

BIOGRAPHICAL SKETCH**NAME:**Indranil Mallick**POSITION TITLE:** Senior Consultant, Department of Radiation Oncology, Tata Medical Center Kolkata**EDUCATION/TRAINING**

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Medical College, Calcutta (University of Calcutta)	MBBS	09/2001	Basic Medical Degree
Post-Graduate Institute of Medical Education and Research, Chandigarh, India	MD	12/2005	Radiation Oncology
National Board of Examinations, New Delhi, India	DNB	03/2006	Radiation Oncology Post-specialization training – Radiation Oncology
Tata Memorial Hospital, Mumbai, India		08/2008	
Princess Margaret Hospital (University of Toronto), Toronto, Canada		05/2010	Clinical Fellowship – Radiation Oncology

Additional qualifications:

- IBM Data Science Professional Certificate, June 2019

A. Personal Statement

Clinical commitments: I am a consultant radiation oncologist at Tata Medical Center, Kolkata, the largest cancer center in Eastern India. I was a part of team of committed doctors responsible for setting up the center in 2011. Today it registers more than 24000 new patients annually and functions as a non-profit comprehensive cancer center. My special interests revolve around genitourinary cancers, gastrointestinal cancers and head and neck cancers. Our focus has been on optimizing highly conformal treatments leading to research on techniques like hypofractionation, stereotactic radiotherapy and locally advanced disease.

E-learning: I also have a deep commitment to e-learning. In 2014 I developed a free online portal on image guided radiation therapy (www.igrtonline.com) which has been accessed by 1900 participants from 54 countries. I won the Radiological Society of North America – Education Scholar Grant in 2016 for developing an online course on radiological anatomy for radiation oncology trainees (www.avaroproject.net). This grant was successfully concluded. I have recently led the creation of the National Cancer Grid online learning portal (www.ncgeducation.in) which will serve the educational needs of a consortium of more than 140 hospitals.

Data Science and AI: I believe in leading technical innovation in healthcare and am currently focusing on projects in natural language processing, clinical text mining, machine learning and artificial intelligence applications in oncology. I have completed a Professional Certificate course with IBM on the application of data

science and machine learning and currently lead several projects on the applications of ML/AI in the cancers that I treat.

B. Positions and Honors

Current position(s)

- June 2010 – present: Consultant, Department of Radiation Oncology, Tata Medical Center, Kolkata, India.
- Oct 2018 onwards: Visiting Faculty, MSc-PhD Program in Medical Physics, Indian Institute of Technology, Kharagpur, India

Important Honors and Grants

- Kataria Memorial Gold Medal – Best Postgraduate of the Year (2006) – PGIMER, Chandigarh. (Awarded by the President of India Dr APJ Abdul Kalam)
- RSNA Education Scholar Grant (2016-17) – Development of an online interactive course on radiological anatomy for target volume delineation and image guidance.

Memberships

- 2004- Association of Radiation Oncologists of India (AROI);
- 2008- European Society for Therapeutic Radiology and Oncology (ESTRO)
- 2011- American Association of Physicists in Medicine (Physician member)
- 2013- American Society for Radiation Oncology (ASTRO)
- 2015- Radiological Society of North America (RSNA)
- 2015- American Society of Clinical Oncology (ASCO)

