8th Annual Conference of
AROI Bihar Chapter



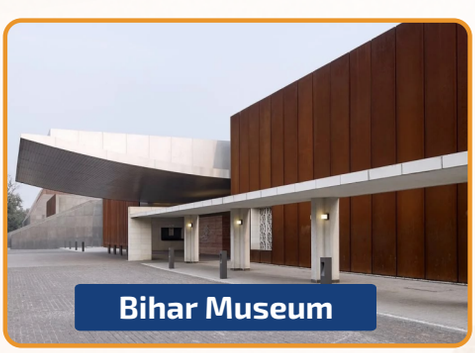
9th - 10th October 2026

Central Auditorium, IGIMS, Patna

Theme: Innovation, Precision, and Personalization: Transforming the Future of Cancer Care

Organized by Department of Radiation Oncology,
State cancer institute, IGIMS, Patna

Souvenir







aroibiharchapter@gmail.com | www.aroi-bih.org

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(News Letter)



Dr. Kanchan Singh
Editorlal Board
(News Letter)

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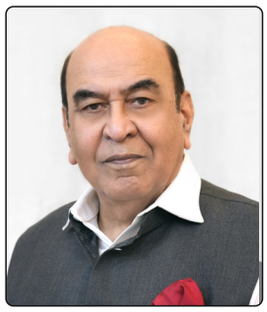
www.aroi-bih.org

Messages

ले ज सय्यद अता हसनैन
पी.वी.एस.एम., यू.वाई.एस.एम., ए.वी.एस.एम.,
एस.एम., वी.एस.एम.** (सेवानिवृत्त)
Lt Gen Syed Ata Hasnain
PVSM, UYSM, AVSM, SM, VSM** (Retd)

सत्यमेव जयते
राज्यपाल, बिहार
GOVERNOR OF BIHAR

बिहार लोक भवन
पटना-800022
BIHAR LOK BHAVAN
PATNA-800022



06 October, 2026

Message

I am delighted to know that the State Cancer Institute, Indira Gandhi Institute of Medical Sciences, Patna is organizing the 8th Annual AROI Bihar Chapter Conference, 2026 on the theme, "Innovation, Precision and Personalization: Transforming the Future of Cancer Care", from 9th to 10th October 2026 at IGIMS, Patna. I am also pleased that a souvenir is being brought out on this occasion.

Cancer care is advancing rapidly through innovation, precision medicine and personalized treatment. Such conferences provide a valuable platform for medical professionals and researchers to exchange knowledge and explore new approaches to improve cancer diagnosis and treatment.

I am confident that the deliberations will contribute meaningfully to strengthening cancer care and improving patient outcomes.

I extend my best wishes for a successful and impactful conference.

(Syed Ata Hasnain)

Phone : 0612-2786100-107, Fax : 0612-2786178
e-mail : governorbihar@nic.in

सम्राट चौधरी
मुख्यमंत्री

लोक सेवक आवास,
पटना (बिहार)-800001

दिनांक: 29.09.2026



Message

It is heartening to learn that the State Cancer Institute, Indira Gandhi Institute of Medical Sciences, Patna is organizing the *8th Annual Conference of Association of Radiation Oncologists of India (AROI)- Bihar Chapter 2026* on *9th and 10th October 2026* at the Central Auditorium, IGIMS, Patna. A souvenir is also proposed to be published to commemorate the occasion.

Under the visionary and dynamic leadership of the Hon'ble Prime Minister, Shri Narendra Modi Ji, the Government of Bihar is taking significant steps towards strengthening and expanding modern cancer-care facilities across the state.

The theme "Innovation, Precision and Personalization: Transforming the Future of Cancer Care" of the conference is highly relevant and timely in the present healthcare scenario.

I am confident that the conference will be debated purposefully and the recommendations of the eminent oncologists, renowned faculty members, delegates and all other participants will be meaningful, constructive and outcome-oriented. I hope that the souvenir will be useful, beneficial and enlightening for all stakeholders.

On this occasion, I extend my greetings and felicitations to the participants, organisers and all those associated with the conference and also wish the doctors a very bright future and the publication of a souvenir all success

(Samrat Choudhary)

दूरभाष: +91-612-2215167, 2215168 फैक्स: +91-612-2224129 ई-मेल: cmbihar@nic.in

निशांत
मंत्री
स्वास्थ्य विभाग
बिहार, पटना

बिहार सरकार

Nishant
Minister
Health Department
Bihar, Patna

पत्रांक :- 404 (HMCell) दिनांक :- 05/10/2026



MESSAGE

It gives me immense pleasure to extend my warm greetings and best wishes to the organisers, faculty members, delegates and participants of the 8th Annual Conference of the Association of Radiation Oncologists of India (AROI), Bihar Chapter 2026, being hosted by the State Cancer Institute, Indira Gandhi Institute of Medical Sciences, Patna.

The theme of the conference, "Innovation, Precision and Personalization: Transforming the Future of Cancer Care," is highly relevant in the present era of rapidly evolving cancer diagnosis and treatment. Advances in radiation oncology, precision medicine, multidisciplinary care and evidence-based practices are opening new avenues for improving cancer outcomes and quality of life.

Such academic forums provide an excellent platform for sharing knowledge, exchanging experiences and fostering collaboration among oncology professionals. I am confident that the participation of distinguished experts from Bihar and across the country will generate meaningful discussions and encourage the adoption of innovative and patient-centred approaches to cancer care.

I commend the Organising Committee for its efforts and wish the conference every success. May this scientific gathering contribute significantly towards strengthening cancer care services in Bihar and beyond.

My best wishes for a successful and memorable conference.

(Nishant)

Mr. Nishant
Honorable Health Minister

कार्यालय : विकास भवन, प्रथम तल, बेली रोड, पटना- 800 015, दूरभाष : 0612-2215330 (कार्या.), फैक्स नं.: 0612-2215603, मो.: 9472001000
आवास : 05, देशरत्न मार्ग, पटना- 800 001, दूरभाष : 0612-2233961, 2233962
ई-मेल : healthministercellbihar@gmail.com

कुमार रवि, भा०प्र०से०
सचिव
Kumar Ravi, I.A.S.
Secretary

बिहार सरकार

स्वास्थ्य विभाग,
बिहार सरकार
विकास भवन, पटना - 800 015
HEALTH DEPARTMENT,
GOVERNMENT OF BIHAR
Vikas Bhawan, Patna- 800 015
Tel : 0612 - 2215809, 2215801
E-mail : health-bih@nic.in

पत्रांक.....217(H·S)

दिनांक.....05.10.2026.



MESSAGE

It gives me immense pleasure to extend my warmest greetings and congratulations to the Association of Radiation Oncologist of India (AROI) Bihar chapter, 2026 being hosted by the State Cancer Institute, IGIMS, Patna.

The field of oncology is evolving at an unprecedented pace with technological advancement and breakthrough research constantly redefining cancer care. This annual conference serves as vital platform for clinicians, researchers and healthcare professionals to deliberate on the latest clinical protocols and share valuable insights.

I commend the organizing committee of AROI Bihar chapter of their meticulous efforts in hosting this conference and bringing together leading minds in radiation oncology.

I wish the 8th Annual AROI Bihar chapter conference a resounding success and hope the souvenir serves as a valuable repository of knowledge for all participants.

(Kumar Ravi)

Indira Gandhi Institute of Medical Sciences

(An Autonomous Institute of Government of Bihar)

Director

Sheikhpura, Patna-800 014, INDIA, EPABX : 2297631, 2297099, 2296329(P), Fax No. : 0612-2297225

Website : www.igims.org

It gives me immense pleasure to extend my warm greetings and best wishes on the occasion of the 8th Annual Conference of the Association of Radiation Oncologists of India (AROI), Bihar Chapter 2026, being organized by the State Cancer Institute, Indira Gandhi Institute of Medical Sciences (IGIMS), Patna, on 9th–10th October 2026.

The theme of the conference, "Innovation, Precision and Personalization: Transforming the Future of Cancer Care," is highly relevant in the present era of rapidly evolving cancer diagnosis and treatment. Such academic forums provide an excellent platform for exchange of knowledge, sharing of clinical experiences, and meaningful discussions on emerging evidence and technological advances in oncology.

I am confident that the participation of eminent oncologists and distinguished national faculty will enrich the scientific deliberations and foster collaboration, innovation and evidence-based cancer care. I particularly appreciate the efforts of the organizing committee in bringing together experts from Bihar and across the country for this important academic endeavour.

I convey my sincere appreciation to the organizers and extend my best wishes for the grand success of AROICON Bihar Chapter 2026. May the conference inspire new ideas and contribute meaningfully towards improving cancer care and outcomes.

With my best wishes for a successful and memorable conference.

7/10/26

Prof. (Dr.) Bindey Kumar
Director
Cum Vice Chancellor, BHUS
Indira Gandhi Institute of Medical Sciences, Patna





Prof. (Dr.) Om Kumar
Dean (Academics),
Indira Gandhi Institute of
Medical Sciences (IGIMS)
Patna

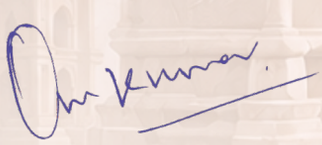
Message

It gives me immense pleasure to extend my heartfelt greetings to the organizers, delegates, and faculty gathered for the 8th Annual Conference of the Association of Radiation Oncologists of India (AROI) – Bihar Chapter, 2026, being hosted by the State Cancer Institute, IGIMS, Patna.

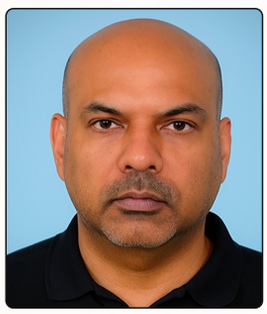
This year's theme, "Innovation, Precision and Personalization: Transforming the Future of Cancer Care," reflects the very direction in which modern oncology must move — towards therapies that are not only scientifically advanced but also tailored to the individual needs of every patient. Radiation oncology has witnessed extraordinary progress in recent years, and platforms such as this conference play a vital role in translating that progress into better outcomes for patients across Bihar and beyond.

I commend the Organizing Committee for bringing together such an impressive gathering of over 40 national faculty alongside our own outstanding experts from the state. Such academic exchange strengthens not just individual expertise but the collective capability of our region in cancer care.

I extend my warm wishes for the resounding success of this conference and hope it inspires continued excellence, collaboration, and compassion in the service of cancer patients.



Prof. (Dr.) Om Kumar
Dean (Academics),
IGIMS, Patna



Prof (Dr) Bibhuti P. Sinha
Deputy Director (Administration)
Indira Gandhi Institute of Medical Sciences,
Patna

Message

It gives me immense pleasure to extend my heartfelt congratulations to the Department of Radiation Oncology, State Cancer Institute, Indira Gandhi Institute of Medical Sciences, Patna on the occasion of organizing 8th Annual Conference of Association of Radiation Oncologists of India, 2026.

Radiation Oncology has witnessed remarkable advancements over the past decade, evolving from conventional techniques to highly precise, image-guided, and biologically informed approaches to cancer care. Conferences such as this provide an invaluable platform for clinicians, researchers, physicists, and students to come together, exchange knowledge, and deliberate upon the latest evidence shaping our clinical practice. They play a vital role in translating scientific progress into meaningful outcomes for our patients.

I am confident that this conference, with its rich scientific program and distinguished faculty, will foster fruitful academic discussions and strengthen collaborations among radiation oncology professionals from across the region/country. Such gatherings not only enrich our collective knowledge but also inspire the next generation of oncologists to pursue excellence in both research and patient care.

I commend the Organizing Committee for their dedication and tireless efforts in bringing this conference to fruition. I extend my best wishes for the grand success of the conference and hope that the deliberations over these days will open new avenues of learning and collaboration for all the delegates.

My warm greetings to all the participants, faculty, and organizers. I wish the conference every success.

Prof (Dr) Bibhuti P. Sinha
Deputy Director (Administration)
Indira Gandhi Institute of Medical Sciences,
Patna



Prof (Dr) Manish Mandal
Medical Superintendent
Indira Gandhi Institute of Medical Sciences,
Patna

Message

It is with great pride and satisfaction that I extend my warm congratulations to the Department of Radiation Oncology State Cancer Institute, Indira Gandhi Institute of Medical Sciences, Patna on hosting 8th Annual Conference of Association of Radiation Oncologists of India, 2026.

Cancer care is a journey that demands not only clinical expertise but also compassion, coordination, and continuous learning. As a tertiary care institution committed to serving patients from across the region, we take great pride in the quality and dedication of our Radiation Oncology team, who work tirelessly, often under challenging circumstances, to deliver the best possible outcomes to those who place their trust in us.

Hosting a conference of this scale reflects the growing stature of our institution as a centre of excellence in oncology services. It also reaffirms our commitment to keeping pace with evolving treatment protocols, technologies, and best practices, so that our patients continue to receive care that is both compassionate and current. Platforms such as this allow our clinicians to interact with eminent experts and peers, bringing back fresh insights that will ultimately benefit patient care at our institution.

I take this opportunity to acknowledge the hard work of the entire team — doctors, nursing staff, technologists, and administrative personnel — whose combined efforts make such academic endeavours possible alongside our daily commitment to patient care.

I extend my best wishes to the Organizing Committee for the success of this conference, and my warm greetings to all the delegates and faculty joining us. May this gathering strengthen our shared mission of providing better, safer, and more accessible cancer care to those who need it most.

Prof (Dr) Manish Mandal
Medical Superintendent
Indira Gandhi Institute of Medical Sciences,
Patna



Prof. Surendra Nath Senapati
President
Association of Radiation
Oncologists of India (AROI)

Message

Dear Colleagues,

It gives me great pleasure to extend my warm greetings to the delegates of the 8th AROICON – Bihar Chapter 2026, being held on 9–10 October 2026 and organized by the Department of Radiation Oncology, Indira Gandhi Institute of Medical Sciences, Patna.

This conference takes place in AROI's Golden Jubilee year, making it an especially meaningful occasion for our community. As we celebrate 50 years of the association, we honour the vision of our founders and the contributions of generations of radiation oncologists. Their work has shaped our specialty and laid the foundation for its future.

The conference theme, "Innovation, Precision and Personalization: Transforming the Future of Cancer Care," is fitting for this milestone year. Advances in radiotherapy offer us remarkable opportunities to improve outcomes. Our task is to turn that progress into timely, compassionate and accessible care for every patient.

I hope the scientific sessions and conversations in Patna will inspire new ideas, encourage young colleagues and strengthen collaboration across Bihar and neighbouring states. May the spirit of AROI's Golden Jubilee make this gathering a celebration of both our achievements and our shared purpose.

On behalf of AROI, I congratulate the Bihar Chapter and the organizing team for their dedication. I wish all delegates an enriching conference and a memorable stay in Patna.

My heartfelt wishes for the grand success of the 8th AROICON – Bihar Chapter 2026.

Prof. Surendra Nath Senapati
President
Association of Radiation
Oncologists of India (AROI)



Dr. V. Srinivasan
Secretary General
Association of Radiation
Oncologists of India (AROI)

Message

It gives me immense pleasure to be associated with the 8th Annual Conference of Association of Radiation Oncologists of India (AROI) - Bihar Chapter, 2026 to be held 09th - 10th October at the "Central Auditorium, IGIMS, Patna".

We Radiation Oncologists are the torchbearers who will shape the future of cancer care through innovation, compassion, and scientific excellence. In this context, the theme "Innovation, Precision and Personalization: Transforming the Future of Cancer Care", are both timely and inspiring. It challenges us to look beyond conventional boundaries, embrace newer technologies, and constantly strive to improve patient outcomes.

I am delighted to note the participation of eminent Radiation Oncologists from across the country. The Scientific program has been thoughtfully designed to empower young radiation oncologists with knowledge, confidence, and vision to meet future challenges in oncology.

I commend the organizing committee for their dedication and tireless efforts in bringing together such a meaningful academic platform. I extend my best wishes for the grand success of this Conference and hope that every delegate leaves inspired — not only academically enriched, but also motivated to push boundaries and transform lives.

I wish you all a rewarding scientific experience and cherish memorable moments in Patna, where timeless heritage meets vibrant culture.

Dr. V. Srinivasan
Secretary General
(AROI)



Dr Rajiv Ranjan Prasad
Director Radiation Oncology,
Jay Prabha Medanta Hospital, Patna
President, AROI – Bihar Chapter

Message

It gives me immense pleasure and honour to welcome you all to the 8th Annual Conference of the Association of Radiation Oncologists of India, Bihar Chapter – AROICON Bihar 2026.

The landscape of cancer care is undergoing a rapid and remarkable transformation. Our theme for this year, "Innovation & Precision – The Future of Cancer Care" aptly captures this evolution. We have moved from conventional approaches to an era of personalised and precise oncology – empowered by Adaptive Radiotherapy, Stereotactic Precision, Proton Therapy, Brachytherapy Innovations, Artificial Intelligence, and the emerging paradigm of Immuno-Radiotherapy.

This theme is particularly significant for us in Bihar. While we must keep pace with these global innovations, our collective responsibility is to ensure that this precision and innovation reaches every patient in our state – making advanced cancer care accessible, affordable and equitable.

The organising team has curated an enriching scientific program with eminent national faculty, covering cutting-edge developments and their practical application in our day-to-day practice. AROICON Bihar 2026 is not just an academic feast – it is a platform to bond, to mentor our young generation, and to strengthen our fraternity.

I express my sincere gratitude to the Organising Committee for their tireless efforts, and to all faculty, delegates, sponsors and our postgraduate students for their wholehearted support in making this conference a grand success.

Let us come together to learn, to innovate and to collectively shape the future of cancer care in Bihar.

I wish you all a rewarding and memorable academic experience.

Welcome to AROICON Bihar 2026!

Dr Rajiv Ranjan Prasad
Director Radiation Oncology,
Jay Prabha Medanta Hospital, Patna
President, AROI – Bihar Chapter



Dr. Rajesh Kumar Singh
Chief, State Cancer Institute
Indira Gandhi Institute of
Medical Sciences (IGIMS), Patna
Secretary General, AROI Bihar Chapter

Message

It gives me immense pleasure to extend my warm greetings and best wishes to all the delegates, faculty members, colleagues, residents, students, and guests participating in the 8th Annual Conference of the Association of Radiation Oncologists of India (AROI), Bihar Chapter, being held on 9th and 10th October 2026 at the Central Auditorium, Indira Gandhi Institute of Medical Sciences (IGIMS), Patna.

The annual conference of the AROI Bihar Chapter provides an important platform for scientific exchange, professional interaction, and sharing of clinical experience among radiation oncologists and allied oncology professionals. In an era of rapidly advancing cancer care, such academic gatherings are essential for keeping pace with developments in precision radiotherapy, image-guided treatment, stereotactic techniques, brachytherapy, artificial intelligence, and multidisciplinary cancer management.

I am particularly pleased that State Cancer Institute (SCI), IGIMS, Patna, is hosting this important academic event. The institute remains committed to excellence in comprehensive cancer care, education, research, and technological advancement. I am confident that the scientific deliberations during this conference will be stimulating, informative, and beneficial to all participants, particularly the younger members of our oncology fraternity.
I also extend my warm greetings and best wishes to the entire AROI fraternity for AROICON 2026 in Hyderabad. I am confident that the conference will provide an excellent opportunity for academic enrichment, exchange of knowledge, and professional collaboration, further strengthening the radiation oncology community across the country.

On this occasion, I am also delighted to convey my best wishes to the AROI Bihar Chapter for the proposed AROICON 2028 in Patna at State Cancer Institute, IGIMS. It will be a matter of great pride for the Bihar Chapter and our institution to welcome the national AROI fraternity to Patna. With its expanding healthcare infrastructure, academic environment, modern convention facilities, excellent connectivity, and rich cultural heritage, Patna provides an enriching setting for scientific and professional interaction.

I congratulate the organizing committee for their dedication and efforts in bringing together this academic program and wish the 8th Annual Conference of AROI Bihar Chapter every success. May the conference foster new ideas, strengthen collaborations, encourage young professionals, and contribute to our shared goal of improving cancer care and patient outcomes.

With warm regards and best wishes for a successful and academically enriching conference.



Prof. (Dr) Dinesh Kumar Sinha
Organizing Secretary
8th Annual Conference of
AROI Bihar Chapter 2026
Professor, Department of Radiation Oncology
State Cancer Institute, IGIMS, Patna

Message

It gives me immense pleasure and privilege, on behalf of the Organizing Committee of the 8th Annual Conference of the Association of Radiation Oncologists of India (AROI), Bihar Chapter, to extend a warm and heartfelt welcome to our respected mentors, distinguished national and regional faculty, colleagues, young oncologists, residents, students and delegates to the historic city of Patna.

It is a matter of great satisfaction to see the academic journey of the AROI Bihar Chapter continue to grow. From the first conference in 2017 to the 8th Annual Conference in 2026, this journey reflects our collective commitment to academic excellence, professional collaboration and, above all, the pursuit of better cancer care. The conference is scheduled on 9–10 October 2026 at the Central Auditorium, Indira Gandhi Institute of Medical Sciences (IGIMS), Patna.

The theme of this year's conference, “Innovation, Precision, and Personalization: Transforming the Future of Cancer Care,” aptly reflects the rapidly evolving landscape of modern oncology.

