J., Haasbeek, C.J.A., Senan, S. (2020). Delivery of magnetic resonance-guided single-fraction stereotactic lung radiotherapy. *Physics and Imaging in Radiation Oncology*, 14, P17-23.

Finazzi, T., Palacios, M. A., Haasbeek, C. J. A., Admiraal, M. A., Spoelstra, F. O. B., Bruynzeel, A. M. E., et al. (2019). Stereotactic MR-guided adaptive radiation therapy for peripheral lung tumors. *Radiotherapy and Oncology*, *144*, 46–52.

Finazzi, T., Palacios, M. A., Spoelstra, F. O. B., Haasbeek, C. J. A., Bruynzeel, A. M. E., Slotman, B. J., et al. (2019). Role of on-table plan adaptation in MR-guided ablative radiation therapy for central lung tumors. *International Journal of Radiation Oncology*Biology*Physics*, *104*(4), 933–941.

Kang, H.J., Kwak, Y.K., Kim, M., Lee, S.J. (2022). Application of real-time MRI-guided linear accelerator in stereotactic ablative body radiotherapy for non-small cell lung cancer: one step forward to precise targeting. *Journal of Cancer Research and Clinical Oncology*, 148(11):3215-3223.

Kim, E., Wu, H.G., Park, J.M., Kim, J.I., Kim, H.J., Kang, H.C. (2018). Lung density change after SABR: A comparative study between tri-Co-60 magnetic resonance-guided system and linear accelerator. *PLoS One*, 13(4):e0195196.

Merna, C., Rwigema, J. M., Cao, M., Wang, P., Kishan, A. U., Michailian, A., et al. (2016). A treatment planning comparison between modulated tri-cobalt-60 teletherapy and linear accelerator–based stereotactic body radiotherapy for central early-stage non-small cell lung cancer. *Medical Dosimetry*, *41*(1), 87–91.

Neboori, H.J., Lamichhane, N., Ishkanian, A., Dogan, N. (2017). Dosimetric Feasibility of Magnetic Resonance Imaging Guided, Tri-60Co Stereotactic Body Radiotherapy for Non-Small Cell Lung Cancer. *Austin Journal of Radiation Oncology and Cancer*, 3(1): 1027.

Padgett, K. R., Simpson, G. N., Llorente, R., Samuels, M. A., & Dogan, N. (2018). Feasibility of adaptive MR-guided stereotactic body radiotherapy (SBRT) of lung tumors. *Cureus*, *10*(4), e2423.

Palacios, M.A, Verheijen, S., Schneiders, F.L., Bohoudi, O., Slotman, B.J., Lagerwaard, F.J., Senan, S. (2022). Same-day consultation, simulation and lung Stereotactic Ablative Radiotherapy delivery on a Magnetic Resonance-linac. *Physics and Imaging in Radiation Oncology*, 24, 76-81.

Park, J. M., Wu, H. G., Kim, H. J., Choi, C. H., & Kim, J. I. (2019). Comparison of treatment plans between IMRT with MR-LINAC and VMAT for lung SABR. *Radiation Oncology, 14*, 105.

Park, J.M., Park, S.Y., Kim, H.J., Wu, H.G., Carlson, J., Kim J.I. (2016). A comparative planning study for lung SABR between tri-Co-60 magnetic resonance image guided radiation therapy system and volumetric modulated arc therapy. *Radiotherapy and Oncology*, 120(2):279-85.

Regnery, S., Buchele, C., Weykamp, F., Pohl, M., Hoegen, P., Eichkorn, T., et al. (2022). Adaptive MR-Guided Stereotactic Radiotherapy is Beneficial for Ablative Treatment of Lung Tumors in High-Risk Locations. *Frontiers in Oncology*, 11:757031.

Rosenberg, S.A., Mak, R., Kotecha, R., Loo, B.W., Senan, S. (2021). The Nordic-HILUS Trial: Ultracentral Lung Stereotactic Ablative Radiotherapy and a Narrow Therapeutic Window. *Journal of Thoracic Oncology*, 16(10):e79-e80.

Thomas, D. H., Santhanam, A., Kishan, A. U., Cao, M., Lamb, J., Min, Y., et al. (2018). Initial clinical observations of intra- and interfractional motion variation in MR-guided lung SBRT. *The British Journal of Radiology, 91*(1083), 20170522.

OTHER – TUMOR SITES

Nierer, L., Eze, C., da Silva Mendes, V., Braun, J., Thum, P., von Bestenbostel, R., et al. (2022). Dosimetric benefit of MR-guided online adaptive radiotherapy in different tumor entities: liver, lung, abdominal lymph nodes, pancreas and prostate. *Radiation Oncology*, 17(1):53

OTHER - CLINICAL EXPERIENCE

Crockett, C.B., Samson, P., Chuter, R., Dubec, M., Faivre-Finn, C., Green, O.L., et al. (2021) Initial Clinical Experience of MR-Guided Radiotherapy for Non-Small Cell Lung Cancer. *Frontiers in Oncology*, 11:617681.

Body Radiotherapy in Voluminous Liver Metastasis: Two Case Reports. *Cureus*, 14(4):e23980.

Ehrbar, S., Käser, S.B., Chamberlain, M., Krayenbühl, J., Wilke, L., Mayinger, M., et al. (2022). MR-guided beam gating: Residual motion, gating efficiency and dose reconstruction for stereotactic treatments of the liver and lung. *Radiotherapy and Oncology*, 174:101-108.

MRIdian Advanced MRI Studies

Lenkowicz, J., Votta, C., Nardini, M., Quaranta, F., Catucci, F., Boldrini, L., et al. (2022). A deep learning approach to generate synthetic CT in low field MR-guided radiotherapy for lung cases. *Radiotherapy & Oncology*, 176:31-38.

Rabe, M., Paganelli, C., Riboldi, M., Bondesson, D., Schneider, M.J., Chmielewski, T., et al. (2020). Porcine lung phantom-based validation of estimated 4D-MRI using orthogonal cine imaging for low-field

Steinmann, A., Alvarez, P., Lee, H., Court, L., Stafford, R., Sawakuchi, G., et al. (2019). MRIgRT dynamic lung motion thorax anthropomorphic QA phantom: design, development, reproducibility, and feasibility study. *Medical Physics, 46*(11), 5124–5133.

Wee, C. W., An, H. J., Kang, H. C., Kim, H. J., & Wu, H. G. (2018). Variability of gross tumor volume delineation for stereotactic body radiotherapy of the lung with tri-^{60}Co magnetic resonance image-

guided radiotherapy system (ViewRay): a comparative study with magnetic resonance- and computed tomography-based target delineation. *Technology in Cancer Research & Treatment*, *17*, 1533033818787383.

MRIdian Technology Description and Evaluation

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Wojcieszynski, A. P., Hill, P. M., Rosenberg, S. A., Hullett, C. R., Labby, Z. E., Paliwal, B., et al. (2017). Dosimetric comparison of real-time MRI-guided tri-cobalt-60 versus linear accelerator-based stereotactic body radiation therapy lung cancer plans. *Technology in Cancer Research & Treatment*, *16*(3), 366–372.