C. Publications

1. Saha S, Sriram Prasath S, Arun B, Kalita SJ, Elavarasan N, Guha Adhya D, Mallick I, et al. ICON-P - A double-blind evaluation of quality improvements with individualized CONSTRAINTS from low-cost knowledge-based radiation therapy planning in prostate cancer. *Tech Innov Patient Support Radiat Oncol*. 2023 Mar 31;26:100206. doi:https://10.1016/j.tipsro.2023.100206.
2. Chilukuri S, Mallick I, Agrawal A, Maitre P, Arunsingh M, James FV, et al. Multi-Institutional Clinical Outcomes of Biopsy Gleason Grade Group 5 Prostate Cancers Treated With Contemporary High-Dose Radiation and Long-Term Androgen Deprivation Therapy. *Clin Oncol (R Coll Radiol)*. 2023 Jul;35(7):454-462. doi:10.1016/j.clon.2023.03.018.
3. Mukherjee S, De MS, Goel G, Bhattacharyya A, Mallick I, Dabkara D, et al. Multi-drug resistant (MDR) and extensively drug-resistant (XDR) bacteraemia rates among cancer patients in an oncology hospital in eastern India: an 11-year retrospective observational study. *Infect Prev Pract*. 2023 Feb 18;5(2):100275. doi: 10.1016/j.infpip.2023.100275.
4. Chatterjee S, Chakrabarty S, Santosham R, Saha A, Mallick I, Arunsingh M, et al. Alleviating Morbidity From Locally Advanced Breast Cancer Using a Practical and Short Radiation Therapy Regimen: Results of the HYPOR Palliative Studies. *Int J Radiat Oncol Biol Phys*. 2023 Aug 1;116(5):1033-1042. doi:10.1016/j.ijrobp.2023.02.008.
5. Maulik S, Roy P, Mallick I, Prasath S, Arun B, Chatterjee S. Definitive chemoradiation for oropharyngeal squamous carcinomas: Outcomes with intensity-modulated radiation therapy using simultaneous integrated boost, in a majorly p16 negative cohort. *Head Neck*. 2023 May;45(5):1156-1161. doi:10.1002/hed.27328.

6. Hammad N, Ndlovu N, Carson LM, Ramogola-Masire D, Mallick I, Berry S, et al. Competency-Based Workforce Development and Education in Global Oncology. *Curr Oncol*. 2023 Feb 1;30(2):1760-1775. doi:10.3390/curroncol30020136.
7. Jain S, Mallick I, Tamhankar AS, Gautam G. Adjuvant versus early Salvage radiation therapy for prostate cancer with adverse pathological features on radical prostatectomy-Do we finally have an answer? *Indian J Cancer*. 2022 Apr-Jun;59(2):170-177. doi: 10.4103/ijc.IJC_516_20.
8. Basu Achari R, Chakraborty S, Goyal L, Saha S, Roy P, Zameer L, Mallick I, et al. Evaluating Quality Indicators of Glioblastoma Care: Audit Results From an Indian Tertiary Care Cancer Center. *JCO Glob Oncol*. 2022 Mar;8:e2100405. doi: 10.1200/GO.21.00405.
9. Kundu S, Chakraborty S, Mukhopadhyay J, Das S, Chatterjee S, Achari RB, Mallick I, Das PP, Arunsingh M, Bhattacharyya T, Ray S. Design and Development of a Medical Image Database for Assisting Studies in Radiomics. *J Digit Imaging*. 2022 Jun;35(3):408-423. doi: 10.1007/s10278-021-00576-6.
10. Chatterjee S, Maulik S, Prasath S, Arun B, Das A, Chakraborty S, Mallick I, et al. Xerostomia quality of life and resource requirements following parotid sparing adaptive radiotherapy in head and neck cancers: Results of a prospective cohort study (Study IDCTRI/2017/11/010683). *Radiother Oncol*. 2022 Mar;168:250-255. doi:10.1016/j.radonc.2022.01.020.
11. Karim S, Sunderji Z, Jalink M, Mohamed S, Mallick I, Msadabwe-Chikuni SC, Delgarno NJ, Hammad N, Berry S. Oncology training and education initiatives in low and middle income countries: a scoping review. *Ecancer medical science*. 2021 Sep 30;15:1296. doi: 10.3332/ecancer.2021.1296.
12. Bhattacharyya T, Arunsingh M, Chakraborty S, Harilal V, Sasidharan R, Saha S, Mallick I, et al. Can the CROSS protocol be safely implemented in real world scenario with broader eligibility criteria? Experience from a tertiary care centre in India. *Ecancer medical science*. 2021 Sep 16;15:1291. doi: 10.3332/ecancer.2021.1291.
13. Dabkara D, Ganguly S, Ghosh J, Mukherjee S, Gupta S, Mallick I, et al. Clinicopathological characteristics, prognostic factors and treatment outcomes of seminomatous germ cell tumours from a tertiary cancer centre in eastern India. *Natl Med J India*. 2021 Mar-Apr;34(2):68-72. doi: 10.4103/0970-258X.326752.
14. Bhattacharyya T, Harilal V, Sashidharan R, Mallick I, Arunsingh M, Chakraborty S, Achari RB, Chatterjee S. Real-world results of definitive chemoradiation in carcinoma oesophagus: can SCOPE 1 results be replicated outside trial setting? *Ecancer medical science*. 2021 Aug 24;15:1280. doi:10.3332/ecancer.2021.1280.
15. Das A, Arunsingh M, Bhattacharyya T, Prasath SS, Balakrishnan A, Mallick I. Intensity modulated radiotherapy in anal canal squamous cell carcinoma: Implementation and outcomes. *J Cancer Res Ther*. 2021 Jul-Sep;17(4):975-981. doi:10.4103/jcrt.JCRT_212_19.
16. Maulik S, Arunsingh M, Arun B, Prasath S, Mallick I. Moderately Hypofractionated Radiotherapy and Androgen Deprivation Therapy for High-risk Localised Prostate Cancer: Predictors of Long-term Biochemical Control and Toxicity. *Clin Oncol (R Coll Radiol)*. 2022 Jan;34(1):e52-e60. doi:10.1016/j.clon.2021.08.010.
17. Kundu S, Chakraborty S, Mukhopadhyay J, Das S, Chatterjee S, Basu Achari R, Mallick I, et al. Research Goal-Driven Data Model and Harmonization for De-Identifying Patient Data in Radiomics. *J Digit Imaging*. 2021 Aug;34(4):986-1004. doi:10.1007/s10278-021-00476-9.
18. Mallick I, Saha S, Arunsingh MA. A Web-based Dose-volume Histogram Dashboard for Library-based Individualized Dose-constraints and Clinical Plan Evaluation. *J Med Syst* 2021;45:62. <https://doi.org/10.1007/s10916-021-01740-9>.
19. Roy P, Mallick I, Arun I, Zameer L, Dey D, Singh A, et al. Nodal yield and topography of nodal metastases from oral cavity squamous cell carcinoma - An audit of 1004 cases undergoing primary surgical resection. *Oral Oncol* 2021;113:105115. <https://doi.org/10.1016/j.oraloncology.2020.105115>.