The scientific programme has been thoughtfully designed to address contemporary and clinically relevant issues across major cancer sites. It encompasses advances in breast and lung cancer, uro-oncology and gynaecological malignancies, as well as evolving approaches in head and neck, paediatric and gastrointestinal oncology. Dedicated sessions on adaptive radiotherapy, artificial intelligence, SBRT, immunotherapy–radiotherapy integration and personalized radiotherapy will provide opportunities to discuss emerging evidence and its practical application. We are privileged to welcome an eminent group of national faculty from leading cancer centres and academic institutions across the country. Their expertise, experience and willingness to share knowledge will undoubtedly enrich the scientific deliberations and provide valuable opportunities for meaningful academic exchange.

The conference also continues the academic traditions of the AROI Bihar Chapter through the Dr Rangi Prasad Singh Oration and the Dr A D Singh Oration, along with oral paper presentations, poster presentations and the running quiz. These platforms encourage young colleagues and students to present their work, engage in scientific discussion and nurture a culture of academic enquiry.

I take this opportunity to express my sincere gratitude to our Chief Patron, Co-Chief Patron, Patrons, President AROI Bihar Chapter, Secretary General & Organizing Chairman, Co-Organizing Secretary, Treasurer, Scientific Committee and all members of the various organizing committees for their dedication and support. I extend my heartfelt thanks to all national and regional faculty, delegates, residents, students, trade partners and the entire support team whose participation has made this academic endeavour possible.

I am particularly grateful to Prof. (Dr) Rajesh Kumar Singh, Organizing Chairman, Prof. (Dr) Richa Madhawi, Co-Organizing Secretary, and Dr Shraddha Raj, Scientific and Souvenir Committee for their constant support and guidance.

Patna is a city with a rich intellectual, cultural and historical heritage. It is our sincere endeavour to extend the warmth and hospitality of Bihar to every guest while creating an environment where knowledge is shared, ideas are exchanged and professional friendships are strengthened.

As we come together for AROICON Bihar Chapter 2026, I hope that these two days will provide not only a stimulating scientific experience but also lasting memories of friendship and fellowship. May the discussions and interactions during the conference inspire us to embrace innovation, pursue precision and place personalization at the heart of cancer care.

I look forward to welcoming each one of you to Patna and to sharing this memorable academic journey together.

Prof. (Dr) Dinesh Kumar Sinha
Organizing Secretary
8th Annual Conference of
AROI Bihar Chapter 2026
Professor, Department of Radiation Oncology
State Cancer Institute, IGIMS, Patna



Dr. Richa Madhawi
Co - Organizing Secretary
Professor, Department of Radiation Oncology,
State Cancer Institute, IGIMS, Patna

Message

It gives me immense pleasure to welcome all the esteemed delegates, faculty members, colleagues and guests to the 8th Annual Conference of AROI Bihar Chapter, being held on 9th–10th October 2026 at IGIMS, Patna.

This year's theme, “Innovation, Precision, and Personalization: Transforming the Future of Cancer Care,” reflects the rapidly evolving landscape of oncology. Advances in precision medicine, radiation technology, artificial intelligence and personalized treatment strategies are reshaping the way we approach cancer care. This conference provides an excellent platform to exchange knowledge, share experiences and discuss emerging practices that can further improve patient outcomes.

As a member of the organizing team, I am delighted to be a part of this academic endeavour and look forward to meaningful scientific discussions, interactive sessions and fruitful collaborations. I sincerely acknowledge the efforts of our senior colleagues, faculty, delegates and the entire organizing team whose support has made this conference possible.

I hope that the conference will be academically enriching, professionally rewarding and memorable for everyone. I extend my warmest wishes for a successful conference and a pleasant stay in the historic and culturally vibrant city of Patna.

Dr. Richa Madhawi
Co - Organizing Secretary
Professor, Department of Radiation Oncology,
State Cancer Institute, IGIMS, Patna

Dr. AD Singh Oration

Remembering the Stalwart



Dr. A. D. Singh

(1929–2014)

1. Name: Dr Atar Deo Singh
2. Father's Name: Shri Laru Singh
3. Date of Birth: 31st July, 1929
4. Place of Birth: Vill Mosadpur, Dist Begusarai, Bihar
5. Address: Road No 4, Rajendra Nagar, Patna

6. Academic Qualifications:
a. Pre-Professional
Lower Primary: 1937 Mosadpur
Upper Primary: 1939 Ullao
Middle: 1941 Sonbarsa Diara
Matriculation: 1946
TNJ Collegiate School, Bhagalpur
Inter Science: 1948 TNJ College, Bhagalpur

b. Professional
MBBS: 1953 PW Medical College, Patna
DMRT: 1958 Conjoint Board, England
FRR: 1960 Faculty of Radiologists, London
FRCR: 1975 Royal College of Radiologists, London

c. Honorary.
FICR: 1986 India College of Radiology & Imaging
FRSM: 1982 Royal Society of Medicine, London

7. Medical Registration:
a. Bihar Council of Medical: Registration # 5344
b. Tamil Nadu Medical: Registration # 15670
c. Malaysia Medical Council: Registration # 22691
d. General Medical Council: Registration # C2927
8. Professional Experience:
a. Professor & Head of Dept of Radiotherapy:
i. Christian Medical College & Hospital, Vellore
ii. Inst of Medical Sciences, BHU, Varanas
iiii. Patna Medical College & Hospital, Patna

b. Consultant Radiotherapist:
i. Mount Miriam Hospital, Penang, Malaysia
ii. WHO consultant, Colombo, Sri Lanka
iii. Lae University, Lae, Papua New Guineaiv. Mahabir Cancer Sansthan, Patna

9. Honours:
i. Dr B C Roy National Award — (1985)
ii. Sri Jagdish Chandra Bose Oration — (1981)
iii. Dr S Padam Singh Oration (1983)
iv. Dr Ida B Scudder Oration (1968)

10. Membership:
a. Life Member, Indian Radiological & Imaging Assn
c. Life Member, Assn of Radiation Oncologists of India
d. Founder Member, Indian College Radiation Oncology
e.Life Member, Assn of Medical Physicists of India
f. Life Member, Assn of Pain Relief of India
Past President, Assn of Radiation Oncologists of Indiag.
Past Chairman of Indian College of Radiation Oncologyh.
Past Vice-President, Indian Radiological & Imaging Assn

11. Miscellaneous:
a. Examiner for MD (RT), DMRT, MNAMS at Agra, Allepy, BHU, Bangalore, Mumbai, Kolkata, Colombo, Chandigarh, Delhi, Hyderabad, Jaipur, Chennai, Manipal, Lucknow, Guwahati, Indore, Trivandrum and Cuttack.
b. MCI Inspector for PG Courses of Radiotherapyin over a dozen collegesc. Editor: i. Who's Who in Indian Radiology, ii. Walk a mile in my shoes, iii. Bulletin of Inst of Medical Sciences, BHU Varanasid.

Author: i. Quintessence of Radio Therapy, ii. Over 40 Scientific papers iii. Reminiscencesiv. Jindgi Ka Safarnama (in Hindi)

12. Special Topics for Clinical Research:
a. Chemotherapy - Radiotherapy trial for Oral Cancerb. Management of Cancer of Maxillary sinus with RT & surgeryc. Radiotherapy in Retinoblastoma

13. Other Places of Working:a. Asst Professor Radiotherapy, PGI Chandigarh (1961 ~ 62)b. Registrar Radiotherapy, The Middlesex Hospital, Londonc. Royal Victoria Infirmary, New Castle Upon Tyne, UK (1957 ~ 60)

14. Retirement : 31st July, 1989 as Professor and head of Radiotherapy, Christian Medical College and Hospital, Vellore, Tamil Nadu

Presenter's Profile



Padma Shri Dr. P. Vijay Anand ReddyPadma Shri Dr. P. Vijay Anand Reddy is a distinguished Radiation Oncologist with over three decades of experience in cancer care. He is the Director & Senior Consultant Oncologist at Apollo Cancer Centres, Hyderabad, and has made significant contributions to the advancement of Radiation Oncology and Ocular Oncology in India. Padma AwardsBorn on 20 October 1959, Dr. Reddy has treated more than 15,000 cancer patients since 1992. His areas of expertise include Head & Neck Oncology, Ocular Oncology, Radiation Oncology, Brachytherapy and advanced radiation techniques. He has received advanced training and fellowships from prestigious institutions in India and abroad, including centres in London, the USA, Australia and Germany. He has also served in several leadership positions in the oncology community, including as Past President of the Association of Radiation Oncologists of India (AROI) and Past Chairman of the Indian College of Radiation Oncology.

Purpose, Passion and Perseverance
A Journey of Medicine, Meaning and Life

Life does not come with an instruction manual. We do not choose where we are born, the circumstances into which we enter, or ultimately when and how our journey will end. What we do have is the journey in between—and the opportunity to give that journey meaning.

For me, that meaning has evolved through three simple yet powerful principles: Purpose, Passion and Perseverance.
Purpose gives direction to our lives. As young doctors and oncologists, we are privileged to be in a profession where our knowledge and skills can directly touch another human life. Treating cancer is not merely about treating a disease; it is about treating a person with dignity, honesty, compassion and hope. Every patient who walks into our clinic gives us an opportunity to make a difference.

I believe that a doctor is truly blessed to have the opportunity to serve humanity. We must use that privilege to the fullest with love, care and compassion. Our profession demands not only knowledge and competence, but also integrity and ethics. There are no shortcuts to building trust. When we consistently do what is right, even when nobody is watching, respect and credibility follow naturally.

Passion is what transforms a profession into a calling. Whatever we choose to do, we must do it wholeheartedly. Do what you love, and love what you do. Keep asking yourself: Can I do this better? Can I do something differently? Can I make an ordinary thing extraordinary?

Medicine is constantly evolving, and we must evolve with it. Learn continuously, seek opportunities, attend fellowships, acquire new skills, share your knowledge and remain curious. Knowledge grows when it is shared, not when it is guarded. One person's light does not diminish when it lights another candle.

Perseverance is what converts dreams into achievements. You will encounter failures, criticism, disappointments and moments when you may doubt yourself. Do not lose the battle before you even attempt to fight it. Believe in yourself, aim high, work hard and keep moving forward.

Do not be afraid to stand out. Speak up when you have something meaningful to contribute. Look for opportunities and, when necessary, create them. You do not have to be the best when you begin; determination, discipline and the willingness to keep learning can take you far beyond what you initially imagined.

But success in medicine should not come at the cost of life itself. Balance matters. Family, friends, career, sport, recreation and service can—and must—coexist. We should not postpone happiness until some future milestone. There will always be another target, another achievement and another deadline. Enjoy the journey while pursuing excellence.

Our relationship with patients is at the heart of oncology. A smile, a patient ear, a reassuring touch, a few words of encouragement and genuine empathy can sometimes mean as much as the treatment itself. Patients may forget the details of our prescriptions, but they rarely forget how we made them feel.

Beyond our profession, there is immense fulfilment in giving back. Helping someone who cannot repay us, supporting the needy, spreading cancer awareness, fighting tobacco and contributing to society can bring a deeper sense of happiness and purpose. Happiness often comes not from what we receive, but from what we are able to give.

And finally, remember that life is not a race. We have no control over the starting point or the finish line. What matters is how we walk the path between them. We must maintain our balance, face the challenges with courage, cherish our relationships, serve others and make every moment count.

My message to the young oncologists is simple:
Find your Purpose.
Follow it with Passion.
Pursue it with Perseverance.
Do ordinary things extraordinarily well.
Serve with compassion.
Live with integrity.
Dream big.
And most importantly—do not merely exist. Perform, contribute, and enjoy the journey.
Because ultimately, the meaning of life is not something we discover—it is something we create through the way we live it.
Play the game of life with dedication. You will win.
Cherish every moment. Be happy.
And always be ready to take up the next challenge.

Padma Shri Dr. Vijay Anand Reddy
Sr. Consultant Oncologist,
Professor & Head, Dept. of Radiation Oncology
Apollo Hospitals, Hyderabad

Dr Rangi Prasad Singh Oration

Remembering the Stalwart



Dr Rangi Prasad Singh

(26 February 1926 – 8 December 2001)

Prof. Dr. Rangi Prasad Singh was a pioneer in the field of oncology in Bihar. He played a pivotal role in nurturing the Prince of Wales Medical College-based Radium Institute, Patna, from its nascent stage in the 1960s and transforming it into a premier oncology centre in Eastern India. He served as Professor and Head of the Department with distinction.

He graduated from Prince of Wales Medical College in 1952 and obtained his M.S. (General Surgery) in 1958 and M.D. (Radiology) in 1965. He earned his DMRT from Middlesex Hospital, London, in 1970 and was associated with prestigious institutions including Hammersmith Hospital, Royal Marsden Hospital, and Holt Radium Institute, Manchester. He was a Fellow of the Royal Society and Royal College of Physicians, London, as well as a Fellow of the Indian College of Radiology.

During his illustrious career, he held several distinguished positions. He served as President of IMA Bihar, President of the Bihar State Radiology Association, Founder President of AROI Bihar Chapter, Senior Vice President of the Indian Radiological and Imaging Association (IRIA), President of the Bihar State Health Services Association, and Vice President of the Bihar Literary Forum. He was also a Visiting Professor at Howard University Hospital, Washington, and the National Institutes of Health, Bethesda, U.S.A.

A man of both science and letters, Dr. Singh had more than a dozen publications to his credit, covering both medical and non-medical subjects. He also served as Vice President of Akhil Bharatiya Bhasha Sahitya Sammelan.

The influence of his gentle personality and remarkable contribution to society is difficult to fully measure. His passing left a profound void. He was truly a son of the soil—a self-made man, humble in nature, simple in his ways, and immense in character. His legacy continues to inspire generations.

Presenter's Profile



Dr Prashant Mathur is Director, ICMR-National Institute of NCD Epidemiology, Bengaluru, and is Professor (Outstanding) of the Academy of Scientific and Innovative Research (AcSIR), as contributed extensively to cancer surveillance, epidemiology and disease informatics in India. He has been leading the ICMR National Cancer Registry Programme since 2016 and has contributed to national analyses of cancer burden, patterns of care and survival. His work focuses on strengthening cancer registration, generating evidence for cancer control, and translating routinely collected health data into actionable public-health evidence.

Dr Mathur is on several national and international committes and Lancet Commissions on cancer. He has 140 peer reviewed publications, 21 chapters in books, with an h-index of 54 and 62,527 citations.

National Cancer Registry Program as a Enabler for High-Value Cancer Care: Studies on Guideline Concordance and Comparative Effectiveness-

Gokul Sarveswaran[1], Jayasankar Sankarapillai[1], Thilagavathi Ramamoorthy[1], Satish Krishnan[1], Sudarshan K L[1], Priyanka Das[1], **Prashant Mathur[1,*]**

[1]*ICMR-National Institute of NCD Epidemiology, Bengaluru, India*
*Corresponding author email: director-nine@icmr.gov.in

Abstract

Cancer registries have conventionally served a descriptive public health function — quantifying incidence, mortality, and broad patterns of presentation within defined populations. This oration examines whether the same registry infrastructure can be also utilised to address a more direct clinical question: to what extent does routine cancer care in India conform to evidence-based treatment guidelines, as a real world data measure to its benefits.

India's National Cancer Registry Programme (NCRP), through its Population-Based and Hospital-Based Cancer Registries and its Patterns of Care and Survival Studies, captures longitudinal information on staging, treatment sequencing, and outcomes at a scale not achievable through single-institution studies. This infrastructure enables two complementary lines of enquiry. The first is the direct measurement of guideline concordance — the proportion of patients receiving treatment consistent with evidence-based recommendations — using breast cancer treatment trajectories as a case study, along with the patient-, hospital-, and system-level factors associated with deviation from recommended care. The second is the application of target trial emulation, a methodology that applies the design principles of a randomised controlled trial to observational registry data, to generate comparative-effectiveness evidence for treatment-strategy questions that may not otherwise be addressed through trials conducted in the Indian setting.

Three such questions will be examined during the presentation: the comparative outcomes of breast-conserving surgery versus mastectomy, with and without adjuvant radiotherapy, in early-stage breast cancer; the comparative effectiveness of axillary lymph node dissection versus no further axillary surgery in node-negative disease; and the role of brachytherapy in addition to external beam radiotherapy, including the influence of treatment timeliness, in locally advanced cervical cancer. Each example is intended to illustrate a broader principle: that both underuse of effective treatment and overuse of treatment without added benefit represent measurable, registry-detectable departures from high-value care, and that each carries distinct implications for clinical practice and health-system planning.

The presentation will conclude by situating these findings within the broader requirements for strengthening NCRP as a platform for comparative-effectiveness research — specifically, the completeness and standardisation of staging and treatment documentation, the extension of longitudinal follow-up, and the development of digital and computational methods to support registry-based analysis at scale. The central notion is that cancer registries, when sufficiently detailed and rigorously analysed, can function not merely as public health surveillance system but, also as a continuous source of evidence for guiding treatment decisions, informing clinical guidelines, and shaping cancer-control policy in India.

Keywords: National Cancer Registry Programme, Guideline Concordance, Target Trial Emulation, Comparative Effectiveness, Breast Cancer, Cervical cancer

Write ups

Speaker

Adaptive Radiotherapy in Head and Neck Cancers



Sarbani Ghosh Laskar
MD (Rad Onco), DNB (Rad Onco), DMRT
Fellow of the Indian College of Radiation Oncology (FICRO)
Professor & Radiation Oncologist
Department of Radiation Oncology,
Tata Memorial Hospital,
Parel, Mumbai 400012

Adaptive radiotherapy is integral to good and safe Radiation Therapy, especially when the target is surrounded by several Organs at Risk (OARs). Even before the advent of sophisticated machines allowing this and in the 2-dimesional era, when there was any distortion in the contours or loss of weight or any other reasons, Adaptive RT was carried out.

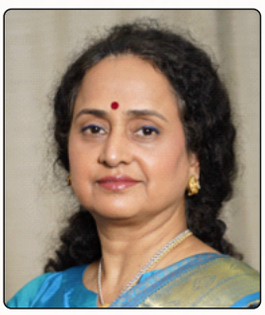
These evolutions over time have been documented, andpatients who are more at risk for needing adaptive RT have beenstudied in greater detail. These have led the Radiation Oncologist to build adaptive RT into treatment for patients who are more likely to need adaptation. This includes large bulky nodes, advanced disease, weight loss, amongst other reasons. Studies have also looked at what time patients are more likely to need adaptation. Most studies reveal that adaptation is most necessary in the 4th week of therapy for head and neck cancers.

This also brings into focus the verification protocols that clinicians practice and the margins around the CTV (PTVs) that Institutes practise. There is a lot of debate on what the optimum alteration and margins should be while practising adaptive RT.

This also leads to a lot of discussion on being able to calculate the doses to normal structures that accumulate as contours and plans are modified during adaptive RT.

During the lecture, all this and msny more issues and the workflow will be covered. I will try to address these issues in HN cancers and how we do it in our set-up.

Multidisciplinary Approach In Gall Bladder Cancer Management



Prof (Dr) Sushma Agrawal
Department of Radiotherapy,
Sanjay Gandhi Institute of Medical Sciences,
Lucknow
India Phone +91522-2494454

It gives me immense pleasure to share my thoughts on the occasion of Bihar Chapter of AROI being conducted at IGIMS Patna, where I worked for two years from 2002 to 2004. The department of Radiotherapy has grown immensely both in terms of manpower and resources. The faculty are energetic, proactive and doing good and relevant work which is important for teaching of MD students. I wish good luck to the deparment staff for continuing the good work and contributing to the rise of institute.

In brief about my work in Gallbladder Cancer, which is prevalent in the Indo-gangetic belt and presents in unresectable stage in 90% patients. It is important to categorise them into borderline resectable, unresectable and metastatic disease. Borderline resectable are those where patients have T3/T4 with N0/N1 disease while T4 with N2/retroperitoneal LN are unresectable. Based on our work, we demonstrated that neoadjuvant chemotherapy results in downstaging and 10% resectability in unresectable disease, and addition of consolidation chemoradiation results in further 10% resectability. Consolidation chemoradiation also results in doubling of median overall survival from 7 months to 13 months based on our randomised RACE-GB study. Also based on our largest database of GBC with retroperitoneal lymphadenopathy which is considered as metastatic disease, we observed that these patients if treated with radical intent demonstrated similar outcomes as unresectable disease and hence these patients should be treated with radical intent.

Optimizing local control in Ewing's Sarcoma



Dr. Nehal Khanna
Professor and Consultant Radiation Oncologist,
Tata Memorial Hospital and
Homi Bhabha National Institute,
Mumbai.

Ewing's Sarcoma (EWS) is a highly aggressive malignant bone and soft-tissue tumor primarily affecting children and young adults. Characterised by a remarkably high propensity for early metastatic dissemination, its systemic control relies heavily on intensive multi-agent chemotherapy. However, long-term survival is deeply contingent upon achieving robust local control at the primary site.

The Structural Shift: Overcoming the Surgical Bias

Historically, local treatment choice in EWS has suffered from a pronounced "surgical bias". Multicenter retrospective data traditionally associated surgery with superior local control rates compared to radiotherapy alone. Furthermore, a deep-seated clinical apprehension existed regarding the long-term sequelae of radiation in developing children, particularly radiation-induced second malignancies, skeletal growth arrests, and functional limb limitations. As contemporary imaging, surgical reconstruction options, and highly precise radiation delivery platforms have matured, the paradigm has decisively transitioned toward patient-tailored, multi-disciplinary decision-making.

Definitive Radiotherapy: The Paradigm Shift of Dose Escalation

For unresectable or centrally located primary tumors, definitive radiotherapy serves as the primary local modality. The milestone clinical breakthrough is the Tata Memorial Centre Phase III Randomized Controlled Trial (Dose escalation trial, 2019). This trial addressed a long-standing clinical dilemma: whether escalating the radiation dose could overcome local failure without exacerbating severe tissue toxicity.

The trial randomised 95 patients with unresectable EWS into two distinct treatment pathways:

Standard-Dose Radiotherapy (SDRT): Delivering 55.8 Gy in 31 fractions.

Escalated-Dose Radiotherapy (EDRT): Delivering 70.2 Gy in 39 fractions (utilising a two-phase planning design where the final 14.4 Gy was restricted tightly to the post-induction chemotherapy volume).

The results demonstrated a statistically significant superior local control (LC) rate of 79.2% in the EDRT arm, compared to just 55.3% in the SDRT arm ($p=0.02$). Furthermore, dose escalation showed a strong positive trend toward improving overall survival (62.5% vs 40.4%) with highly acceptable functional outcomes and no significant surge in severe late toxicities. This firmly established the role of advanced conformal methods (IMRT and IGRT) in safely executing dose escalation.

Refining Post-Operative Radiotherapy (PORT) and Pre-Operative Timing

When surgery is chosen as the primary local control strategy, the selective integration of Post-Operative Radiotherapy (PORT) provides significant local failure protection. According to data from the Euro-E.W.I.N.G group (Foulon et al., 2016), adding PORT to surgery produces a major reduction in local failure (subHR 0.43, $p=0.02$),

proving uniquely beneficial for large tumors (>200 ml) or instances of narrow margins. The radiotherapy doses recommended are 45 Gy for negative, narrow resections or close margins, 50.4 Gy for microscopically positive margins and 55.8 Gy for gross positive residual disease.

Pre-operative radiotherapy (45–55 Gy) remains an excellent tool when close or positive margins are anticipated, effectively downsizing tumors to allow function-preserving, margin-negative operations. Crucially, chronological timing matters: delaying local therapy beyond 16 weeks post-chemotherapy initiation is independently linked to significantly worse survival outcomes.

Metastatic Disease and Pediatric Care

The management of *de novo* metastatic EWS requires aggressive, curative-intent multi-modality care for low-to-intermediate risk tiers.

Lung Metastases: Because microscopic lung involvement is common, Whole Lung Irradiation (WLI) at 12–15 Gy is mandatory for patients presenting with pulmonary metastases, irrespective of their initial response to induction chemotherapy.

Oligometastatic Disease: Curative protocols require treating all active metastatic sites alongside the primary lesion using precise platforms like Stereotactic Body Radiotherapy (SBRT).

Finally, for very young pediatric patients, safeguarding skeletal growth plates and craniofacial ossification centers is paramount. The presentation highlighted advanced modalities such as Proton Therapy—which drastically lowers the tracking integral dose to healthy surrounding structures—and interstitial Brachytherapy

Ethics in Indian Oncology: Between Hope, Harm and the Family's Last Savings



Dr Gautam K Sharan
Medical Director and Senior Radiation Oncologist,
Ranchi Cancer Hospital and Research Centre,
Ranchi.

"Doctor sahib, please do not tell him that he has cancer. He will not be able to tolerate it."

This is a request that almost every oncologist in India has heard. The family wants to protect the patient. At the same time, the patient has a right to know about his illness and participate in decisions about his treatment. There is no easy answer. We have to handle such situations with honesty, compassion and maturity.

Ethics in oncology is not something limited to consent forms or ethics committee meetings. It is part of our daily practice. It comes before us when we decide how much truth to disclose, whether an aggressive treatment is really justified, whether the likely benefit is worth the toxicity and cost, and when we should stop treating the disease and concentrate on comfort and dignity.

The accepted principles of medical ethics are autonomy, beneficence, non-maleficence and justice. In simple language, we should respect the patient's choice, try to do good, avoid unnecessary harm and provide fair treatment. These principles are universal, but their application in India has its own challenges.

In our country, cancer treatment is usually a family affair. The family arranges money, accompanies the patient to hospital, donates blood, collects reports and provides care at home. Their role cannot be ignored. However, family involvement should not mean that the patient is completely kept out of the discussion.

A simple question may help: "Would you like to know the details of your illness yourself, or should I discuss them with your family?" Some patients want complete information. Others prefer that a son, daughter or spouse takes the lead. Both choices should be respected. Our duty is not to force information upon the patient, but also not to hide it merely because the family has asked us to do so.

Informed consent is another area where we need to be careful. A signature or thumb impression does not always mean that the patient has understood the treatment. Many patients come from distant villages and may not understand English or complex medical terms. Some may be too anxious to ask questions.

We must explain clearly whether the treatment is intended to cure the disease, control it for some time or only relieve symptoms. The expected benefit, side effects, alternatives and cost should be discussed in a language that the patient and family understand. Instead of saying that a drug improves "progression-free survival," it may be more useful to explain how much additional disease control can realistically be expected.

The question of how much treatment is enough is often the most difficult one. With modern chemotherapy, targeted therapy, immunotherapy and advanced radiotherapy, we have many options. But having an option does not mean that it must be used.

Sometimes, an elderly or very sick patient is brought for another line of treatment because the family wants us to "do everything." We understand their emotions. But another treatment may add toxicity, repeated admissions and expense without giving the patient meaningful benefit. Continuing treatment merely because something can still be prescribed may not always be ethical.

Stopping cancer-directed treatment does not mean giving up on the patient. Good pain relief, symptom control, nutrition, psychological support and care at home are also active treatment. At times, allowing a patient to spend his remaining time comfortably with the family is more meaningful than prolonging hospital-based treatment with little chance of benefit.

Cost is another important ethical issue in Indian oncology. We have seen families sell jewellery, borrow money or mortgage land to continue treatment. Government schemes such as Ayushman Bharat have certainly improved access, but several investigations, medicines, travel expenses and supportive needs may still have to be managed by the family.

We should therefore discuss financial implications honestly. If two treatments provide similar benefit, the more affordable option should be considered. If an expensive drug is likely to provide only a small benefit, the family must be told this clearly. Giving hope is important, but giving unrealistic hope at the cost of a family's financial security is not right.

Justice means that a patient from a village should receive the same thoughtful medical advice as a patient from a major city. Treatment decisions should not change because a person is poor, elderly, less educated or unable to speak confidently. Standard treatment protocols, multidisciplinary discussion and timely referral can help reduce such differences.

New technologies bring new ethical concerns. Reports and clinical photographs are frequently shared through mobile phones and WhatsApp. Artificial intelligence is becoming part of diagnosis and treatment planning. These tools are useful, but patient privacy must be protected. Technology can assist the doctor, but it cannot take responsibility for the final decision.

Before advising any treatment, I feel we should ask ourselves one honest question:

"If this were my own family member, with the same disease, age, financial position and expectations, would I still recommend the same treatment?"

This question may not solve every problem, but it often helps us see the situation more clearly.

Science tells us what treatment is possible. Evidence tells us what is likely to work. Ethics helps us decide what is appropriate for the patient sitting before us. The best treatment is not always the newest, costliest or most aggressive one. It is the treatment that is honest, sensible, compassionate and right for that particular patient.

Artificial Intelligence (AI) in Radiation Oncology: Promises and Pitfalls

AI in Radiation Oncology: Promises and Pitfalls



Dr Vikash Kumar
Director and Head, Radiation Oncology,
Metro Cancer Institute,
Faridabad, (Delhi-NCR)

Artificial intelligence (AI) is rapidly transforming radiation oncology, a specialty uniquely suited to its application because of its image-intensive, data-driven and increasingly automated workflow. AI applications now extend from imaging and contouring to treatment planning, adaptive radiotherapy (ART) and outcome prediction. Broadly, AI has two potential roles: improving efficiency through automation and enabling greater personalization through predictive analytics.[1] These opportunities, however, must be balanced against limitations related to validation, generalizability, explainability and overdependence on automation.

Improving the Radiation Oncology Workflow

Synthetic Imaging and MRI-only Planning

CT remains fundamental to radiotherapy planning because it provides electron-density information for dose calculation, whereas MRI offers superior soft-tissue definition. AI-generated synthetic CT from MRI may enable MRI-only planning while reducing uncertainties associated with CT-MRI registration. Studies in pelvic and liver tumors have demonstrated encouraging dosimetric agreement between synthetic and conventional CT-based planning.[1,2]

Similarly, generating synthetic CT from cone-beam CT (CBCT) may overcome limitations such as artefacts and unreliable Hounsfield units, thereby facilitating online dose calculation and adaptive replanning.[3]

Automatic Delineation

Contouring is among the most time-consuming and operator-dependent components of radiotherapy planning. Deep learning-based auto-segmentation has considerably improved upon earlier atlas-based methods, particularly for organs at risk and anatomically defined target volumes.[4]

Automated segmentation can reduce contouring time and improve consistency. However, postoperative anatomy, unusual tumor extension and institutional variations in contouring practice remain challenging. AI-generated contours should therefore be considered a starting point rather than the final clinical decision.

AI in Treatment Planning

Knowledge-based planning learns from previously approved high-quality plans to predict achievable dose-volume parameters for new patients. Deep learning and reinforcement-learning approaches can additionally predict three-dimensional dose distributions and reproduce iterative planning decisions.[5]

A particularly important lesson comes from McIntosh et al. During retrospective evaluation, AI-generated prostate plans demonstrated high acceptability, but their selection declined substantially during prospective clinical deployment.[6] This illustrates a crucial principle: retrospective algorithmic performance cannot substitute for prospective clinical validation.

AI in Adaptive Radiation Therapy

ART represents one of the most compelling applications of AI. Daily adaptation requires rapid imaging, recontouring, dose recalculation, replanning and quality assurance while the patient remains in treatment position. AI can accelerate these processes and may also identify fractions in which replanning is genuinely required.[7]

By reducing the time and manpower required, AI could make sophisticated adaptive treatments accessible beyond highly specialized centres.

Beyond Workflow: Towards Personalized Radiotherapy

Perhaps the greater promise of AI lies beyond automation. Integration of clinical, radiomic, genomic, pathological and dosimetric information may improve prediction of tumor control and treatment toxicity, ultimately allowing more individualized radiotherapy.

AI-derived digital pathology biomarkers in prostate cancer, for example, have demonstrated potential to identify patients deriving differential benefit from androgen-deprivation therapy.[8] Such approaches could eventually move treatment decisions beyond conventional population-based risk groups towards individualized biological prediction.

However, most AI-based clinical decision-support systems remain investigational. Unlike an automated contour that can be visually reviewed and corrected, an AI-generated probability of tumor control or toxicity may be difficult to independently verify.

The Pitfalls

AI is only as reliable as the data on which it is trained. Models developed within individual institutions may reproduce local patient characteristics, imaging protocols and treatment philosophies, limiting their generalizability.

The "black-box" nature of many deep-learning systems raises additional concerns regarding explainability and accountability. Data privacy, cybersecurity, regulatory oversight and medico-legal responsibility also require careful consideration.

Another important concern is automation bias. Repeated exposure to apparently reliable automated outputs may reduce human vigilance. For trainees, excessive dependence on automated contouring and planning could weaken the skills required to recognize when AI is wrong.

The Radiation Oncologist in the AI Era

AI should not be viewed as a competitor to the radiation oncologist. Its greatest value lies in performing repetitive computational tasks rapidly and consistently, allowing clinicians to concentrate on judgment, multidisciplinary decision-making and patient care.

The radiation oncologist of the future must understand not only how to use AI, but when to question it. AI literacy, awareness of algorithmic limitations and systematic human verification should therefore become integral components of radiation oncology training.

Conclusion

AI can improve efficiency, standardize workflows, facilitate adaptive treatment and support personalized radiotherapy. Yet technological sophistication cannot replace clinical judgment.

The future should therefore not be AI versus the radiation oncologist, but AI with the radiation oncologist: technology providing speed, consistency and computational power, while the physician retains responsibility for interpretation, judgment and compassionate patient care.

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Prostate-only vs Whole-Pelvis Radiotherapy: Are We Ready to Change Practice?



Dr Sayan Paul
Director and Senior Consultant
Radiation Oncology,
Manipal Comprehensive Cancer Care Center,
Manipal Hospitals Dhakuria, Kolkata.

The optimal radiotherapy volume for clinically node-negative high-risk prostate cancer remains controversial. While prostate-only radiotherapy (PORT) minimizes normal-tissue exposure, whole-pelvis radiotherapy (WPRT) aims to eradicate occult nodal micrometastases. The biological rationale is compelling, particularly when the estimated risk of pelvic lymph-node involvement exceeds 15–20%; however, randomized evidence has historically been inconsistent.

RTOG 9413 was among the first randomized trials to suggest a benefit from pelvic irradiation. In patients with an estimated nodal involvement risk >15%, WPRT produced a higher 4-year progression-free survival than PORT (54% vs 47%). Importantly, outcomes appeared influenced by the sequencing of androgen-deprivation therapy (ADT), with WPRT combined with neoadjuvant/concurrent hormonal therapy producing the most favorable PFS. The complex 2×2 factorial design and interaction between radiation field and ADT timing, however, make interpretation challenging.

In contrast, the French GETUG-01 randomized 446 patients between pelvic-plus-prostate and prostate-only irradiation. After a median follow-up of 11.4 years, no significant improvement in event-free survival or overall survival was demonstrated with pelvic irradiation. Interpretation in contemporary practice is limited by relatively modest prostate doses (66–70 Gy), 3D-conformal techniques, heterogeneous risk groups and inconsistent use of ADT.

The debate was revitalized by the Indian POP-RT phase III trial, arguably the most relevant randomized evidence in the modern radiotherapy era. The study enrolled 224 node-negative patients with high/very-high-risk disease and an estimated nodal risk =20%. All underwent image-guided IMRT and received at least two years of ADT. WPRT covered pelvic nodes, including the common iliac region, to 50 Gy/25 fractions, while the prostate received 68 Gy/25 fractions.
At a median follow-up of 68 months, WPRT significantly improved 5-year biochemical failure-free survival (95.0% vs 81.2%; HR 0.23) and disease-free survival (89.5% vs 77.2%; HR 0.40). Importantly, distant metastasis-free survival also improved (95.9% vs 89.2%; HR 0.35). However, no overall-survival advantage was demonstrated (92.5% vs 90.8%).

This benefit comes at a cost. POP-RT demonstrated increased cumulative =grade 2 late GU toxicity with WPRT (17.7% vs 7.5%), although late GI toxicity and patient-reported quality of life were not significantly different. Modern multicentre data such as PIVOTAL further demonstrate that high-dose pelvic nodal IMRT can be delivered with acceptable toxicity.
Nevertheless, the evidence does not justify indiscriminate WPRT for every high-risk patient. A 2026 systematic review and reconstructed individual-patient-data meta-analysis concluded that randomized evidence has not demonstrated an overall-survival advantage and that improvements in progression-related endpoints have not been consistently reproduced across trials.

Where does this leave contemporary practice?

Rather than a simple PORT-versus-WPRT dichotomy, pelvic irradiation should increasingly be viewed as a risk-adapted treatment decision. WPRT is particularly relevant to patients with high or very-high-risk disease and substantial predicted nodal involvement, after appropriate contemporary staging. Conversely, routine elective pelvic irradiation for every clinically node-negative patient remains difficult to justify.

The unanswered question is becoming even more interesting in the PSMA-PET era. Improved identification of macroscopic nodal disease may simultaneously reduce the population requiring purely elective irradiation while revealing microscopic-risk patients whose PSMA-PET remains negative. The definitive phase III NRG/RTOG 0924 trial, which compares prostate/SV irradiation with or without elective pelvic irradiation in patients receiving ADT, is therefore particularly important.

The practice is evolving—but the evidence currently supports selection rather than universal pelvic irradiation.

Artificial Intelligence in Head & Neck Radiation Therapy



Dr. Amit Bahl
Professor
Department of Radiotherapy & Oncology
PGIMER , Chandigarh

Radiation oncology plays a critical role in management of head and neck cancers. Treatment planning in head and neck cancers is a complex decision-making process including diagnosis, radiotherapy planning, dose calculation and image guidance. Head and neck radiotherapy is also technically challenging because the tumour is often located close to critical structures such as the spinal cord, brainstem, salivary glands, optic structures and brain tissues.

Artificial intelligence (AI) particularly machine learning and deep learning is emerging as the latest technology being incorporated into radiation oncology workflow.

AI has been evaluated in image segmentation and tumour delineation. Integration of information from multiple imaging modalities to provide a more comprehensive assessment of the tumour appears to be a potential area for AI use in head neck oncology. AI algorithms can also assist in generating treatment plans that balance adequate tumour coverage with saving healthy tissues. Automated planning can also reduce workload and improve planning efficiency. Machine-learning models may help predict tumour response, toxicity, and the likelihood of recurrence. Such predictive modelling of outcomes such as tumour control, recurrence, xerostomia, dysphagia, and other treatment-related complications is being evaluated. This could contribute to more individualized treatment strategies.

Adaptive radiotherapy is another domain where machine learning can help clinical work. During a course of head and neck radiation patients experience weight loss, tumour shrinkage, or changes in neck anatomy. These changes can affect the delivered dose distribution. AI can analyse repeated imaging and help identify clinically significant anatomical changes, supporting decisions about whether a treatment plan should be adapted.
All artificial intelligence applications require a careful clinical validation before routine use. It has to be understood that the quality of AI predictions depends heavily on the quality and diversity of the data used to train the system. Generating AI models applicable to a diverse population groups also remains a challenge. AI tools should be designed support rather than replace the expertise of radiation oncologists, medical physicists and other healthcare domains.

With appropriate clinical validation and human supervision AI can assist in more efficient, precise and personalized radiotherapy in head neck cancers while helping clinicians manage the challenges of head and neck cancer management.

Trimodality Therapy for Muscle-Invasive Bladder Cancer: Bladder Preservation in Practice



Dr. Vinita Trivedi
Associate Director & Head,
Department of Radiation Oncology
Mahavir Cancer Sansthan, Patna

Introduction

Muscle-invasive bladder cancer (MIBC) is an aggressive disease in which radical cystectomy with pelvic lymph-node dissection remains a well-established curative standard. It means permanent loss of the native bladder, however, and can significantly affect urinary, sexual and overall quality of life. Trimodality therapy (TMT) is an established bladder-preserving alternative for appropriately selected patients with non-metastatic disease. It consists of maximal transurethral resection of bladder tumour (TURBT), definitive radiotherapy with concurrent radiosensitising chemotherapy, close surveillance, and prompt salvage cystectomy for persistent or recurrent muscle-invasive disease. International guidelines recognise TMT as a curative option.[1],[2]

Patient Selection

Selection is perhaps the most important determinant of outcome. The ideal candidate has a solitary, unifocal cT2–T3a tumour, good baseline bladder function, no extensive carcinoma in situ (CIS), and no or only unilateral hydronephrosis, with a complete or near-complete TURBT technically feasible. Multifocal disease, diffuse CIS, poor bladder function or extensive hydronephrosis make preservation less suitable.[2] Every patient should be discussed in a multidisciplinary team of urologists, radiation oncologists, medical oncologists, radiologists and pathologists, with cystectomy and TMT presented as alternative curative strategies.[2]

The Three Components

1. Maximal TURBT. A complete and meticulous resection removes all visible tumour whenever feasible. Adequate pathological staging is essential, and restaging TURBT may be considered if resection is incomplete or residual disease is suspected.

2. Definitive radiotherapy. Image-guided IMRT treats the bladder and, when indicated, pelvic nodes accurately while sparing bowel and other normal tissues. Conventional schedules are about 64–66 Gy in 32–33 fractions, and 55 Gy in 20 fractions is an established alternative for bladder-only treatment.[2],[3] The BC2001 and BCON individual-patient meta-analysis found 55 Gy in 20 fractions non-inferior to 64 Gy in 32 fractions for invasive locoregional control, with comparable late

3. Concurrent chemotherapy. This is an integral component of TMT, because radiotherapy alone gives inferior locoregional control. In BC2001, adding 5-fluorouracil and mitomycin-C significantly improved locoregional control, and the benefit held at long-term follow-up.4 Cisplatin-based chemotherapy and low-dose gemcitabine are other established radiosensitisers. In NRG/RTOG 0712, both 5-FU/cisplatin and daily gemcitabine chemoradiation gave encouraging long-term bladder preservation, with seven-year overall survival of 48% and 59% and low rates of late severe toxicity.5

Oncological Outcomes

TMT can achieve durable cancer control in carefully selected patients. In contemporary series, five-year cancer-specific and overall survival range from approximately 50–84% and 36–74%, varying with selection, stage and protocol.[2] The long-term BC2001 results are particularly important because they provide randomised evidence that adding concurrent chemotherapy to radiotherapy improves locoregional control. Chemoradiotherapy significantly reduced locoregional and invasive locoregional recurrence compared with radiotherapy alone, and the five-year salvage cystectomy rate was lower.4 No completed randomised trial compares modern TMT directly with radical cystectomy, and patients chosen for preservation may differ substantially from those having surgery, so comparisons need caution.[2]

Modern Radiation Techniques

Importance of Modern Radiation Techniques Radiotherapy planning has evolved considerably from historical two-dimensional techniques. IMRT/VMAT, daily image guidance, bladder-volume protocols and adaptive radiotherapy can improve target coverage while reducing unnecessary irradiation of bowel and other pelvic organs.