20. Jain PV, Das A, Manikantan K, Sharan R, Mallick I, Chatterjee S, et al. Radiation-induced hypothyroidism in patients of oral squamous cell carcinoma: A retrospective analysis of 195 patients. *Indian J Cancer* 2021. https://doi.org/10.4103/ijc.IJC_946_19.
21. Chakraborty S, Mallick I, Luu HN, Bhattacharyya T, Arunsingh M, Achari RB, et al. Geographic disparities in access to cancer clinical trials in India. *Ecancermedicallscience* 2021;15:1161. <https://doi.org/10.3332/ecancer.2021.1161>.
22. Mallick I, Chakraborty S, Baral S, Saha S, Lal VH, Sasidharan R, et al. Prioritizing Delivery of Cancer Treatment During a COVID-19 Lockdown: The Experience of a Clinical Oncology Service in India. *JCO Glob Oncol* 2021;7:99–107. <https://doi.org/10.1200/GO.20.00433>.
23. Ghosh S, Maulik S, Chatterjee S, Mallick I, Chakraborty N, Mukherjee J. Prediction of survival outcome based on clinical features and pretreatment 18FDG-PET/CT for HNSCC patients. *Comput Methods Programs Biomed* 2020;195:105669. <https://doi.org/10.1016/j.cmpb.2020.105669>.
24. Parekh D, Kukreja P, Mallick I, Roy P, Others. Worst pattern of invasion - type 4 (WPOI-4) and Lymphocyte host response should be mandatory reporting criteria for oral cavity squamous cell carcinoma: A re-look at the American Joint Committee of Cancer (AJCC) minimum dataset. *Indian J PatholMicrobiol* 2020;63:527–33. https://doi.org/10.4103/IJPM.IJPM_662_19.
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26. Jain PV, Sharan R, Manikantan K, Clark GM, Chatterjee S, Mallick I, et al. Redefining adequate margins in oral squamous cell carcinoma: outcomes from close and positive margins. *Eur Arch Otorhinolaryngol* 2020;277:1155–65. <https://doi.org/10.1007/s00405-019-05779-w>.
27. Murthy V, Mallick I, Gavarraju A, Sinha S, Krishnatreya R, Telkhade T, et al. Study protocol of a randomised controlled trial of prostate radiotherapy in high-risk and node-positive disease comparing moderate and extreme hypofractionation (PRIME TRIAL). *BMJ Open* 2020;10:e034623. <https://doi.org/10.1136/bmjopen-2019-034623>.
28. Mallick I, Arunsingh M, Chakraborty S, Arun B, Prasath S, Roy P, et al. A Phase I/II Study of Stereotactic Hypofractionated Once-weekly Radiation Therapy (SHORT) for Prostate Cancer. *Clin Oncol* 2020;32:e39–45. <https://doi.org/10.1016/j.clon.2019.09.046>.
29. Chatterjee S, Mallick I, Chakraborty S, Prasath S, Arunsingh M, Achari RB, et al. Helical Radiotherapy in Early Laryngeal Cancers Could Lead to Excess Local Recurrence: Lessons From a Phase II Prospective Study. *Clin Oncol* 2020;32:e67–75. <https://doi.org/10.1016/j.clon.2019.09.048>.
30. Das J, Ray S, Tapadia R, Midha D, Mallick I. Prostate-specific Membrane Antigen-expressing Hepatic Lesion: Metastatic or Hepatocellular Carcinoma. *Indian J Nucl Med* 2020;35:58–60. https://doi.org/10.4103/ijnm.IJNM_145_19.
31. Das A, Arunsingh M, Bhattacharyya T, Prasath SS, Balakrishnan A, Mallick I. Intensity modulated radiotherapy in anal canal squamous cell carcinoma: Implementation and outcomes 2020.
32. Jain PV, Sharan R, Manikantan K, Mallick I, Chatterjee S, Arun I, et al. Clinicopathologic Determinants of Outcome in Pathologic T4a (pT4a) Squamous Cell Carcinoma of the Gingivobuccal Subsite of the Oral Cavity. *Indian J Surg Oncol* 2019;10:594–9. <https://doi.org/10.1007/s13193-019-00950-5>.
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34. Murthy V, Mallick I, Arunsingh M, Gupta P. Prostate Radiotherapy in India: Evolution, Practice and Challenges in the 21st Century. *Clin Oncol* 2019;31:492–501. <https://doi.org/10.1016/j.clon.2019.05.020>.
35. Mummudi N, Agarwal JP, Chatterjee S, Mallick I, Ghosh-Laskar S. Oral cavity cancer in the Indian subcontinent - challenges and opportunities. *Clin Oncol* 2019;31:520–8. <https://doi.org/10.1016/j.clon.2019.05.013>.

36. Mallick I, Das A, Arunsingh M. Moderately Hypofractionated Radiotherapy in Node-positive Prostate Cancer. *Clin Oncol* 2019;31:260–4. <https://doi.org/10.1016/j.clon.2019.01.004>.
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38. Shrimali RK, Saha A, Arun B, Prasath S, Nallathambi C, Bhoulmik S, et al. Setting up a lung stereotactic body radiotherapy service in a tertiary center in Eastern India: The process, quality assurance, and early experience 2019.
39. Robin TP, Grover S, Reddy Palkonda VA, Fisher CM, Gehl B, Bhattacharya K, et al. Utilization of a Web-Based Conferencing Platform to Improve Global Radiation Oncology Education and Quality-Proof of Principle Through Implementation in India. *Int J Radiat Oncol Biol Phys* 2019;103:276–80. <https://doi.org/10.1016/j.ijrobp.2018.07.2003>.
40. Chatterjee S, Chakraborty S, Moses A, Nallathambi C, Mahata A, Mandal S, et al. Resource requirements and reduction in cardiac mortality from deep inspiration breath hold (DIBH) radiation therapy for left sided breast cancer patients: A prospective service development analysis. *PractRadiat Oncol* 2018;8:382–7. <https://doi.org/10.1016/j.prr.2018.03.007>.
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43. Shrimali RK, Nallathambi C, Saha A, Das A, Prasath S, Mahata A, et al. Radical radiotherapy or chemoradiotherapy for inoperable, locally advanced, non-small cell lung cancer: Analysis of patient profile, treatment approaches, and outcomes for 213 patients at a tertiary cancer center. *Indian J Cancer* 2018;55:125–33. https://doi.org/10.4103/ijc.IJC_469_17.
44. Roy P, Datta J, Roy M, Mallick I, Mohandas M. Reporting of tumor budding in colorectal adenocarcinomas using ×40 objective: A practical approach for resource constrained set-ups. *Indian J Cancer* 2017;54:640–5. https://doi.org/10.4103/ijc.IJC_642_17.
45. Murthy V, Calcuttawala A, Chadha K, d'Cruz A, Krishnamurthy A, Mallick I, et al. Human papillomavirus in head and neck cancer in India: Current status and consensus recommendations. *South Asian J Cancer* 2017;6:93–8. https://doi.org/10.4103/sajc.sajc_96_17.
46. Achari R, Arunsingh M, Badgami RK, Saha A, Chatterjee S, Shrimali RK, et al. High-dose Neural Stem Cell Radiation May Not Improve Survival in Glioblastoma. *Clin Oncol* 2017;29:335–43. <https://doi.org/10.1016/j.clon.2017.01.010>.
47. Das A, Mallick I, Arun P, Midha D, Sen S, Krishnan S, et al. Encouraging Outcomes With Manageable Toxicity Using Neoadjuvant Chemotherapy and Intensity-modulated Radiotherapy in Advanced Pediatric Nasopharyngeal Carcinoma: Single-Center Experience From a Developing Country. *J PediatrHematol Oncol* 2017;39:318–9. <https://doi.org/10.1097/MPH.0000000000000794>.
48. Chatterjee S, Arun I, Agrawal S, Arunsingh M, Mallick I, Ahmed R. Immunohistochemistry Heterogeneity in Reported Breast Cancer Demographics From India: Triple-Negative Breast Cancer Rates Could Be Lower Than Suggested in Pooled Meta-Analysis. *J Glob Oncol* 2017;3:180–1. <https://doi.org/10.1200/JGO.2016.006635>.
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- advanced lung cancer over five-field forward-planned intensity-modulated radiotherapy. *Indian J Cancer* 2017;54:155–60. https://doi.org/10.4103/ijc.IJC_79_17.
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The complete list of publications with citations is available at Google Scholar:
<https://scholar.google.co.in/citations?user=uRpvkP4AAAAJ&hl=en>