The role of tumour-focused adaptive dose escalation is also being investigated. Although adaptive and dose-escalated strategies have shown promising feasibility and local-control outcomes, they should currently be considered within appropriate clinical protocols rather than as routine replacement for established fractionation schedules.[2]

Surveillance and Salvage Cystectomy

Bladder preservation does not mean freedom from bladder surveillance. Strict lifelong follow-up is essential: cystoscopy with urine cytology at regular intervals, especially in the first two years when recurrence risk is greatest, plus cross-sectional imaging for pelvic, upper-tract and distant disease.[2],6 Persistent or recurrent muscle-invasive disease should prompt evaluation for salvage radical cystectomy if the patient remains surgically suitable. Non-muscle-invasive recurrences can often be managed with TURBT and intravesical therapy in selected patients.[2],6

Future Directions

Better patient selection, improved imaging, molecular biomarkers and personalised treatment are the way forward. Molecular profiling may identify tumours sensitive or resistant to radiation-based preservation. Combining immunotherapy with TMT is under investigation, but outside clinical trials, adding checkpoint inhibitors to bladder-preserving chemoradiation remains investigational.[2]

Conclusion

TMT has evolved from an alternative into an established bladder-preserving curative strategy for appropriately selected patients with non-metastatic MIBC. The combination of maximal TURBT, modern radiotherapy and concurrent radiosensitising chemotherapy can provide durable local control while preserving a functional native bladder in a substantial proportion of patients. Its success depends on careful selection, high-quality TURBT, modern radiation delivery, appropriate chemotherapy, multidisciplinary decision-making and lifelong surveillance. Cystectomy and TMT are complementary curative approaches, not competing philosophies. The goal is effective cancer control while preserving quality of life whenever oncologically appropriate.

SBRT for Portal Vein Tumor Thrombosis in HCC: From Local Control to Therapeutic Opportunity



Dr. Kaustav Talapatra
Principal Director, Radiation Oncology
and Lead Academics and Research
Nanavati Max Super speciality Hospital,
Mumbai

Portal vein tumor thrombosis (PVTT) remains one of the most formidable clinical challenges in hepatocellular carcinoma (HCC). Its presence usually reflects aggressive disease biology, but the problem is more than prognostic. Progressive portal venous obstruction can compromise hepatic perfusion, worsen portal hypertension and accelerate loss of an already vulnerable hepatic reserve. Once major portal venous involvement develops, therapeutic choices also become considerably narrower.

For many years, this effectively placed patients with PVTT into the category of advanced disease requiring systemic therapy. That paradigm, however, is beginning to evolve. With modern radiation techniques, particularly stereotactic body radiotherapy (SBRT), the tumor thrombus itself has emerged as a potentially important therapeutic target. There is a practical logic to this approach. In many patients, it is not simply the volume of intrahepatic tumor that determines the clinical course, but its location. A relatively limited volume of tumor within the main or first-order portal vein may have consequences disproportionate to its size. Controlling this strategically located disease could therefore have benefits extending beyond conventional measures of local response.

SBRT is particularly suited to this objective. Contemporary image guidance, respiratory motion management and highly conformal planning allow a substantial biological dose to be delivered to the tumor thrombus while limiting exposure of uninvolved liver. This is crucial in HCC, where treatment tolerance is determined as much by the underlying liver disease as by the tumor.

The available clinical evidence, although predominantly non-randomized, is remarkably consistent in showing that PVTT responds to radiation. Xi and colleagues reported objective responses in approximately three-quarters of patients treated with SBRT for portal vein and/or inferior vena cava tumor thrombosis.

[1] Subsequent experiences have supported meaningful response and local control with stereotactic treatment.

[2] A systematic review involving more than 2,500 patients reported a pooled response rate of approximately 71% following SBRT for PVTT.

[3] These observations challenge the older perception of vascular invasion as a manifestation of HCC that should be managed exclusively with systemic treatment. But response of the thrombus is probably not the most interesting endpoint.

The more clinically relevant question is whether controlling PVTT changes what becomes possible afterwards. This concept was illustrated by Shui et al., who used SBRT as an initial treatment in patients with extensive PVTT.

[4] Patients who subsequently became suitable for transarterial chemoembolization (TACE) experienced considerably better outcomes. Similarly, combinations of SBRT and TACE have produced encouraging results, with a meta-analysis suggesting improvements in response and survival compared with monotherapy.

[5] These observations introduce an important way of thinking about SBRT in PVTT: radiotherapy as an enabling treatment. Rather than regarding SBRT as the final local treatment in an otherwise advanced disease setting, it may be more useful to consider what successful treatment of the thrombus permits us to do next.

Reduction of PVTT may restore or improve portal flow, preserve hepatic function and potentially open the door to additional locoregional or systemic treatment. In carefully selected situations, it may even contribute to downstaging. Pathological responses following preoperative SBRT, including complete tumor necrosis within PVTT, provide an intriguing biological proof of principle.
[6]This discussion has become even more relevant in the immunotherapy era. Modern systemic therapy has substantially changed the treatment landscape of advanced HCC. The availability of immune checkpoint inhibitors, anti-VEGF strategies and tyrosine kinase inhibitors raises an obvious question: should SBRT and systemic treatment really be viewed as alternatives? Probably not. Their therapeutic objectives are different and potentially complementary. Systemic therapy addresses the wider biological burden of HCC, including microscopic and extrahepatic disease. SBRT, on the other hand, can rapidly control a discrete vascular lesion that may threaten hepatic function long before systemic progression becomes the dominant clinical problem.

Early studies combining SBRT with contemporary systemic treatments are therefore particularly interesting. Recent reports of SBRT with lenvatinib and with immunotherapy-based combinations have demonstrated encouraging responses and survival outcomes. [7,8] Prospective phase II experience combining SBRT with cadonilimab and lenvatinib in patients with Vp3/Vp4 PVTT has also shown substantial responses within the portal venous thrombus.[9] These results are promising, but they should not be overinterpreted. Most available studies remain relatively small, heterogeneous or non-randomized, and selection bias is unavoidable.

The central issue is therefore not whether every patient with PVTT should receive SBRT. Clearly, they should not. Patient selection remains fundamental. Baseline liver function, extent of portal venous involvement, volume of uninvolved liver, intrahepatic disease burden, proximity of the target to gastrointestinal structures and previous treatments all influence the therapeutic ratio. The patient with preserved hepatic reserve, limited extrahepatic disease and a dominant PVTT threatening portal flow is very different from one with extensive intrahepatic replacement, poor liver function and rapidly progressive systemic disease. Contemporary guidelines have begun to acknowledge this changing role. The ASTRO clinical practice guideline supports external-beam radiotherapy as an option in HCC with macrovascular invasion, particularly when appropriately integrated with systemic or catheter-based therapy.[10]

Where, then, does SBRT fit?
Perhaps its greatest value lies neither in replacing systemic therapy nor in competing with established liver-directed treatments. Instead, SBRT may occupy the space between them providing rapid control of a strategically important vascular component while creating an opportunity for subsequent treatment. The next generation of trials should therefore move beyond the simple question of whether SBRT produces radiological regression of PVTT. We need to determine whether it preserves portal flow and hepatic function, which patients derive meaningful survival benefit, and how radiation should be sequenced with immunotherapy, anti-VEGF agents and other liver-directed treatments. The emerging story of SBRT in PVTT is ultimately not just about better local control. It is about changing the therapeutic trajectory of a difficult disease. For appropriately selected patients, treating the portal vein tumor thrombus may transform a therapeutic obstacle into an opportunity.

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Watch-and-Wait After Total Neoadjuvant Therapy in Rectal Cancer: How Far Have We Succeeded?



Dr Pritanjali Singh
Professor& Head,
Radiation Oncology,
All India Institute of Medical Sciences Patna.

Introduction

For decades, locally advanced rectal cancer was managed with neoadjuvant therapy followed by total mesorectal excision (TME). While this approach improved local control and survival, radical surgery often results in permanent stoma formation, low anterior resection syndrome, and urinary and sexual dysfunction, with significant effects on quality of life.

The recognition that some rectal tumours can achieve complete clinical regression after neoadjuvant therapy has challenged the assumption that every patient requires immediate radical surgery. This insight gave rise to the watch-and-wait (W&W) strategy, in which patients with a convincing clinical complete response are closely monitored rather than undergoing immediate TME. Total neoadjuvant therapy (TNT) — delivering systemic chemotherapy before surgery — has strengthened this approach by increasing the opportunity for tumour regression. The clinical question has thus evolved from "Can the tumour be removed?" to "Can the patient be cured while preserving the rectum?"

TNT and Organ Preservation

TNT incorporates systemic chemotherapy into the preoperative period, either before or after chemoradiotherapy. Major trials including RAPIDO and PRODIGE-23 demonstrated improved disease-control outcomes with intensified preoperative treatment in selected patients [1,2]. Greater tumour regression increases the likelihood of achieving a complete clinical response, and treatment sequencing also matters: the CAO/ARO/AIO-12 trial showed a higher pathological complete response rate with consolidation chemotherapy after chemoradiotherapy than with induction chemotherapy followed by chemoradiotherapy [3]. This finding laid the groundwork for the OPRA trial.

OPRA: A Landmark for Watch-and-Wait

The OPRA trial, a randomized phase II study, evaluated TNT followed by response-adapted management in stage II–III rectal cancer [4]. Patients received either induction chemotherapy followed by chemoradiotherapy, or chemoradiotherapy followed by consolidation chemotherapy. Those achieving a complete or near-complete response entered W&W; others underwent TME.

At 5 years, disease-free survival was similar between sequences, but TME-free survival was substantially higher with consolidation chemotherapy (54%) than induction chemotherapy (39%) [4]. Roughly half of appropriately selected patients avoided TME, establishing organ preservation as a realistic treatment goal.

Tumour Regrowth and Salvage Surgery

The principal concern with W&W is regrowth of residual disease. Reassuringly, approximately 94% of regrowths occurred within 2 years and 99% within 3 years [4], underscoring the need for intensive early surveillance. Patients undergoing salvage TME after regrowth had disease-free survival comparable to those operated on for incomplete initial response [4]. W&W is therefore not an abandonment of surgery but active treatment paired with intensive surveillance and timely salvage intervention when required.

PROSPECT and STAR-TREC

PROSPECT demonstrated that neoadjuvant FOLFOX with selective chemoradiotherapy produced disease-free survival similar to standard chemoradiotherapy (80.8% vs. 78.6% at 5 years) [5]. Importantly, PROSPECT was not a W&W trial — all patients underwent surgery — so it supports treatment de-escalation rather than non-operative management.

STAR-TREC is prospectively evaluating organ preservation as a planned endpoint. Early 12-month results showed TME-free survival of 78.5% after long-course chemoradiotherapy versus 60.6% after short-course radiotherapy among patients choosing organ preservation [6]. These findings are encouraging but require longer follow-up before definitive conclusions on optimal radiotherapy strategy.

How Far Have We Succeeded, and What Remains Uncertain

Current evidence confirms that organ preservation is achievable, consolidation chemotherapy may improve TME-free survival, most regrowth occurs early, salvage surgery remains effective, and treatment is becoming increasingly individualized [4].

Several questions remain open. It is unclear who can safely remain in W&W indefinitely, as outcomes vary with tumour characteristics and depth of response. Reliable identification of a true complete response is also limited — digital rectal examination, endoscopy, and MRI remain the foundation of assessment, but none matches pathological certainty; ctDNA, radiomics, and artificial intelligence may improve prediction but need further validation. The extent to which treatment can be safely de-escalated is also undefined. Finally, organ preservation does not guarantee functional preservation: bowel dysfunction, urgency, and incontinence can persist even without surgery.

Surveillance and a New Endpoint

W&W depends on rigorous surveillance — digital rectal examination, endoscopy, high-resolution MRI, CEA assessment, systemic imaging, and multidisciplinary review — with the first 2–3 years being most critical [4]. It should be offered only to patients able to commit to intensive follow-up, in centres equipped for timely salvage surgery.

Success should now be measured not only by survival but by quality of life. A patient cured but left with severe bowel dysfunction or a permanent stoma has a fundamentally different outcome than one cured with a functioning rectum. TME-free survival remains important but should not be the sole measure of success.

Future Directions and Conclusion

Future research should focus on better prediction of complete response using MRI biomarkers and AI, integration of ctDNA, further de-escalation in low-risk patients, functional and quality-of-life endpoints, standardized surveillance, and wider, safe implementation beyond specialized centres.

W&W has evolved from an experimental concept into a credible organ-preservation strategy for carefully selected patients. It is not “doing nothing” — it demands accurate imaging, meticulous endoscopy, experienced clinical judgment, and committed patients. The future of rectal cancer management is unlikely to be “watch and wait for everyone,” but rather: treat according to risk, assess according to response, preserve when safe, and operate when necessary.

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Regional Nodal Irradiation in Breast Cancer: A Risk-Adapted Approach



Dr Shekhar Kumar Kesari
Director & HOD- Radiation Oncology
Paras HMRI,
Patna

Introduction

Regional nodal irradiation (RNI) was traditionally considered integral to treating node-positive breast cancer, especially with multiple involved axillary nodes or high-risk features. However, advances in systemic therapy, axillary surgery, and neoadjuvant treatment have reframed the question. It is no longer "Are the nodes positive?" but "What is the patient's residual risk of regional and distant recurrence, and does that risk justify the added morbidity of RNI?"

Trials like MA.20 and EORTC 22922 showed RNI reduces recurrence and, in selected populations, breast cancer mortality — though absolute benefit is heterogeneous and overall survival gains inconsistent. More recently, NSABP B-51/RTOG 1304 challenged the traditional approach for patients achieving pathological nodal clearance after neoadjuvant chemotherapy. RNI should now be viewed as risk-adapted treatment, not an automatic response to node-positive status.

Rationale and Trade-offs

Breast cancer spreads through predictable lymphatic pathways (axillary, supraclavicular, internal mammary). RNI aims to sterilize occult nodal disease and reduce subsequent distant relapse. However, it is not biologically neutral — expanded radiation volumes increase exposure to the lung, heart, brachial plexus, oesophagus, and soft tissue, raising lymphedema risk. Benefit must be weighed against both immediate and decades-long toxicity.

What the Landmark Trials Showed

MA.20 randomized 1,832 node-positive/high-risk node-negative patients to whole-breast irradiation ± RNI. At 10 years, RNI improved disease-free survival (82.0% vs. 77.0%) and distant disease-free survival (86.3% vs. 82.4%), but overall survival was not significantly different (82.8% vs. 81.8%). Toxicity rose: grade =2 lymphedema (8.4% vs. 4.5%) and pneumonitis (1.2% vs. 0.2%).

EORTC 22922/10925 randomized 4,004 patients to internal mammary/medial supraclavicular irradiation or none. At 15 years: recurrence 24.5% vs. 27.1%, breast cancer mortality 16.0% vs. 19.8% (significant), but overall survival difference (73.1% vs. 70.9%) was not significant — a pattern persisting at ~20 years. This highlights that cancer-specific gains don't always translate to overall survival benefit once competing mortality and toxicity are considered.

AMAROS showed axillary radiotherapy could replace axillary dissection in sentinel-node-positive patients, with comparably low recurrence and less morbidity — reinforcing that not every microscopic nodal metastasis demands maximal axillary treatment.

NSABP B-51/RTOG 1304, the most practice-changing recent trial, enrolled patients with cT1-3N1M0 disease converting to ypN0 after neoadjuvant chemotherapy (1,556 analyzed). At ~5 years, RNI showed no significant benefit in invasive recurrence-free interval (92.7% vs. 91.8%; HR 0.88), locoregional or distant recurrence, disease-free survival, or overall survival — suggesting RNI may be safely omitted in appropriately selected ypN0 converters, though this shouldn't be generalized to all node-positive patients after chemotherapy.

Who Really Needs RNI?

1. Strong indications: =4 positive nodes, gross residual disease, N2/N3 disease, supraclavicular involvement, clinically involved internal mammary nodes, or persistent nodal disease post-neoadjuvant therapy.

2. The 1–3 node grey zone: Clinical judgment is critical. Factors increasing expected benefit include multiple/large nodal deposits, extranodal extension, lymphovascular invasion, large or medially located primary tumours, triple-negative biology, young age, and inadequate axillary staging.

3. ypN0 after neoadjuvant chemotherapy: Per B-51, RNI can often be omitted without demonstrable short-term harm.

4. ypN+ after neoadjuvant therapy: Residual disease indicates incomplete eradication — RNI remains strongly supported, especially with substantial residual burden.

Internal Mammary Nodes

IMN irradiation remains controversial. EORTC 22922 showed reduced recurrence and mortality, but without consistent overall-survival benefit, making selection important. The case strengthens with medial/central tumours, positive axillary nodes, multiple involved nodes, high-risk biology, or clinically involved IMNs. Modern techniques like deep-inspiration breath hold reduce cardiac exposure, improving the safety of comprehensive nodal irradiation.

2025 ASTRO/ASCO/SSO Guidance

The updated postmastectomy radiation guideline recommends PMRT for most node-positive patients while recognizing situations where omission is reasonable — notably, PMRT is now only conditionally recommended for cT1-T3N1 or cT3N0 patients who achieve ypN0 after neoadjuvant therapy.

Conclusion

RNI remains vital for curative treatment but is no longer an automatic consequence of node positivity. Strongest candidates include those with substantial residual nodal burden, N2/N3 disease, persistent post-neoadjuvant disease, or clinically involved nodes. The clearest de-escalation opportunity is in cN1 patients achieving ypN0, per B-51. For 1–3 node disease after upfront surgery, decisions remain individualized, weighing biology, nodal burden, systemic therapy, age, competing mortality, and planning quality. The essential question is no longer whether nodes are positive, but what residual risk remains, what absolute benefit RNI offers, and whether that benefit justifies the toxicity.

Lung Stereotactic Body Radiotherapy In Clinical Practice



Dr Kanhu Charan Patro
Department of Radiation Oncology
Mahatma Gandhi Cancer Hospital &
Research Institute, Visakhapatnam, India

The history of lung SBRT illustrates an important principle in radiation oncology: the success of high-dose treatment depends as much on where the dose is not delivered as on where it is delivered.

Initial experience established impressive local tumor control for peripheral early-stage NSCLC. As SBRT expanded toward central tumors, severe complications demonstrated that peripheral prescriptions could not simply be transferred to central thoracic anatomy.5,6

RTOG 0813 showed that central tumors could be treated using appropriately adapted five-fraction schedules. Subsequently, HILUS demonstrated that even apparently conservative fractionation can produce substantial toxicity when tumors directly involve or compress central bronchi. LungTech and SUNSET further demonstrated that carefully planned eight-fraction treatment represents an important strategy for selected central and ultracentral tumors, although serious late toxicity remains possible.8-11

These studies should not be reduced to a simple rule that all ultracentral tumors receive 60 Gy in eight fractions. Their greater contribution is the recognition that anatomical relationships, hotspot distribution and specific OAR dose determine safety.

A similar principle applies to treatment interval. Alternate-day SBRT has traditionally been attractive because of theoretical normal-tissue repair. Nevertheless, contemporary clinical evidence does not demonstrate that every patient requires a 48-hour interval. Peripheral tumors can frequently be treated on consecutive days, while even the prospective SUNSET trial used daily treatment for carefully selected ultracentral tumors.10,13

The key question is therefore not simply "Daily or alternate day?" but "What fractionation, interval and dose distribution produce the safest biologically effective treatment for this particular tumor?"

Post-treatment imaging represents another area where experience is essential. Lung SBRT intentionally creates a high-dose region that can produce substantial fibrosis. Radiological change can evolve for months or years, and the resulting opacity can mimic recurrent malignancy. Surveillance CT should therefore be interpreted in the context of serial examinations rather than from a single scan.

The role of systemic therapy around early-stage SBRT is also changing rapidly. Early biological enthusiasm surrounding immunotherapy has not translated into routine benefit in phase III testing. The 2026 SWOG/NRG S1914 results reinforce the need to avoid adopting combined treatments solely on mechanistic rationale before randomized evidence demonstrates clinically meaningful benefit.[17]

Table 1. Practical Lung SBRT Workflow

Step	Key consideration
1	Confirm diagnosis/probability of malignancy
2	Complete CT/PET-based staging
3	Assess operability, pulmonary reserve and comorbidities
4	Multidisciplinary decision when appropriate
5	Reproducible immobilization
6	Respiratory-motion assessment
7	4DCT/gating/breath hold/tracking as appropriate
8	GTV and ITV definition
9	Institution-specific PTV expansion
10	Complete OAR contouring
11	Risk-adapted dose/fraction selection
12	Advanced heterogeneity-corrected calculation
13	Evaluate conformity, gradient and OAR constraints
14	Physics and stereotactic QA
15	Pre-fraction volumetric IGRT
16	Daily or alternate-day delivery as appropriate
17	CT-based follow-up

Table 2. Important Lung SBRT Trials

Trial	Clinical setting	Key contribution
RTOG 0236	Peripheral inoperable NSCLC	Established multicenter SBRT efficacy
CHISEL	Peripheral stage I NSCLC	SABR superior to conventional RT for local control
RTOG 0915	Peripheral NSCLC	Evaluated single vs 4-fraction approaches
RTOG 0813	Central NSCLC	Defined 5-fraction central SBRT experience
HILUS	Central/ultracentral	Highlighted serious airway toxicity
LungTech	Central NSCLC	Prospective 60 Gy/8 fraction experience
SUNSET	Ultracentral NSCLC	Prospective 60 Gy/8 fraction approach
SABR-COMET	Oligometastatic cancers	Supported comprehensive metastasis-directed SABR
SWOG/NRG S1914	High-risk early NSCLC	No OS benefit from adding atezolizumab to SBRT

Table 3. Peripheral, Central and Ultracentral Treatment Philosophy

Feature	Peripheral	Central	Ultracentral
Anatomical risk	Lower	Intermediate/high	Highest
Typical fractions	3-5	5-8	Often 8 or more
Very high dose/fraction	Often feasible	Use cautiously	Usually avoided
Main determinant	Tumor control + lung/chest wall	Airway/OAR constraints	Critical OAR constraints
Daily treatment	Reasonable	Selected cases	Protocol-dependent
Alternate-day treatment	Reasonable	Commonly considered	Individualized
PTV compromise	Uncommon	Sometimes	May be necessary
Multidisciplinary review	Useful	Strongly encouraged	Strongly encouraged

Table 3. Peripheral, Central and Ultracentral Treatment Philosophy

Medically inoperable early-stage node-negative NSCLC remains the classical indication for lung SBRT.

Biopsy is preferred but not obligatory when procedural risk is unacceptable and the probability of malignancy is sufficiently high.

Peripheral, central and ultracentral lesions should not receive identical prescriptions.

4DCT or another validated method of respiratory-motion assessment is fundamental.

Respiratory motion can demonstrate hysteresis and should not be assumed to be regular.

There is no single universal PTV margin for all lung SBRT platforms.

Advanced heterogeneity-corrected dose calculation is essential.

BED10 ≥100 Gy is a useful benchmark, not an absolute requirement when OAR safety is threatened.

Critical OAR constraints take priority over forcing perfect PTV coverage.

Daily and alternate-day treatment are both valid approaches.

Central and ultracentral treatment requires conservative, anatomy-driven fractionation.

Routine prophylactic corticosteroids are not mandatory for uncomplicated lung SBRT.

There is no universal requirement to stop all targeted therapy or immunotherapy for an arbitrary 1-3 month interval around SBRT. Drug-specific decisions should be individualized.

Routine surveillance should be CT based rather than PET/CT based.

Routine addition of checkpoint inhibitors to definitive early-stage lung SBRT is not supported by current randomized evidence.

Conclusion

SBRT has transformed treatment for patients with early-stage lung cancer who cannot undergo surgery and has expanded into selected central, ultracentral, recurrent and oligometastatic settings.

Its effectiveness, however, depends on much more than high dose per fraction. Optimal lung SBRT requires a systematic sequence of appropriate staging, careful patient selection, respiratory-motion characterization, accurate target delineation, advanced dose calculation, risk-adapted fractionation, rigorous OAR protection, quality assurance, image-guided delivery and thoughtful follow-up.

Peripheral lesions generally permit aggressive ablative schedules. As targets approach central airways, the esophagus, heart or major vessels, treatment should become progressively more conservative and OAR driven.

Daily and alternate-day treatments are both acceptable. Fraction interval should be individualized rather than treated as a fixed rule.

Right patient → right staging → right target → right motion strategy → right fractionation → right OAR constraints → right image guidance → right follow-up.

Lung SBRT is therefore not merely high-dose radiotherapy. It is high-dose radiotherapy delivered with high geometric, dosimetric and clinical confidence.

Risk Stratification and Management of Nonmetastatic Rhabdomyosarcoma in Children and Adolescents



Dr Amita Mahajan
MD MRCPCH CCST
Sr. Consultant, Pediatric Hematology Oncology
Indraprastha Apollo Hospitals
Chair Medical Advisory, CANKIDS Medical Advisor: Leukemia Crusaders
Thalassemics India, Foundation against Thalassemia

Rhabdomyosarcoma (RMS) is the most common soft-tissue sarcoma in children and adolescents. Outcomes vary considerably according to tumor biology, site, size, local extension, lymph-node involvement and surgical resection. Contemporary management therefore uses risk-adapted therapy, balancing optimal disease control against treatment-related toxicity.[1],[6]

Risk stratification integrates histology, FOXO1 fusion status, primary site, tumor size, T stage, regional nodal involvement and postsurgical IRS group. Embryonal and spindle-cell RMS generally have favorable outcomes, whereas alveolar RMS, particularly FOXO1 fusion-positive disease, carries a higher risk of treatment failure.[3],[7] Tumors ≤5 cm, T1 disease, favorable sites and absence of regional nodal involvement are associated with better prognosis.[1],[2]

Table 1. Risk stratification of nonmetastatic RMS

Risk group	Typical characteristics	5-year EFS	5-year OS
Low risk	Favorable histology/site, ≤5 cm, T1, N0, usually completely resected	93.7%	96.7%
Standard risk	Predominantly embryonal RMS with intermediate clinical features and no major high-risk biology	77.4%	90.6%
High risk	Large/unfavorable-site or invasive tumors, residual disease and/or adverse biological features	67.3%	76.7%
Very high risk	Predominantly alveolar/fusion-positive RMS with regional nodal involvement and other adverse features	48.8%	49.7%

Low-risk patients have excellent outcomes and can receive shorter, less intensive chemotherapy, thereby limiting long-term toxicity. Standard-risk patients require multimodal therapy, although cumulative alkylating-agent exposure can be reduced in selected patients.[1],[2]

High-risk disease requires systemic chemotherapy combined with appropriate local control. Anthracyclines can be omitted from selected contemporary treatment strategies without compromising outcome, while maintenance chemotherapy with vinorelbine and low-dose cyclophosphamide has improved survival in high-risk RMS.[2],[5] Very-high-risk disease continues to have an unsatisfactory prognosis despite intensive multimodal treatment and remains an important area for therapeutic innovation.

Table 2. Key prognostic parameters for risk assessment

Parameter	Favorable	Adverse
Histology	Embryonal/spindle cell	Alveolar
FOXO1 status	Fusion negative	Fusion positive
Size	≤5 cm	>5 cm
T stage	T1	T2
Site	Orbit/selected GU sites	Parameningeal/extremity/other unfavorable sites
Nodes	N0	N1
IRS group	Group I	Groups II–III

Local control remains essential. Complete resection is desirable when achievable without unacceptable functional or cosmetic morbidity; otherwise, chemotherapy followed by appropriately planned surgery and/or radiotherapy is preferred.[4]

In conclusion, approximately 80% of children with nonmetastatic RMS can achieve long-term survival, but prognosis differs markedly across risk groups. Accurate integration of clinical, pathological and molecular factors enables treatment de-escalation in favorable disease while identifying patients requiring intensified or novel therapeutic approaches.

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Recurrent Cervical Cancer: Real Progress, Honest Limits



Dr Shraddha raj
Additional Professor
Radiation Oncology
State Cancer Institute
Indira Gandhi Institute of Medical Sciences, Patna
shraddharaj82@gmail.com

Recurrent cervical cancer is still a difficult diagnosis. Recurrence after primary treatment can reach 60%, and the prognosis is poor in most cases.[1] The last five years have added options, particularly in radiotherapy and systemic therapy, and they deserve a clear-eyed look at both the gains and their limits.

Treatment depends on where and how it recurred

Management depends mainly on prior therapy and the site and extent of recurrence.[1] Recurrences are classed as central pelvic, lateral pelvic or extra-pelvic. The first steps matter: tissue confirmation, biomarker testing, and imaging that separates a pelvic-only relapse, which may be curable, from disease that has spread.

Surgery: curative, but demanding

For carefully selected patients with central pelvic recurrence, pelvic exenteration remains a curative option. A 2025 meta-analysis, in which most patients had cervical cancer, called it viable but high-risk, with pelvic wall involvement and nodal positivity reducing survival.[2] A recent review puts five-year survival at 24% to 51% for cervical cancer.[3] These are retrospective figures that partly reflect careful selection, and honest counselling about morbidity and quality of life is part of the treatment.

Radiotherapy: more options than many realise

For recurrence after surgery alone, radiation, usually with concurrent platinum-based chemotherapy, is generally the treatment of choice.[4] The harder situation is recurrence inside a previously irradiated field. A 2022 review still describes re-irradiation as a clinical challenge because of toxicity, especially for early in-field recurrence.[1] Better image guidance and enhanced precision has nonetheless widened the options to include stereotactic body radiotherapy (SBRT) in well-selected cases and high-dose-rate (HDR) interstitial brachytherapy. Intraoperative radiotherapy, given at the time of surgery in specialist centres, is another, less established option.[5] Proton therapy is another option wherever available and affordable.

A systematic review published recently highlights the use of GRIB (Gynaecological Reirradiation using brachytherapy and its outcomes. Modern GRIB techniques have shown encouraging local control (35%-87% at 1 year, 26%-59% at 5 years) and overall survival rates (52%-83% at 1 year, 34%-54% at 5 years), although accompanied by grade 3 or 4 late toxicity rates ranging from 0% to 33%. An ideal candidate for GRIB would present in a good general condition, with an isolated central or para-central pelvic recurrence, measuring <4 to 5 cm in maximum diameter and <30 cm^3in volume. The interval since primary irradiation should be >12 to 24 months. Patients should be referred to specialized centers with high experience in image guided adaptive brachytherapy, including intracavitary/interstitial techniques.[6]

The caveats are important. These data are heterogenous usually small, mostly single-centre, and use varied doses and techniques, and some treatments were palliative in intent, aiming to relieve symptoms rather than cure. No large prospective trials exist. Access is also uneven: brachytherapy remains underused because of limited training, geographic disparities and travel burden.[7] Where expertise exists, re-irradiation deserves a place in tumor board discussion alongside surgery.

Systemic therapy, in brief

Adding immunotherapy to first-line chemotherapy improved survival in KEYNOTE-826 (median 28.6 versus 16.5 months in PD-L1 CPS =1 disease)[8] and in the open-label BEATcc trial (32.1 versus 22.8 months, interim).[9] These trials differ in design and should not be compared directly. After progression, tisotumab vedotin gave 11.5 versus 9.5 months in innovaTV 301,[10] but about half of patients had ocular events, so eye care coordination is essential. NCCN Guidelines Version 2.2026 list immunotherapy-based regimens as preferred first-line options for PD-L1–positive disease and tisotumab vedotin as a preferred later-line option.[4]

What remains unresolved

- How best to combine re-irradiation with systemic therapy, and what cumulative dose limits are safe.
- How to treat patients who reach second line already exposed to immunotherapy.
- Local salvage evidence remains retrospective, and toxicity is a real concern.

Take-home messages

1. Treat the recurrence as a map before a plan: confirm it, test biomarkers, and image carefully.
2. Isolated central pelvic recurrence deserves early surgical and radiation oncology discussion.
3. Re-irradiation, especially image-guided interstitial brachytherapy, is feasible in selected patients, with meaningful but not trivial toxicity.
4. Immunotherapy-based first-line treatment and tisotumab vedotin later have improved systemic outcomes, with gains that are often modest in later lines.
5. Decisions belong in a multidisciplinary tumor board, and trial enrollment should always be considered.

Progress is real, and it should be presented with the limits clearly stated. Patients deserve both.

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Abstracts

AROI Bihar Chapter 2026 - Abstract List

Sr No	Abstract ID	Name of Presenter	Title	Category
1	260301	Dr Gopika S. Babu	Stereotactic body radiotherapy in hepatocellular carcinoma: a single-centre prospective cohort study	Oral
2	260502	Dr Binni Raj	How does ultrahypofractionated radiation impact the quality of life in breast cancer patients?	Oral
3	260703	Dr Samapika Bhaumik	Response rates in carcinoma rectum patients undergoing radiation: a retrospective institutional analysis	Oral
4	261104	Dr Suvam Dash	Shrinking Tumours, Shifting Parotids: A Single Mid-Course Adaptive Re-Plan Restores Parotid Sparing in Head and Neck Cancer	Oral
5	261005	Dr Aditya Kumar	Comparison of Intensity-Modulated Radiotherapy Versus Volumetric Modulated Arc Therapy Using Simultaneous Integrated Boost	Oral
6	261406	Dr Vikram K Bairwa	Comparative analysis of conventional versus accelerated radiotherapy with concurrent chemotherapy in locally advanced head and neck cancer: a prospective study	Oral
7	261707	Dr Aman Kumar	Tumor-Infiltrating Lymphocytes (tils) Across the Breast Cancer Molecular Spectrum: Adding an Immune Dimension to Our Histopathological Armamentarium	Oral
8	260608	Dr Jyoti Rai	When the Scar Speaks: Abdominal Wall Metastasis Following Non-Oncologic Hysterectomy for Cervical Cancer	Oral

Abstract: 260301

STEREOTACTIC BODY RADIOTHERAPY IN HEPATOCELLULAR CARCINOMA: A SINGLE-CENTRE PROSPECTIVE COHORT STUDY

Authors
Dr Pritanjali Singh – Professor & HOD, Dr Nilesh Mani – Associate Professor,
Dr Harikesh Singh – Associate Professor, Dr Minakshi Mishra – Assistant Professor,
Dr Gopika S. Babu – Junior Resident (JR3), Presenting Author
Department of Radiation oncology (AIIMSPATNA)

Background: Hepatocellular carcinoma (HCC), particularly with cirrhosis and portal vein thrombosis (PVT), poses challenges for local control. Stereotactic body radiotherapy (SBRT) delivers ablative radiation doses with high precision while sparing uninvolved liver. We evaluated radiological response and toxicity following SBRT in HCC, including PVT.

Methods: This prospective cohort included six evaluable patients with HCC treated with SBRT, with or without PVT. Patients were aged 40–65 years (mean, 52.5 years). Baseline clinical characteristics, Child-Pugh class, tumour characteristics, SBRT dose-volume parameters, radiological response and treatment-related toxicities were assessed. Response was evaluated using modified RECIST (mRECIST) and RECIST 1.1 where available.

Results: Two patients had PVT. SBRT doses ranged from 45–50 Gy in 4–5 fractions; mean liver dose was 10.5 Gy among patients with available dosimetric data. All six patients demonstrated radiological response: four complete responses (CR) and two partial responses (PR). Two patients treated to tumour lesions achieved CR, while both patients treated to PVT achieved complete radiological response after 50 Gy in 5 fractions (BED10 approximately 100 Gy). Neither PVT patient demonstrated portal vein recanalization; bland thrombus with collateral formation was observed. No documented acute radiation-induced liver disease occurred. One patient developed grade 2 jaundice and grade 2 hepatic encephalopathy, followed by fatal hepatic failure approximately 3 months after treatment; a causal relationship with SBRT could not be established.

Conclusion: SBRT demonstrated radiological responses in HCC, including patients with PVT, with limited documented acute toxicity. Complete response was observed following treatment of both tumour lesions and PVT. Hepatic decompensation remains an important concern in cirrhotic patients and requires careful interpretation alongside baseline liver function and other potential causes of hepatic failure.

Keywords: Hepatocellular carcinoma; Stereotactic body radiotherapy; Portal vein thrombosis; Radiological response; Toxicity

Abstract: 260502

HOW DOES ULTRAHYPOFRACTIONATED RADIATION IMPACT THE QUALITY OF LIFE IN BREAST CANCER PATIENTS?

Dr Binni Raj(junior resident), Dr(Prof)Dinesh Kumar Sinha(Professor), Dr(Prof)Richa Madhawi(Professor), Dr Shraddha Raj(Additional professor), Dr Kunal Kishor(Associate Profesor), Department of Radiation oncology , State Cancer Institute,IGIMS,Patna.

Background: Advances in radiotherapy lead to progressive shift from conventional fractionation schedule toward shorter hypofractionated regimen.Moderately hypofractionated radiotherapy (MHFRT) delivered over 15 fractions is an established standard of adjuvant radiotherapy in breast cancer. Ultrahypofractionated radiotherapy (UHFRT), delivered in five fractions over one week, substantially reduces overall treatment duration and hospital visits. This study aimed to compare overall and breast cancer-specific quality of life (QoL)among patients treated with moderate versus ultrahypofractionated adjuvant breast radiotherapy.

Materials and Methods:A prospective randomised study was conducted in Department of Radiation oncology, SCI,IGIMS, Patna between December, 2023-March 2026. Patients were randomised into two groups of 30 each. Group A received UHFRT(26 Gy in 5 fractions over 1 week), whereas Group B received MHFRT (40 Gy in 15 fractions over 3 weeks).Quality of life was assessed at baseline,and at 6 months after completion of radiotherapy using the EORTC QLQ-C30 and breast cancer-specific EORTC QLQ-BR45 questionnaires. Questionnaire scores were transformed to a 0–100 scale according to EORTC scoring principles.

Results: Baseline QoL characteristics were comparable between the two treatment groups.Following treatment,the mean QLQ-C30 global health status/QoL was 70.4 ± 14.6 in the UHFRT group and 67.1 ± 15.8 in the MHFRT group. Physical functioning was better preserved following UHFRT (82.1 ± 12.8 vs 76.4 ± 14.6), as was role functioning (78.5 ± 16.7 vs 72.0 ± 18.5).
Breast cancer-specific assessment using QLQ-BR45 demonstrated a lower breast symptom burden in UHFRT group. Mean breast symptom scores were 19.6 ± 14.8 in the UHFRT group compared with 31.7 ± 18.5 in the MHFRT group. Arm symptom scores were also lower in UHFRT group(21.4 ± 16.3 vs 27.8 ± 18.0, respectively.Acute treatment related toxicities were less frequent in UHFRT group . Grade =2 radiation dermatitis occurred in 4/30 (13.3%) patients receiving UHFT compared with 9/30 (30.0%) receiving MHRT.

Conclusion: UHFRT was associated with better preservation of overall and breast specific QoL as compared to MHFRT with lower rates of radiation dermatitis, fatigue and breast related symptoms. Together with substantially shorter treatment duration, UHFRT my reduce the physical and logistical burden of adjuvant radiotherapy without compromising short term patient- reported QoL.

Abstract: 260703

RESPONSE RATES IN CARCINOMA RECTUM PATIENTS UNDERGOING RADIATION: A RETROSPECTIVE INSTITUTIONAL ANALYSIS

AUTHORS:
Presenting author: Dr. Samapika Bhaumik, Senior Resident, Radiation Oncology,
Dr. Ravi Roushan Kumar, Dr. Aviral Rastogi, Department of Radiation Oncology,
Dr. Gaurav, Department of Medical Oncology,
Homi Bhabha Cancer Hospital And Research Center (HBCHRC), Muzaffarpur

KEYWORDS: Carcinoma Rectum, Total neo-Adjuvant Therapy (TNT), Pathological Complete Response (pCR), Long Course Radiotherapy (LCRT)

Background: For Locally advanced Carcinoma Rectum, multimodality management provides major local control benefits as compared to surgery alone. The sequencing and choice of RT schedules and chemotherapy have been evolving with the focus now going towards Total Neo-Adjuvant Therapy (TNT) and organ preservation. Treatment options vary on a case-to-case basis, which requires a focussed multidisciplinary approach.

Methods: Since the inception of the institute RT machines, 64 Carcinoma Rectum patients have been taken for radiation. In this study, we perform a retrospective analysis of the patients treated from April 2025 to August 2026 in a tertiary care center, who have undergone response assessment. Patients yet to undergo response assessment or who defaulted for the same were excluded from the treatment response analysis. Data analysis was done for disease characteristics, modalities and treatment response. Data were analysed with SPSS V21.0.

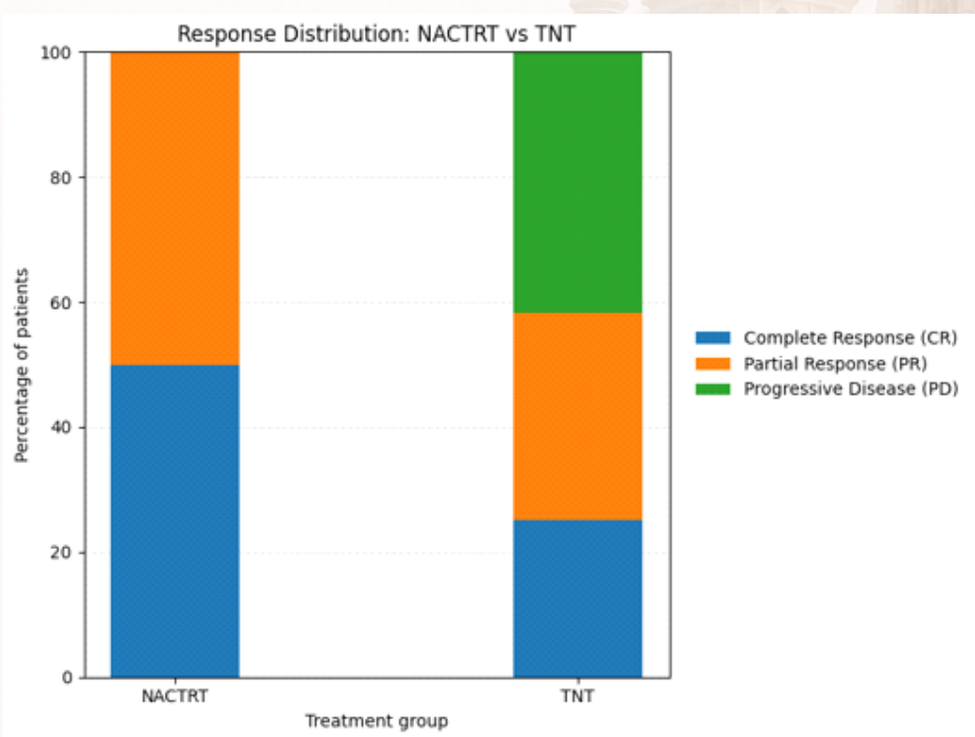


Figure1: Treatment Response in the two cohorts

Results: The mean age was 50 years (Range 14 – 89) with male to female ratio 1.5:1. Most common T stage was T3 with approximately 63% patients, followed by T4 stage. Most common histology was Moderately Differentiated Adecarcinoma with >90% patients having lower rectum tumour. Almost 33.3% patients received NACTRT only, while 66.6% patients received TNT. Half the patients receiving NACTRT had Complete Response (CR, R0 Resection), and half showed Partial response (PR) . Of the patients receiving TNT, 25%, 33.3% and 41.7% patients had CR, PR and Progressive Disease Respectively.