D. Additional Information: Research Support and/or Scholastic Performance

Current Clinical Projects:

1. MRC-UK/University College London: PI Mallick, I: Aug 2023 onwards. Artificial Intelligence based radiotherapy treatment planning for Cervical and Head and Neck cancer. Role PI
2. University of Cambridge: PI Sanjoy Chatterjee: Oct 2023 onwards: Hamlet.rt – Heuristics, Algorithms and Machine Learning: Evaluation & Testing in Radiation Therapy India specific protocol. Role: co-PI
3. Intramural funding, Tata Medical Center; PI: Mallick, I: April 2019 onwards: Development of a dosimetric dashboard for treatment plan evaluation and prediction of doses from anatomical information. Role: PI
4. Intramural Funding, Tata Medical Center; PI: Chatterjee, S; Dates: Jan 2016 to Dec 2018 Biologically targeted Radiotherapy dose escalation in Laryngo-pharyngeal cancers (INTELHOPE). Role: Co-investigator
5. National Cancer Grid / MRC-UK Funding. Site PI: Mallick, I: Dates: Oct 2016 onwards. ADD-ASPIRIN study. Aspirin for secondary prophylaxis in Esophagogastric and Breast Cancer.
6. National Digital Library of India, CHAVI-RO :CompreHensive Digital ArchiVe of Cancer Imaging - Radiation Oncology. Role: Co-Investigator.

EDUCATION AND TRAINING DEVELOPMENT Projects and Courses

1. The National Cancer Grid Online Educational Portal: Project Lead: Mallick I. Jan 2018 – ongoing. Development of an online educational portal for a consortium of more than 130 cancer hospitals and allied institutions
2. RSNA Education Scholar Grant, RSNA. PI: Mallick, I; July 2016-June 2017. AVARO - Applied Virtual Anatomy for Radiation Oncology: Teaching Radiological Anatomy for Target Delineation and Image Guidance Using Interactive Online Tools for Large Audiences. Role: PI
3. IGRTOnline (www.igrtonline.com) – a portal on education in IGRT from Tata Medical Center, with a free interactive course on Principles and Practice of Image Guided Radiation Therapy comprising 19 modules. Launched in April 2015 this course has >2200 registrants from 96 countries.
4. Course Coordinator – Varian Advanced Imaging School in India
5. Course Coordinator – Fellowship of the Royal College of Radiologists (Clinical Oncology) Part 1 Course in collaboration with Christie Hospital Manchester.

Mallick
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