Conclusion: Neoadjuvant therapy is a major modality prior to surgery. This study shows that the response rates of each Neoadjuvant option are varied. A “one size fits all” treatment approach is not suitable. The Right approach for an individual patient should be based on multidisciplinary discussion taking into account patient and disease characteristics.

Abstract: 261104

Shrinking Tumours, Shifting Parotids: A Single Mid-Course Adaptive Re-Plan Restores Parotid Sparing in Head and Neck Cancer

Dr. Suvam Dash[1]*, Dr. Shraddha Raj[1], Dr. (Prof.) Rajesh Kumar Singh[1]
Dr. Deepali.B.Patil[2], [1]Department of Radiation Oncology, [2]Department of Medical Physics, State Cancer Institute, Indira Gandhi Institute of Medical Sciences (IGIMS), Patna, Bihar, India

Background: Tumour regression and weight loss during chemoradiation shift the parotids toward the high-dose region of the original IMRT plan. We measured the dosimetric gain from a single mid-course adaptive re-plan in routine tertiary-care practice.

Methods: In this prospective study at State Cancer Institute, IGIMS Patna, 34 patients with stage III–IV head and neck squamous cell carcinoma (age 18–60, KPS >70) received IMRT with simultaneous integrated boost (70/60/54 Gy in 35 fractions) and concurrent cisplatin 100 mg/m² three-weekly. A week-3 repeat CT was re-contoured and re-optimised for the remaining fractions. Plan 1 and Plan 2 doses were compared with paired tests (SPSS 22, $p < 0.05$). Secondary endpoints were acute toxicity (CTCAE v5.0, RTOG, EAT-10) and three-month response (RECIST v1.1).

Results: Thirty-one patients were re-planned and 29 completed follow-up (mean age 51.8 years, 94.1% male). Re-planning reduced mean parotid dose from 25.3 to 21.1 Gy on the left and from 25.4 to 21.1 Gy on the right ($p < 0.001$). The dose constraints were finalised as per the QUANTEC guidelines. Both parotids met the 25 Gy constraint in 7/31 initial plans and in 31/31 adaptive plans. Weighted for the fractions delivered on each plan, the saving over the whole course was about 2.4 Gy per gland. Submandibular mean dose fell from 40.9 to 39.9 Gy ($p < 0.001$). Target coverage was preserved (PTV D95 67.5 ± 0.9 Gy). Doses to the spinal cord (41.0 ± 1.7 Gy), brainstem (44.9 ± 2.8 Gy) and DARS (45.2 ± 3.0 Gy) stayed within tolerance in every patient. At three months, xerostomia was Grade 1 in 64.5% and Grade 2 in 35.5%, with no Grade 3–4. Median EAT-10 was 13, and the complete response rate was 67.6%.

Conclusion: A single week-3 adaptive re-plan brought parotid dose below 25 Gy in every patient without compromising target dose, supporting its routine use.

Keywords: Adaptive radiotherapy; Parotid sparing; IMRT; Head and neck cancer; Replanning.

Abstract: 261005

Comparison of Intensity-Modulated Radiotherapy Versus Volumetric Modulated Arc Therapy Using Simultaneous Integrated Boost in Chemoradiation of High-Grade Glioma: A Prospective Study

Dr. Aditya Kumar[1]*, Dr. (Prof.) Richa Madhawi[1], Dr. Shraddha Raj, Dr. Brajesh Kumar[2], Dr. Kunal Kishor[1]

[1]Department of Radiation Oncology, State Cancer Institute, Indira Gandhi Institute of Medical Sciences (IGIMS), Patna, Bihar, India

[2]Department of Neurosurgery, State Cancer Institute, Indira Gandhi Institute of Medical Sciences (IGIMS), Patna, Bihar, India

* Presenting author

Background:

High-grade glioma is treated with maximal safe resection followed by radiotherapy with concurrent temozolomide. Simultaneous integrated boost (SIB) allows escalation of dose to high-risk regions while maintaining standard or lower doses to lower-risk areas without prolonging overall treatment time, and early feasibility studies showed that SIB-IMRT could safely deliver higher doses to gross tumour volumes while sparing normal brain tissue. IMRT and VMAT are both in routine use, but a relative paucity of prospective clinical data evaluates their comparative performance with SIB in a uniform treatment setting: many published studies are limited by small sample size, retrospective design, heterogeneity in dose prescription, or lack of standardised toxicity and quality-of-life assessment, and most available evidence originates from Western populations, with limited data from Indian tertiary care centres, where patient demographics, tumour biology, and healthcare resource constraints may differ.

Methods:

In this prospective randomised study at State Cancer Institute, IGIMS Patna, 50 patients with WHO grade III–IV glioma (age 18–60, ECOG 0–2) were randomised 1:1 to IMRT (n = 25) or VMAT (n = 25). Both arms received an identical SIB prescription of 60 Gy to PTV1 and 50 Gy to PTV2 in 25 fractions with concurrent temozolomide 75 mg/m²/day. Target coverage, organ-at-risk doses, monitor units, acute toxicity (CTCAE v5.0, RTOG), early radiological response and quality of life (EORTC QLQ-C30, QLQ-BN20) were compared (SPSS 22, $p < 0.05$).

Results: Target coverage was equivalent: PTV V95% 97.19 ± 1.17% versus 96.71 ± 1.05% ($p = 0.133$), PTV D95 59.01 ± 0.89 versus 59.11 ± 0.77 Gy ($p = 0.674$), homogeneity index ($p = 0.202$) and conformity index ($p = 0.332$) were also similar. VMAT lowered maximum brainstem dose (46.81 ± 14.51 to 34.86 ± 20.50 Gy, $p = 0.023$) and hippocampal maximum dose (37.74 ± 16.72 to 28.47 ± 20.16 Gy, $p = 0.027$). Mean brain dose (33.36 versus 31.80 Gy, $p = 0.094$), optic chiasm, optic nerves, eyes, lenses, cochleae and pituitary doses did not differ. Monitor units fell from 793.88 ± 55.85 with IMRT to 549.40 ± 62.17 with VMAT ($p < 0.001$). Acute haematological and RTOG toxicity, early radiological response, and quality-of-life scores at baseline and six months were comparable.

Conclusion:
VMAT with SIB achieved target coverage equivalent to IMRT (PTV V95% 96.71 ± 1.05% versus 97.19 ± 1.17%, p = 0.133) and comparable dose to most organs at risk, while significantly reducing maximum brainstem dose (34.86 ± 20.50 versus 46.81 ± 14.51 Gy, p = 0.023) and maximum hippocampal dose (28.47 ± 20.16 versus 37.74 ± 16.72 Gy, p = 0.027). VMAT also required significantly fewer monitor units than IMRT (549.40 ± 62.17 versus 793.88 ± 55.85, p < 0.001), reflecting the inherent delivery efficiency of volumetric arc therapy, without compromising acute toxicity or quality-of-life outcomes. VMAT with SIB is therefore a dosimetrically equivalent, neuro-cognitively sparing, and more efficient alternative to IMRT for chemoradiation of high-grade glioma, particularly relevant to resource-constrained treatment settings.

Keywords: High-grade glioma; VMAT; IMRT; Simultaneous integrated boost; Temozolomide

Abstract: 261406

COMPARATIVE ANALYSIS OF CONVENTIONAL VERSUS ACCELERATED RADIOTHERAPY WITH CONCURRENT CHEMOTHERAPY IN LOCALLY ADVANCED HEAD AND NECK CANCER: A PROSPECTIVE STUDY

Dr Vikram Kumar Bairwa[1]*, Dr. Seema Devi[2]
[1]Jr. Resident , [2]Professor
Department of Radiation Oncology, SCI, IGIMS, Patna

Background:

Locally advanced head and neck cancer requires effective locoregional treatment while limiting treatment-related toxicity. Accelerated radiotherapy may reduce overall treatment time and counteract accelerated tumour repopulation. This study compared conventional versus accelerated radiotherapy with concurrent chemotherapy in locally advanced head and neck cancer.

Materials and Methods:

This hospital-based prospective comparative study was conducted over 18 months at the Department of Radiation Oncology, State Cancer Institute, IGIMS, Patna. Sixty patients were randomly allocated into two groups of 30 each. Arm A received conventional radiotherapy (54–70 Gy in 33–35 fractions, 5 days/week) and Arm B received accelerated radiotherapy with the same total dose and fraction size, delivered 6 days/week. Both arms received concurrent weekly cisplatin 40 mg/m² or carboplatin AUC-2. Tumour response was assessed after treatment and at 1, 3 and 6 months. Acute toxicities were assessed weekly.

Results:

Complete response at the end of treatment was 43.3% in Arm A versus 53.3% in Arm B (p=0.581). At 1, 3 and 6 months, complete response rates were 43.3% vs 53.3% (p=0.715), 50.0% vs 56.7% (p=0.875), and 50.0% vs 60.0% (p=0.796), respectively. Thus, accelerated radiotherapy showed a consistent numerical trend toward higher complete response, without statistical significance. Acute toxicities were predominantly grade 1–2 and comparable between groups. Dysphagia was significantly higher in Arm B during weeks 5–6, but differences were not significant during follow-up. Treatment interruptions were comparable (90% vs 86.67%; p=0.697).

Conclusion:

Accelerated radiotherapy with concurrent chemotherapy demonstrated a numerical trend toward improved tumour response with an overall comparable and manageable acute toxicity profile.

Keywords: Head and neck cancer; accelerated radiotherapy; chemoradiotherapy; tumour response; acute toxicity.

Abstract: 261707

Tumor-Infiltrating Lymphocytes (TILs) Across the Breast Cancer Molecular Spectrum: Adding an Immune Dimension to Our Histopathological Armamentarium

Authors:
Dr. Aman Kumar*, Prof. (Dr.) Dinesh Kumar Sinha, Dr. Manish Kumar, Dr. Kalpana Chandra, Dr. Shiv Shankar Mishra, Dr. Shambhavi Pandey

Affiliations:
Department of Radiation Oncology, State Cancer Institute, IGIMS, Patna, Bihar, India
Department of Surgical Oncology, IGIMS, Patna, Bihar, India
Department of Pathology, IGIMS, Patna, Bihar, India

Presenting Author: Dr. Aman Kumar

Background

Tumor-infiltrating lymphocytes (TILs) represent an important component of the breast cancer tumor microenvironment and provide a morphologic measure of the host immune response against the tumor. Increasing evidence indicates that stromal TIL density differs according to breast cancer molecular subtype, with particularly prominent immune infiltration reported in triple-negative and HER2-positive disease. Standardized evaluation of stromal TILs on routinely available hematoxylin and eosin (H&E)-stained sections provides a simple, reproducible, and cost-effective method for incorporating an immune parameter into conventional histopathological assessment. The present study evaluated stromal TILs across molecular subtypes of breast cancer and assessed the practical feasibility of incorporating TIL assessment into routine pathology reporting.

Methods

This prospective observational study was conducted at the State Cancer Institute, IGIMS, Patna. Thirty patients with newly diagnosed, histopathologically confirmed invasive breast carcinoma were included. Pretreatment tumor tissue specimens were assessed for stromal TIL density on H&E-stained sections according to the International TILs Working Group recommendations. TILs were recorded as a continuous percentage of stromal area occupied by mononuclear inflammatory cells and evaluated in relation to breast cancer molecular subtype, including Luminal A, Luminal B, HER2-enriched, and triple-negative breast cancer (TNBC). Clinicopathological parameters including tumor grade, tumor size, and proliferative index were also evaluated where available. The feasibility of routine TIL assessment was evaluated by documenting the proportion of specimens suitable for scoring, tissue adequacy, assessment time, and interobserver agreement where feasible. Appropriate statistical methods were used for comparison of TIL density between molecular subgroups.

Results

All 30 included cases were evaluated for stromal TIL density on routine H&E-stained sections. The study demonstrated variation in stromal immune infiltration across molecular subtypes, with a greater degree of lymphocytic infiltration observed in the more immunogenic HER2-positive and triple-negative tumors, while luminal tumors generally demonstrated lower stromal TIL levels. Higher TIL

density was also observed in association with higher-grade tumors. This overall pattern is concordant with previously published large observational cohorts and pooled analyses showing significantly greater TIL infiltration in TNBC and HER2-positive breast cancers compared with luminal subtypes.

Routine H&E sections were suitable for stromal TIL assessment in the majority of evaluable specimens, supporting the practical feasibility of incorporating standardized TIL scoring into conventional histopathological assessment.

Conclusion

In this prospective cohort of 30 patients, stromal TIL assessment demonstrated clinically relevant variation across breast cancer molecular subtypes, with greater immune infiltration observed in HER2-positive and triple-negative disease compared with luminal tumors. The findings support the potential role of standardized stromal TIL assessment as an additional, inexpensive histopathological parameter in breast cancer. Incorporation of TIL assessment into routine reporting may provide an additional immune dimension to conventional tumor characterization, particularly in biologically aggressive breast cancer subtypes.

Abstract: 260608

When the Scar Speaks: Abdominal Wall Metastasis Following Non-Oncologic Hysterectomy for Cervical Cancer

Dr. Jyoti Rai[1], Dr. Vinita Trivedi[2], Dr. Rita Rani[3], Dr. Richa Chauhan[3], Dr. Usha Singh[3], Dr. Kanchan Singh[3], Dr. Santosh Shubham[3], Dr. Sucheta[3]
[1] DNB Resident, Department of Radiation Oncology, Mahavir Cancer Sansthan, Patna
[2] HOD & Associate Director, Department of Radiation Oncology, Mahavir Cancer Sansthan, Patna
[3] Consultant, Department of Radiation Oncology, Mahavir Cancer Sansthan, Patna

Background:

Abdominal wall scar metastasis following hysterectomy for cervical cancer is an uncommon but clinically significant presentation. Non-oncologic hysterectomy may result in inadequate tumour clearance and altered patterns of disease recurrence.

Aim:

To describe the clinical profile, disease patterns, management, and early outcomes of patients presenting with abdominal scar metastasis following non-oncologic hysterectomy for cervical cancer.

Methods:

A retrospective case-series analysis was conducted at Mahavir Cancer Sansthan, Patna, involving 10 patients with biopsy-proven carcinoma cervix who developed abdominal wall scar metastasis following previous abdominal hysterectomy. Demographic characteristics, details of previous surgery, interval to presentation, pattern of recurrence, treatment received, and early treatment response were evaluated.

Results:

All patients had undergone hysterectomy outside a dedicated oncology centre. Patients presented with varied disease patterns, including residual pelvic disease with scar deposits, isolated abdominal wall metastasis, and disseminated metastatic disease. Management was individualised according to disease extent and performance status and included chemoradiation, wide excision followed by radiotherapy, and palliative radiotherapy. Early treatment responses were variable.

Conclusion:

Abdominal scar metastasis represents a challenging manifestation of cervical cancer following non-oncologic hysterectomy. This series highlights the importance of appropriate initial staging, adherence to oncologic surgical principles, and timely referral to specialised cancer centres.

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Abstract: 260101

: Mid-Tracheal Adenoid Cystic Carcinoma: A Rare Case Report

Authors: Dr SOURAV RAJ Dr KUNAL KISHOR Dr BANTI KUMAR,
Department of Radiation Oncology, State Cancer Institute, IGIMS, Patna

BACKGROUND:

Primary tracheal malignancies are rare, accounting for a small proportion of respiratory tract neoplasms. Adenoid cystic carcinoma (ACC) is an uncommon malignant tumor of the trachea characterized by submucosal infiltration. Complete surgical resection remains the cornerstone of treatment in resectable disease, while postoperative radiotherapy may be considered to improve local disease control. We present a case of mid-tracheal adenoid cystic carcinoma treated with surgical resection followed by adjuvant intensity-modulated radiotherapy (IMRT).

CASE PRESENTATION:

A 55-year-old male presented with progressively worsening cough and dyspnea, associated with blood-streaked sputum. He underwent evaluation at multiple healthcare facilities for persistent respiratory symptoms. Contrast-enhanced computed tomography (CECT) of the thorax demonstrated an approximately 2.5 × 2.2 × 2.2 cm soft-tissue mass arising from the left lateral wall of the mid-trachea, with significant intraluminal extension causing marked tracheal luminal narrowing. Biopsy and subsequent histopathological examination confirmed adenoid cystic carcinoma with IHC positive for CK7 & P40 and negative for MYB. The patient underwent definitive tracheal resection and anastomosis at All India Institute of Medical Sciences, New Delhi in March 2026. Following surgery, he was referred for adjuvant radiotherapy at State Cancer Institute, Indira Gandhi Institute of Medical Sciences, Patna. TREATMENT: Postoperative adjuvant radiotherapy was delivered using IMRT technique to a total dose of 60 Gy in 30 fractions over 6 week. Treatment was completed as planned with good tolerance and with manageable grade 1 dermatitis, dysphasia. RESULTS: Following completion of adjuvant IMRT, the patient demonstrated marked clinical improvement, with complete resolution of cough and dyspnea. The patient remains under follow-up for assessment of long-term local control and late treatment-related toxicity.

CONCLUSION:

Primary tracheal adenoid cystic carcinoma is a rare malignancy requiring an individualized multidisciplinary approach. In resectable disease, surgical resection followed by appropriately planned adjuvant radiotherapy may provide effective local management. In the present case, tracheal resection followed by postoperative IMRT was well tolerated and resulted in significant symptomatic improvement. Longer follow-up is essential to assess durable local control, late toxicity, and long-term clinical outcomes in this

KEYWORDS:- Adenoid cystic carcinoma; Mid-tracheal carcinoma; Tracheal resection ; Intensity-modulated radiotherapy, Tracheal malignancy, Tracheal adenoid cystic carcinoma

Abstract: 260202

Role of melatonin in reducing Radiation toxicity and tumour control in breast cancer: A Prospective randomized Control study.

Authors: Anjana Singh

Background:
Breast cancer representing about 25% of all cancers worldwide. Majority of operable breast cancer will have surgery, followed by chemotherapy and radiotherapy.Melatonin, a natural cytotoxin can induce tumour cell death, inhibit tumour's growth rate and metastasis.

Aims:
To find out the benefits of melatonin in breast cancer in terms of loco-regional tumour control, radiation induced toxicity.

Settings and Design:
Tertiary care Centre(KGMU, Lucknow) Randomised Control Trial.

Methods and Material:
100 patients randomized to two arms. 1st arm had 51patients undergone radiotherapy without melatonin and 2nd arm (study arm) had 47 patients received radiotherapy with melatonin. Patients were followed up weekly during the treatment, then 3 monthly up to 1year.

Statistical analysis:
Stata11.2, Categorical variable by using Chi square / Fisher's exact test. Continuous variable by using independent t-test and Wilcoxon Ranksum test P value < 0.05 is statistically significant.

Results:
Only 6 OUT of 47 patients in melatonin arm Vs 19 out of total 51 patient in control arm
have shown bad outcome (p value 0.005) (in terms of recurrence, residual, metastasis, died). Six(11.76%) patients had recurrence or residual disease present in Melatonin and in Control arm two patients(4.26%). (p= 0.105) .Very few patients have got Skin (melatonin arm 6.38% Vs 13.72%), Gastrointestinal and Lung (2.13% Vs 1.96%), and Cardiac toxicity(Grade III , 2.13%).

Conclusions:
Melatonin has significant role in decreasing overall bad outcome. In terms of locoregional control melatonin has shown better results. Melatonin may be beneficial in reducing locoregional control and other toxicities.

Key words: melatonin, breast cancer, locoregional control, radiation induced toxicity.

Abstract: 260403

Preserving the Smile: Upfront HDR Interstitial Brachytherapy as Sole Modality for T2N0 Lower Lip Squamous Cell Carcinoma – A Case Report

Dr. Kanika Modi* (DNB Resident, 2nd Year)
Dr. Vinita Trivedi (Head of Department, Radiation Oncology)
Department of Radiation Oncology, Mahavir Cancer Sansthan & Research Centre, Patna, Bihar

Background:

Lip carcinoma is among the commonest head and neck malignancies; the lower lip is involved in about 90% of cases, mostly as squamous cell carcinoma (SCC). Excising lesions larger than 2 cm often needs flap reconstruction, risking microstomia, oral incompetence and deformity. Interstitial brachytherapy achieves over 90% local control while preserving the form and function of the lip. We report upfront high-dose-rate (HDR) interstitial brachytherapy as the sole treatment for T2N0 lower lip SCC.

Methods:

41-year-old woman without comorbidities presented with a non-healing lower lip ulcer of two months' duration. Clinically, there was a 3 × 1.2 cm ulceroproliferative growth with no palpable neck nodes. Biopsy confirmed well-differentiated SCC. Contrast-enhanced CT of the face and neck showed a 2.8 × 1.5 × 0.4 cm lesion with no lymphadenopathy, and she was staged cT2N0M0 (AJCC 8th edition). Under local anaesthesia, three plastic tubes were implanted parallel to each other, about 1 cm apart, following Paris system principles, with a mandibular shield to protect the gingiva. On CT-based planning, the clinical target volume was the gross tumour with a 5–10 mm margin. She received 45 Gy in nine fractions of 5 Gy by Ir-192 HDR, twice daily at least six hours apart (BED10 67.5 Gy; EQD2 ~56 Gy).

Results:

Treatment was completed over five days without interruption. Acute reactions were limited to Grade 2 mucositis and Grade 2 radiation dermatitis (CTCAE v5.0), which healed fully within 4–6 weeks. At five months, she has a complete clinical response, no nodal recurrence, a competent oral sphincter and excellent cosmesis without microstomia.

Conclusion:

Upfront HDR interstitial brachytherapy is an effective organ-preserving monotherapy for T2N0 lower lip SCC, achieving complete response with minimal morbidity and excellent functional and cosmetic outcome. It merits consideration as a first-line alternative to surgery, especially in young patients. Longer follow-up is warranted.

Keywords: Lip neoplasms; Squamous cell carcinoma; Interstitial brachytherapy; High-dose-rate; Organ preservation

Abstract: 260804

Biopsy-Proven AL Amyloidosis in Monoclonal Gammopathy of Renal Significance: A Tertiary Care Center Experience

Dr. Kumar Anupam[1]*, Dr. Kailash Kumar Singh[1], Dr. Suvam Dash[1], Dr. (Prof.) Rajesh Kumar Singh[1], Dr. Alok Ranjan[1], Dr. Aman Kumar[1]
[1]Indira Gandhi Institute of Medical Sciences (IGIMS), Patna, Bihar, India
* Presenting author

Background:

Monoclonal gammopathy of renal significance (MGRS) describes kidney lesions caused by a nephrotoxic monoclonal immunoglobulin in patients whose clone does not itself meet criteria for treatment. AL amyloidosis is an important but under-recognised cause, and renal biopsy is essential for diagnosis and timely clone-directed therapy. We studied the frequency, clinicopathological profile and renal outcomes of biopsy-proven AL amyloidosis in MGRS.

Methods:

This retrospective observational study included patients with MGRS and kidney involvement who underwent renal biopsy at a tertiary care centre in Eastern India. Clinical presentation, laboratory and haematological parameters, renal histopathology, treatment details and renal outcomes were analysed. Patients with biopsy-proven AL amyloidosis were studied as a distinct subgroup and followed for one year.

Results:

Forty-two patients with MGRS and kidney involvement underwent renal biopsy. AL amyloidosis was the commonest lesion, in 16 (38.1%), followed by light chain cast nephropathy in 13 (30.9%), light chain and monoclonal immunoglobulin deposition disease in 5 (11.9%) and other lesions in 8 (19.0%). Among the 16 patients with AL amyloidosis, the presentation was nephrotic syndrome in 10 (62.5%), chronic kidney disease in 3 (18.8%), acute kidney injury in 2 (12.5%) and nephritic syndrome in 1 (6.3%). At one year, 5 (31.3%) achieved complete renal remission and 6 (37.5%) partial remission, 3 (18.8%) had refractory renal disease despite therapy and 2 (12.5%) progressed to end-stage renal disease.

Conclusion: AL amyloidosis was the commonest biopsy-proven renal lesion in MGRS at our centre and usually presented as nephrotic syndrome. Complete or partial renal remission was achieved in 68.8% at one year, while 31.3% had refractory disease or reached end-stage renal disease, underlining the value of early biopsy and prompt clone-directed treatment.

Keywords: MGRS; AL amyloidosis; Renal biopsy; Nephrotic syndrome; Renal outcomes

Abstract: 260905

Bilateral Wilms Tumor With Disorder of Sex Development in Infancy: A Rare Presentation Suggestive of WT1-Related Denys–Drash Syndrome

Dr. Aditya Kumar, Dr. (Prof.) Richa Madhawi
Department of Radiation Oncology, State Cancer Institute, IGIMS, Patna

Background:

Bilateral Wilms tumor accounts for roughly 5% of nephroblastoma cases and, when it presents with congenital genitourinary anomalies or disorders of sex development (DSD) at an unusually young age, should prompt evaluation for an underlying WT1-related syndrome, classically the Denys–Drash phenotype (Wilms tumor, 46,XY DSD, and progressive nephropathy).

Case Presentation:

A 1-year-old infant with ambiguous/underdeveloped external genitalia and an abnormal urinary outlet noted at birth (managed with a urinary diversion) had been apparently well until about 2 months prior to presentation, when his mother noticed a painless left flank swelling; the swelling was rapidly increasing in size over 20–25 days, prompting hospital evaluation. Cross-sectional imaging revealed bilateral heterogeneously enhancing renal masses containing fat attenuation, with a dominant left upper-pole lesion measuring approximately 10×13×11 cm and a second left lesion measuring 3.6×4.2×4.7 cm; renal vasculature was patent and there was no pulmonary metastasis. Imaging additionally noted absent scrotal sacs and a rectovesical structure requiring further characterization, raising suspicion for a syndromic WT1 disorder. Bilateral core biopsies confirmed Wilms tumor with favourable histology on both sides.

Management and Outcome:

The child received 10 cycles of preoperative chemotherapy followed by left radical nephrectomy. Final histopathology showed favourable-histology Wilms tumor (15×12×10 cm), intermediate risk (viable tumor >33%, blastemal component <66%), with clear margins, no sinus or extrarenal vascular involvement, and local stage I. Postoperative imaging showed non-visualization of the left kidney with a perinephric collection, and persistent right-sided lesions (42×33 mm and 23×22 mm) consistent with residual contralateral disease, underscoring the importance of nephron-sparing strategies for the remaining kidney.

Conclusion:

This case illustrates the diagnostic significance of pairing congenital genital/urogenital anomalies with early-onset bilateral Wilms tumor, a combination that should trigger evaluation for a WT1-related disorder such as Denys–Drash syndrome. Multidisciplinary, risk-adapted management with an emphasis on renal parenchymal preservation remains central to optimizing outcomes in bilateral disease.

Abstract: 261206

One Extra CT, No Lost Time: Real-World Feasibility of Adaptive Radiotherapy for Head and Neck Cancer in India

Dr. Suvam Dash*, Dr. Shraddha Raj, Dr. Shivshankar Mishra, Dr. (Prof.) Rajesh Kumar Singh
Department of Radiation Oncology, State Cancer Institute, Indira Gandhi Institute of Medical Sciences (IGIMS), Patna, Bihar, India

Background:

Dosimetric evidence supports adaptive radiotherapy, but routine use depends on a practical question. Can a busy public-sector department deliver a mid-course re-plan without prolonging treatment or disrupting concurrent chemotherapy?

Methods:

This prospective study at State Cancer Institute, IGIMS Patna enrolled 34 patients with stage III–IV head and neck squamous cell carcinoma (age 18–60, KPS >70). All were treated with IMRT with simultaneous integrated boost (70/60/54 Gy in 35 fractions) and cisplatin 100 mg/m² three-weekly. A repeat CT, re-contouring and re-optimisation were planned at week 3. Feasibility endpoints were re-plan completion and timing, radiotherapy gaps, chemotherapy delays, protocol completion, acute toxicity (CTCAE v5.0, RTOG, EAT-10) and three-month response (RECIST v1.1).

Results:

Three patients left the study before re-planning: two died and one discontinued treatment. All 31 patients who reached week 3 were re-planned: 21 at fraction 15 (67.7%), 7 at fraction 17 (22.6%) and 3 at fraction 19 (9.7%). Every planning objective was met on the adapted plan. Radiotherapy was completed as scheduled in 91.2% of patients. 55% had no interruption, and only 10% had a gap longer than one week. Cisplatin was given without delay in 67.6%, with delays of =5 days in 14.7% and >5 days in 11.8%. Twenty-nine patients completed the protocol with full follow-up. Acute toxicity peaked in week 7, with Grade 3 mucositis in 51.6%, Grade 2 dermatitis in 32.3% and Grade 2 dysphagia in 58.1%. No Grade 3–4 xerostomia was seen, and the complete response rate at three months was 67.6%.

Conclusion:

A single mid-course re-plan was deliverable in routine practice. It cost one extra CT and one extra plan per patient, did not lengthen overall treatment time or compromise chemotherapy, and toxicity was acceptable.

Keywords: Adaptive radiotherapy; Feasibility; Head and neck cancer; Treatment interruption; Concurrent chemoradiation.

Abstract: 261307

From Risk to Remission: An Institutional Four-Year Experience with Risk-Adapted Chemotherapy in Gestational Trophoblastic Neoplasia

Authors: Dr. Shambhavi Pandey*, Dr. Suvam Dash, Dr. Aman Kumar, Dr. (Prof) Rajesh Kumar Singh, Dr. Shraddha Raj, Dr. Alok Ranjan
*Presenting Author

Background:

Gestational trophoblastic neoplasia (GTN) is highly chemosensitive with treatment guided by the FIGO/WHO prognostic score. We evaluated outcomes of risk-adapted chemotherapy at a tertiary cancer center in Bihar.

Methods:

We retrospectively reviewed 50 women with GTN treated at our center during 2022–2025. Low-risk patients (score =6) received single-agent Methotrexate, switching to Actinomycin-D or EMA-CO for inadequate response. High-risk patients (score =7) received EMA-CO, with Intrathecal Methotrexate for brain metastases or Etoposide–Cisplatin induction when critically ill. Endpoints were Complete Response (CR), toxicity (CTCAE v5.0, MASCC index for neutropenic episodes), treatment compliance in terms of follow up.

Results:

The median age was 24 years, and vaginal bleeding was the most common presentation (90%). Of 50 patients, 36 (72%) had high-risk disease and 14 (28%) had low-risk disease. Among high-risk patients, 26 (72%) had pre-treatment β-hCG =105 mIU/mL, and 12 (33%) had metastatic disease, all involving the lungs. The overall complete response (CR) rate was 96% (48/50), with 100% (14/14) in low-risk and 94% (34/36) in high-risk patients. In low-risk disease, Methotrexate achieved first-line CR in 71% (10/14); the remaining four patients achieved CR after salvage therapy with Actinomycin-D or EMA-CO. All high-risk patients treated with EMA-CO developed neutropenia, with grade 3–4 neutropenia in 71% and febrile neutropenia in 69%. Grade 3 mucositis occurred in 36% of patients receiving Methotrexate. Treatment compliance was 90%. The two deaths were due to early sepsis in critically ill patients with metastatic disease.

Conclusion:

Risk-adapted chemotherapy achieved remission in 96% of patients despite a predominantly high-risk cohort. EMA-CO-related neutropenia was universal, while early sepsis caused both deaths. These findings highlight that timely risk stratification, appropriate chemotherapy and close supportive care can achieve high cure rates in GTN, even in a resource-limited setting.

Keywords: Gestational trophoblastic neoplasia; EMA-CO; Methotrexate; FIGO prognostic score; Febrile neutropenia

Abstract: 261508

High-Grade Appendiceal Mucinous Neoplasm Presenting as Giant Appendiceal Mucocele: A Rare Localized Case

Author: Sujeet Kumar[1]
[1]Department of Radiation Oncology, State Cancer Institute, Indira Gandhi Institute of Medical Sciences (IGIMS), Patna, Bihar, India

Background:

High-grade appendiceal mucinous neoplasm (HAMN) is a rare appendiceal epithelial neoplasm with potential for peritoneal dissemination and pseudomyxoma peritonei. Localized HAMN without peritoneal disease is uncommon and presents diagnostic and therapeutic challenges.

Methods:

We report the clinical, radiological, operative and histopathological findings of a 74-year-old man presenting with a progressively increasing right lower abdominal swelling. Contrast-enhanced CT, surgical findings, histopathology and mismatch repair (MMR) immunohistochemistry were reviewed.

Results:

The patient presented with a 6-month history of right lower abdominal swelling and mild abdominal pain for 1 month. Contrast-enhanced CT demonstrated a large, well-defined cystic tubular dilatation of the appendix measuring 15.6 × 9.6 cm, consistent with an appendiceal mucocele, without rupture, ascites, peritoneal deposits or distant metastases. He underwent right hemicolectomy with appendectomy and ileotransverse anastomosis. Intraoperatively, a large appendiceal mucocele extending to the appendiceal base was identified, without peritoneal mucin deposits or distant metastases. Histopathology revealed high-grade appendiceal mucinous neoplasm, measuring 10 × 9 × 3 cm, with high-grade cytological atypia and pushing invasion extending to the muscularis propria. Acellular mucin extended into the subserosa. Lymphovascular and perineural invasion were not identified. All 6 regional lymph nodes were negative, and proximal and distal margins were free of tumour. Perforation and fibrosis were noted. The final pathological stage was pT3N0Mx (AJCC 8th edition). MMR immunohistochemistry showed intact MLH1, MSH2, MSH6 and PMS2 expression.

Conclusion:

This case highlights a rare presentation of localized high-grade appendiceal mucinous neoplasm as a giant appendiceal mucocele. Accurate histopathological assessment and meticulous surgical management to prevent mucin spillage are essential. The absence of peritoneal dissemination and nodal disease emphasizes the importance of individualized multidisciplinary management.

Keywords:

High-grade appendiceal mucinous neoplasm; Appendiceal mucocele; HAMN; Pseudomyxoma peritonei; pT3N0.

Abstract: 261609

BRCA1 and BRCA2 Testing and Real-World Olaparib Use in Epithelial Ovarian Cancer: Experience from a Tertiary Centre in Eastern India

Authors: Dr. Anjali Kumari[1], Dr. Suvam Dash[1], Dr. (Prof.) Richa Madhawi[1], Dr. Alok Ranjan[1]
[1]Presenting Author
Department of Radiation Oncology, State Cancer Institute, Indira Gandhi Institute of Medical Sciences (IGIMS), Patna, Bihar, India

Background:

BRCA1 and BRCA2 status now decides PARP inhibitor eligibility and cascade testing of relatives in epithelial ovarian cancer, yet testing patterns and yield from Eastern India are sparsely reported. We describe the BRCA1/2 results and clinicopathological profile of women with ovarian cancer tested at our centre.

Methods:

Records of women with epithelial ovarian cancer who underwent BRCA1 and BRCA2 testing at State Cancer Institute, IGIMS Patna were reviewed retrospectively. Age, histology, BRCA1/2 result, bevacizumab use, and PARP inhibitor use, affordability, toxicity and dose modifications were extracted. Carriers were compared with non-carriers (including variants of uncertain significance) using the t-test and chi-square test.

Results:

148 women were included; mean age was 46.9 ± 12.0 years. High-grade serous (including papillary serous) carcinoma was the commonest histology (124, 83.8%), followed by low-grade serous (13, 8.8%), clear cell (7, 4.7%), endometrioid (3, 2.0%) and carcinosarcoma (1, 0.7%). A pathogenic BRCA1/2 variant was found in 51 women (34.5%): BRCA1 in 39 (26.4%), BRCA2 in 11 (7.4%) and both genes in 1 (0.7%); a further 7 (4.7%) had a variant of uncertain significance. Carriers were younger than non-carriers (43.4 ± 11.8 vs 48.4 ± 12.0 years) and more often aged =45 years (60.9% vs 41.2%). PARP inhibitors were affordable for 63% of patients. Olaparib was the only PARP inhibitor used, started at 300 mg twice daily; 89% needed dose reduction to 150 mg twice daily. Anaemia, the main dose-limiting toxicity followed by thrombocytopenia, occurred in 65% mean on-treatment haemoglobin was 9.6 g/dL.

Conclusion:

A pathogenic BRCA1 or BRCA2 variant, predominantly BRCA1, was found in 34.5% of women, particularly among younger patients, underscoring the importance of routine genetic testing. However, real-world implementation of PARP inhibitor therapy was limited by affordability and treatment-related anaemia, necessitating frequent dose modifications. Strengthening access to genetic testing and affordable PARP inhibitors, together with proactive toxicity management, is essential for effective delivery of precision oncology in resource-limited settings.

Keywords: Ovarian cancer; BRCA1; BRCA2; Genetic testing; PARP inhibitor

Abstract: 261810

Adenoid Cystic Carcinoma of Trachea

Dr.Vinita Trivedi, Dr.Rita Rani, Dr. Richa Chauhan,Dr. Usha singh ,Dr Kanchan Singh,
Dr Santosh shubham ,Dr Sucheta
Department of Radiation Oncology, Mahavir Cancer Sansthan, Phulwarisharif, Patna
Presenting Author: Dr.Shiv Gudheniya (DNB Resident -1st year)

Background

Primary tracheal malignancies are rare, with adenoid cystic carcinoma (ACC) being an uncommon salivary gland-type malignancy of the trachea. It is characterized by slow growth and a tendency for submucosal and perineural spread, which may result in late local recurrence. We present a rare case of tracheal ACC managed with surgical resection followed by adjuvant radiotherapy.

Methods

A 44-year-old female presented with cough and breathlessness for one year. CT chest revealed an intraluminal soft-tissue lesion in the upper thoracic trachea causing more than 60% luminal narrowing with involvement of the trachea and oesophagus. Bronchoscopy demonstrated a mass approximately 3 cm from the carina. MRI neck showed a 26 × 24 × 15 mm tracheal growth causing subtotal luminal compression without lymphadenopathy. Metastatic work-up was negative. The patient underwent tracheal resection with anastomosis. Histopathological examination revealed high-grade adenoid cystic carcinoma with grossly involved distal resection margin and a proximal margin of 0.3 cm.

Results

The patient received postoperative adjuvant VMAT to a dose of 60 Gy in 30 fractions, 2 Gy per fraction, over six weeks. Radiotherapy was well tolerated without significant toxicity. On follow-up, the patient remained asymptomatic, with bronchoscopy and CT thorax demonstrating local disease control.

Conclusion

Tracheal ACC is a rare malignancy that may present with nonspecific respiratory symptoms and significant airway obstruction. Early recognition, appropriate surgical resection and postoperative radiotherapy may provide effective local disease control. Modern techniques such as VMAT can facilitate conformal treatment while limiting radiation exposure to surrounding organs at risk.

Keywords

Tracheal tumour; Adenoid cystic carcinoma; VMAT; Adjuvant radiotherapy; Image-guided radiotherapy

Abstract: 261911

Cytogenetic Profile and High-Risk Abnormalities in Patients with Multiple Myeloma: A Single-Center Observational Study

Dr. Puja Bhagat[1*] • Dr. Amrendra Amar[2] • Dr. Navin Nayan[3]

[1] D.R.N.B Resident, Department of Medical Oncology
[2]Associate Director, Department of Medical Oncology
[3]Senior Consultant Hemato-Oncologist
*Presenting Author | Jay Prabha Medanta Hospital, Patna

Background:

Cytogenetic abnormalities play an important role in risk stratification and prognostication of multiple myeloma. Abnormalities involving chromosome 1q, chromosome 17p, and specific immunoglobulin heavy-chain translocations are associated with adverse disease biology. This study aimed to describe the cytogenetic profile of patients with multiple myeloma and determine the frequency of clinically relevant abnormalities.

Methods:

A retrospective observational analysis was performed in 45 patients diagnosed with multiple myeloma. Clinical and cytogenetic data were reviewed from available records. Conventional karyotyping and/or fluorescence in situ hybridization (FISH) results were evaluated where vailable. The frequencies of 1q gain/amplification, t(4;14), del(17p)/p53 deletion, chromosome 13 abnormalities, and double-hit disease were assessed.

Results:

Cytogenetic/FISH data were available for 29 of 45 patients (64.4%). Among patients with available cytogenetic data, 1q gain/amplification was the most frequently observed abnormality, identified in 9 patients (31.0%), followed by t(4;14) in 5 (17.2%) and del(17p)/p53 deletion in 4 (13.8%). Monosomy 13/del(13q) was identified in 2 patients (6.9%), while double-hit disease was documented in 2 patients (6.9%). Standard-risk cytogenetic findings were documented in 17 patients (58.6%) with available results. Cytogenetic data were unavailable in 16 patients (35.6%) of the overall cohort.

Conclusion:

1q gain/amplification was the most frequently identified cytogenetic abnormality in this cohort, followed by t(4;14) and del(17p). The findings highlight the importance of comprehensive cytogenetic/FISH evaluation for risk stratification in multiple myeloma. The proportion of patients without available cytogenetic data also emphasizes the need for consistent incorporation of cytogenetic testing into routine diagnostic evaluation.

Keywords: Multiple myeloma; cytogenetics; FISH; 1q gain; t(4;14); del(17p); high-risk myeloma.

Abstract: 262012

Treatment Response and Acute Toxicity Following Extended-Field VMAT with Concurrent Cisplatin in FIGO IIIC2 Locally Advanced Cervical Cancer: A Prospective Observational Study

Dr Omal Shereef, Dr Vinita Trivedi
Department of Radiation Oncology, Mahavir Cancer Sansthan, Phulwarisharif, Patna
Presenting Author: Dr Omal Shereef

Background:

Locally advanced cervical cancer with para-aortic lymph node involvement (FIGO IIIC2) carries a high risk of disease recurrence and presents challenges in achieving adequate treatment while minimizing toxicity. Extended-field radiotherapy (EFRT) using Volumetric Modulated Arc Therapy (VMAT) permits conformal irradiation of pelvic and para-aortic nodal regions while reducing radiation exposure to adjacent organs at risk. This study evaluated treatment response and acute toxicity in patients with FIGO IIIC2 cervical cancer treated with VMAT-based EFRT and concurrent cisplatin.

Methods:

This prospective observational study included 50 patients with histologically confirmed squamous cell carcinoma of the cervix, FIGO 2018 stage IIIC2, treated at Mahavir Cancer Sansthan, Patna. Patients received VMAT-based extended-field radiotherapy with a simultaneous integrated boost to grossly involved lymph nodes, concurrent weekly cisplatin at 40 mg/m², followed by high-dose-rate brachytherapy. Acute gastrointestinal, genitourinary, and hematological toxicities were assessed using RTOG criteria. Treatment response was evaluated clinically and radiologically using RECIST criteria at 3 and 6 months.

Results:

The study demonstrated an 86% complete response rate, with 14% achieving partial response. Gastrointestinal toxicity was predominantly Grade 2, with 14% developing Grade 3 toxicity and no Grade 4 toxicity. Genitourinary toxicity was generally mild, with 42% experiencing Grade 2 toxicity and no severe toxicity. Hematological toxicity included anemia and neutropenia, while Grade =3 thrombocytopenia was not observed. Treatment planning achieved acceptable dose constraints for the bowel, bladder, rectum, kidneys, and spinal cord.

Conclusion:

VMAT-based EFRT with concurrent weekly cisplatin demonstrated a high early response rate with an acceptable acute toxicity profile in patients with FIGO IIIC2 cervical cancer. Longer follow-up and larger multicentric studies are required to assess long-term disease control, survival, and late toxicity.

Abstract: 262113

Extracorporeal Bone Irradiation in Primary Bone Tumors: A Novel Limb-Salvage Approach –Case Series

Dr. Vinita Trivedi, Dr. Rita Rani, Dr. Richa Chauhan, Dr. Usha Singh, Dr. Kanchan Singh, Dr. Santosh, Dr. Sucheta, Dr. Surya Prakash
Department of Radiation Oncology, Mahavir Cancer Sansthan, Phulwarisharif, Patna
Presenting Author: Dr. Shubham Shekhar (DNB Resident)

Background:

Primary bone tumors requiring wide surgical resection pose a major challenge for reconstruction, particularly in the setting of limb-salvage surgery. Extracorporeal irradiation of the resected tumor-bearing bone followed by reimplantation provides an option for biological reconstruction while preserving the patient's native bone. We present our institutional experience with extracorporeal bone irradiation as part of a multidisciplinary limb-salvage approach.

Methods:

We present a case series of five patients with primary bone tumors who underwent limb-sparing surgery followed by extracorporeal irradiation of the resected tumor-bearing bone and subsequent biological reconstruction. The extracorporeal bone specimens were treated using 6-MV photon beams with a dose of 50 Gy in a single fraction. Appropriate field arrangement and treatment verification were performed to ensure adequate coverage of the resected bone specimen while minimizing unnecessary irradiation of surrounding structures. Clinical and treatment-related parameters were reviewed to assess the technical feasibility of this approach.

Results:

Extracorporeal irradiation was successfully delivered to the resected bone specimens in all five patients at a dose of 50 Gy in 1 fraction using 6-MV photon beams. The procedure demonstrated the technical feasibility of delivering a high single dose to surgically resected tumor-bearing bone as part of a multidisciplinary limb-salvage strategy. The approach enabled preservation of the patients' native bone and anatomical architecture while providing local irradiation of the tumor-bearing specimen.

Conclusion:

Extracorporeal bone irradiation is a technically feasible approach for biological reconstruction following limb-sparing surgery for primary bone tumors. Our case series highlights the potential role of this technique as an alternative to conventional reconstruction and demonstrates the contribution of radiation oncology to multidisciplinary limb-salvage procedures.

Keywords: Primary bone tumors; Extracorporeal irradiation; Limb salvage; Biological reconstruction; Single-fraction radiotherapy; Case series

Abstract: 262214

CLINICAL AND DOSIMETRIC EXPERIENCE OF BRAIN STEREOTACTIC RADIOTHERAPY: A CASE SERIES

Presenting Author: Dr. Akash Kumar Kejriwal
Co-authors: Dr. Vinita Trivedi, Dr. Richa Chauhan, Dr. Nilesh Kumar
Department of Radiation Oncology, Mahavir Cancer Sansthan, Phulwarisharif, Patna

BACKGROUND:

Brain stereotactic radiotherapy (SRT) enables highly conformal radiation delivery to intracranial lesions while limiting dose to surrounding normal brain and critical organs. We describe our institutional experience with brain SRT, focusing on clinical characteristics, treatment planning, dosimetry and early treatment outcomes.

METHODS:

A descriptive case series of 10 patients treated with brain SRT at Mahavir Cancer Sansthan & Research Centre was evaluated. Clinical diagnosis, lesion site and size, prescription dose and fractionation were recorded. Planning parameters included PTV volume, conformity index, gradient index, homogeneity index and relevant normal-brain and organ-at-risk (OAR) doses. Patients received 25–30 Gy in 3–5 fractions using individualized stereotactic arc-based/VMAT planning. Clinical response was assessed at 3 months.

RESULTS:

The cohort comprised patients with brain metastases from breast carcinoma and lung adenocarcinoma, with lesions involving the cerebral hemispheres, cerebellum and posterior fossa. PTV volumes ranged from 4.56 to 49.67 cc. Prescription schedules included 25 Gy/5 fractions, 27 Gy/3 fractions and 30 Gy/5 fractions. Conformity, gradient and homogeneity parameters, along with brainstem and optic pathway doses, were documented for individual plans. At 3-month clinical follow-up, 4 patients demonstrated complete response, 5 partial response and 1 stable disease. All 10 patients completed the planned SRT course.

CONCLUSION:

This institutional case series highlights the application of brain SRT across varied intracranial metastatic presentations using individualized stereotactic planning and structured dosimetric assessment. The observed early clinical responses support continued systematic documentation of SRT planning and follow-up, which may provide a foundation for future prospective evaluation of response, local control and toxicity.

Keywords: Brain SRT; Stereotactic Radiotherapy; Dosimetry; VMAT; Brain Metastases

Abstract: 262315

Rhabdomyosarcoma Involving the Pancreatic–Periampullary Region Presenting with Obstructive Jaundice in a Two-Year-Old Child

Presenting author: Dr. Aman Verma, Junior Resident, Department of Radiation Oncology, AIIMS Patna

Background:

Rhabdomyosarcoma involving the pancreatic–periampullary region is an unusual diagnostic consideration in children presenting with obstructive jaundice. Extensive involvement of adjacent structures can obscure the primary site and complicate treatment planning.

Methods:

We describe the clinical presentation, imaging, histopathological findings and initial management of a two-year-old girl with progressive painless abdominal distension for 5–6 months, followed by fever, jaundice and clay-coloured stools. Evaluation included contrast-enhanced computed tomography, core biopsy, immunohistochemistry and serial biochemical assessments.

Results:

Imaging demonstrated a 7.7 × 6.5 × 8.5 cm heterogeneous solid-cystic mass involving the pancreatic uncinate process, head and proximal body, with retroperitoneal extension, duodenal protrusion and common bile duct compression. Coeliac arterial encasement, superior mesenteric venous involvement and a portal venous filling defect suspicious for tumour thrombus were noted. Core biopsy revealed a malignant spindle-cell neoplasm. Strong desmin expression and focal weak nuclear MyoD1 positivity supported the reported diagnosis of rhabdomyosarcoma; cytokeratin 19 was negative. Percutaneous transhepatic biliary drainage was documented, and total bilirubin declined from 9.18 to 2.36 mg/dL across available assessments. Curative-intent vincristine, dactinomycin and cyclophosphamide chemotherapy was initiated, with initial dose modification planned for hyperbilirubinaemia. By 5 October 2026, four weeks of VAC-based treatment had been administered, most recently on 28 September 2026. Response imaging remained pending, and neither surgery nor radiotherapy had been undertaken.

Conclusion:

Rhabdomyosarcoma should be considered in young children with obstructive jaundice and a complex pancreatic–periampullary mass. This case highlights the importance of tissue diagnosis, biliary decompression and multidisciplinary assessment to establish the primary site and guide subsequent local control.

Keywords: Rhabdomyosarcoma; paediatric oncology; obstructive jaundice; periampullary mass; VAC chemotherapy.

Abstract: 260101

Role Of Radiation Therapist In Radiotherapy Department

Author's name: Preety Kumari, Ashish Kumar (BMRT 1st Year)
Department of Radiation Oncology, State Cancer Institute; IGIMS, Patna

Background:

Radiotherapy is a complex, multidisciplinary treatment modality requiring accurate planning, precise treatment delivery, continuous verification, and patient monitoring. Radiation Therapists (RTTs) play a central role in translating the approved Radiation Therapists (RTTs) play a central role in translating the approved treatment plan into safe and accurate radiation delivery while ensuring patient comfort and safety. They work closely with radiation oncologists, medical physicists, nurses, and other healthcare professionals. physicists, nurses, and other healthcare professionals.

Objective:

To describe the major roles and responsibilities of Radiation Therapists in a modern radiotherapy department and highlight their contribution to treatment accuracy, patient safety, quality assurance, and patient care.

Materials and methods:

A descriptive review of the workflow and responsibilities of Radiation Therapists was performed. Key areas included patient identification and preparation, immobilization, CT simulation, treatment setup, image-guided radiotherapy (IGRT), verification of treatment parameters, radiation delivery, documentation, radiation protection, quality assurance, management of treatment-related issues, and multidisciplinary communication.

Result:

Radiation Therapists contribute to multiple stages of the radiotherapy process. Their responsibilities include patient identification, immobilization, simulation, accurate positioning, image acquisition and verification, and radiation according to the approved treatment plan. They operate advanced technologies including linear accelerators, IGRT systems, intensity-modulated radiotherapy(IMRT), volumetric-modulated arc therapy (VMAT), stereotactic techniques, and electronic portal imaging systems. RTTs assist in detecting setup errors, anatomical changes, and treatment-related problems. They maintain treatment records, follow radiation protection protocols, participate in quality assurance activities, monitor patients during treatment, and promptly communicate deviations or adverse events to the multidisciplinary team.

Conclusion:

Radiation Therapists are an integral part of the multidisciplinary radiotherapy team. Their technical expertise, attention to detail, patient-care skills, and commitment to radiation safety contribute significantly to accurate, safe, and effective treatment delivery. Continuous professional education and competency-based training are essential for maintaining high standards of radiotherapy practice.

Keywords: Radiation therapist, Radiotherapy, Treatment delivery, IGRT, IMRT, VMAT, Patient safety, Radiation protection

Abstract: 260202

Impact of Bladder Filling Protocol Compliance on Daily Setup Reproducibility in CBCT-Guided IGRT for Pelvic Cancers: A Radiotherapy Technologist's Perspective

Author's name: Mr. Rahul Kumar
Department of Radiation Oncology, State Cancer Institute; IGIMS, Patna

Background:

The aim of this study was to determine the effect of bladder filling compliance, based on the treating technologist's assessment before every fraction, on bladder filling-related setup deviations detected by the daily CBCT in patients with pelvic malignancies undergoing IGRT.

Materials & Methods:

A retrospective analysis of 25 patients diagnosed with carcinoma cervix was conducted that had been treated using CBCT-guided IGRT. Bladder compliance was graded by the attending radiotherapy technologist as Grade 1 (fully compliant: patient drank the prescribed amount of water at the correct time), Grade 2 (partially compliant) or Grade 3 (non-compliant: empty or over-filled bladder). The record and verify system was used to obtain CBCT shifts in the three translational axes (lateral X, longitudinal Y, vertical Z) and these shifts were correlated with bladder compliance grades.

Results:

Overall 625 fractions were analysed in 25 patients who had carcinoma cervix. Grade 1 (fully compliant) fractions demonstrated significantly lower mean translational shifts: X = 1.8 ± 0.9 mm, Y = 2.1 ± 1.1 mm, Z = 1.7 ± 0.8 mm. Grade 3 (non-compliant) fractions showed markedly higher deviations: X = 4.3 ± 2.1 mm, Y = 5.6 ± 2.7 mm, Z = 4.9 ± 2.3 mm ($p < 0.001$). In 18.4% of non-compliant fractions, repeat CBCT acquisitions were needed. Technologist-led verbal reinforcement at the time of compliance grading resulted in an increase in compliance from 61% in the first week to 89% after the last week of treatment.

Conclusion:

There is significant inter-fraction setup error in pelvic IGRT due to non-compliance with bladder filling. Non-compliance with bladder filling results in larger CBCT corrections and workflow delays. Adherence is significantly better throughout the treatment course as a result of technologist-led, structured bladder compliance assessment and real-time patient counselling at every fraction. There is a recommendation to formalise this protocol, which is technically driven, as a departmental standard for all centres that provide pelvic IGRT.

Keywords: Bladder filling protocol, CBCT, IGRT, setup reproducibility, pelvic cancer, inter-fraction variation, radiotherapy technologist, , patient compliance

Abstract: 260303

Unplanned Treatment Interruptions in Radiotherapy: Causes, Duration, and the Role of a Radiotherapy Technologist in Prevention

Author's name: Mr. Jitendra Kumar-I, Radiotherapy Technologist
Department of Radiation Oncology, State Cancer Institute; IGIMS, Patna

Background:

Evaluate unplanned radiotherapy interruptions for frequency, causes and duration, impact on overall treatment time (OTT) and opportunities for RTT-led prevention.

Methods:

This study was a retrospective audit of 100 consecutive patients who were treated for curative radiotherapy (RT) during 2025–2026. An unplanned interruption was defined as an interruption of the treatment schedule in which one or more treatment days was missed, aside from holidays and planned breaks. Interruptions were designated as either toxicity/medical, transport/stay-related, social or machine-related. The following factors were noted: tumour site, treatment intent, duration of interruption, and planned versus actual OTT. Potentially preventable events were identified from documented circumstances, and the daily activities of the radiotherapy technologist (RTT) and their interaction with the patient.

Results:

A total of 36 (36%) of 100 patients had at least 1 interruption, for a total of 40 interruptions. Most common were toxicity/medical causes (20, 50%), followed by transport/stay related barriers (16, 40%), social factors (2, 5%) and machine related causes (2, 5%). The median interruption duration was 2 days (IQR 1-4), which added a median of 2 days (range 1-9) to the OTT. Patients with head and neck cancers had more interruptions (15/24; 62.5%) than other tumour sites (21/76; 27.6%; p=0.002). In total, 8 events (20%) were deemed potentially preventable: toxicity/medical (3), transport/stay related (3), social (1) and machine related (1).

Conclusion:

Interruption of treatment was frequent, primarily related to toxicity/medical and transport/stay issues. The daily contact with the patient allows the RTT to detect early treatment-related toxicity and the practical problems that can occur, such as transport, accommodation, financial, family and social problems. 20% of events were "preventable". Avoidable interruptions and OTT prolongation can be minimised through routine RTT-led monitoring, timely communication, supportive interventions and prompt rescheduling. These measures will be assessed during a re-audit.

Keywords: treatment interruptions; overall treatment time; radiotherapy technologist; radiotherapy; clinical audit; treatment compliance.

AGENDA

DAY 1
Friday 09th October

08.30 AM	**Registration**
09:20 AM - 09:30 AM	**Welcome Address**
	Session Coordinators - Dr Reetu, Dr Shambhavi Pandey
09:30 AM - 11:30 AM	**Session 1 - Breast Cancer**
	Chairpersons - Dr Bidyanand Prasad, Prof (Dr) Richa Madhawi, Prof (Dr) Prem Prakash, Dr Minakshi Mishra, Dr Arvind Kumar
09:30 AM - 09:50 AM	**Breast Radiotherapy in 2026: Integrating Landmark Trials and Technological Advances** **Speaker - Dr Sanjoy Chatterjee**
	Chairpersons -Dr Sangita Narain, Dr Sumantra Sircar, Dr Satyendra Narayan Sinha, Dr Sunny Kumar Jha, Dr Ashok Kumar
09:50 AM - 10:10 AM	**Regional Nodal Irradiation in Breast Cancer: who Really Needs it ?** **Speaker- Dr Shekhar Kumar Keshri**
	Chairpersons - Prof (Dr) Ravi Byahut, Dr Manish Kumar(SO), Dr Kanchan Singh, Dr Sweta Kumari
10:10 AM - 10:30 AM	**Motion Management in Breast Radiotherapy** **Speaker- Dr Revathy Krishnamurthy**
	Chairpersons/Judges - Prof (Dr) Seema Devi, Prof (Dr) Pritanjali Singh, Dr Harikesh Bahadur Singh
10:30 AM - 10:50 AM	**Debate - Five Fractions for All?** **Speaker- For the Motion - Dr Tanweer Shahid** **Against the Motion - Dr Amit Kumar**
10:50 AM - 11:20 AM	**Panel Discussion - Oligometastatic Breast Cancer** **Moderator- Dr Vikash Kumar** **Panelists - Dr Ruchi Gupta (RD), Dr Arpana Arbind (Nuclear), Dr Kalpana Chandra (Path), Dr Shravika Akotkar (SO), Dr Avinash Upadhyay (MO), Dr Mukesh Kumar Bharti (RO), Dr Amrita Rakesh (RO)**
	Session Coordinators - Dr Madhuwanti Anand, Dr Aman Kumar
11:20 AM - 12:40 PM	**Session 2 - Lung Cancer**
	Chairpersons - Dr Avinash Upadhyay, Dr Mukesh Kumar Bharti
11:20 AM - 11:30 AM	**Role of Nivolumab in lung Cancer (Supported by Zydus)** **Speaker - Dr Amit Kumar (MO)**
	Chairpersons - Prof (Dr) Manish Shankar, Dr Mosarrat Shahin, Dr Shivani Sinha, Dr Sweta Suman
11:30 AM - 11:50 AM	**Lung Cancer Screening** **Speaker - Dr Abhishek Shankar**
	Chairpersons - Dr Satyendra Narayan Sinha, Dr Amrita Rakesh
11:50 AM - 12:10 PM	**Evolving treatment approaches in Resectable LA-HNSCC Recent Advances with Preoperative IO (Supported By MSD)** **Speaker - Dr. Shekhar Kumar Keshri**

AGENDA

DAY 1
Friday 09th October

	SBRT in Lung Cancer - (Shifted to Day 2) Speaker - Dr Kanhu Charan Patro
12:10 PM - 12:40 PM	Panel Discussion - Locally Advanced Lung Cancer Moderator - Prof (Dr) Rambha Pandey Panelists - Prof (Dr) Umakant Prasad (RD), Dr Chinmoy (Nuclear), Dr Moitri Basu (Molecular), Dr Saurav Singh (SO), Dr Gaurav Kumar (MO), Prof (Dr) Faiz Akram Ansari (RO), Dr Rita Rani (RO), Dr Minakshi Mishra (RO)
12:40 PM - 01:00 PM	Quiz Session (Quiz on Session 1 &2)
01:00 PM - 01:15 PM	Poster Presentation and Judging
01:00 PM - 01:50 PM	Lunch/ Exhibition/Posters
01:50 PM - 02:30 PM	Dr Rangi Prasad Singh Oration Chairpersons - Prof (Dr) Bindey Kumar, Prof (Dr) Om Kumar Prof (Dr) B Sanyal, Padma Shri Dr J K Singh, Prof (Dr) Sudhakar Singh Topic - Cancer Registries in India: Current Status, Challenges and the Road Ahead Orator- Prof (Dr) Prashant Mathur
02:30 PM - 03:30 PM	Inaugural Function Chief Guest Life Time Achievement Award - Prof (Dr) Uday Partap Shahi, Prof (Dr) Satyajit Pradhan Felicitation - Padma Shri Dr P Vijay Anand Reddy, Prof (Dr) Prashant Mathur Guest of Honour - Prof (Dr) S N Senapati, Prof (Dr) Sarbani Ghosh Laskar, Dr Gautam K Sharan, Prof (Dr) Bindey Kumar), Prof (Dr) Om Kumar, Prof (Dr) Bibhuti P Sinha, Prof (Dr) Manish Mandal, Prof (Dr) Rajiv R Prasad Prof (Dr) Rajesh Kumar Singh, Prof (Dr) Dinesh Kumar Sinha, Prof (Dr) Richa Madhawi Invited Guest - Prof (Dr) B Sanyal, Prof (Dr) Ranjit Guha, Padma Shri (Dr) J K Singh, Prof (Dr) Sudhakar Singh, Prof (Dr) P N Pandit Session Coordinator - Dr Banti Kumar
03:30 PM - 04:40 PM	Session 3 - Uro - Oncology Chairpersons - Prof (Dr) Anita Kumari, Dr Richa Chauhan, Dr Nikhil Ranjan, Dr Kunal Kishor
03:30 PM - 03:50 PM	Prostate-only vs Whole-Pelvis Radiotherapy: Are we Ready to Change Practice? Speaker - Dr Sayan Paul
03:50 PM - 04:10 PM	Chairpersons - Dr T M Singh, Dr R K Goswami, Dr Alok Ranjan, Dr Prince Kumar Integrating Immunotherapy with Radiotherapy in Localized and Locally Advanced Bladder Cancer Speaker - Dr Gautam K Sharan

AGENDA

DAY 1
Friday 09th October

04:10 PM - 04:40 PM	Panel Discussion - Trimodality Therapy in Muscle-Invasive Bladder Cancer Moderator- Dr Vinita Trivedi Panelists - Dr Madhukar Dayal (RD), Dr Prabhat Ranjan (Path), Dr Navin Kumar (SO), Prof (Dr) Rohit Upadhyay (Uro), Dr Ridu Kumar Sharma (MO), Dr Navin Nayan (MO), Dr Ravi Roushan Kumar (RO), Dr Santosh Shubham (RO), Dr Aparajeeta (RO) Session Coordinator - Dr Priti Minakshi
04:40 PM - 06:30 PM	Session 4 - Gynae Oncology
	Chairpersons - Prof (Dr) Archana Sinha, Dr Kavya Abhilashi, Dr Kajal Sinha, Prof (Dr) Himanshu Mishra
04:40 PM - 05:00 PM	Gynecological Cancer Survivorship Speaker - Dr Abhishek Shankar
	Chairpersons - Prof.(Dr) Rajesh Kumar Singh, Dr Tanweer Shahid, Prof (Dr) Sangeeta Pankaj, Dr Amrendra Amar
05:00 PM - 05:20 PM	Has Molecular Classification impacted Adjuvant RT in Endometrial Cancer in the Real World ? Speaker - Prof. (Dr) S N Senapati
	Chairpersons - Prof (Dr) P N Pandit, Dr Pragya Mishra Choudhary, Prof (Dr) Neeru Goel, Prof (Dr) Rajiv Ranjan Prasad
05:20 PM - 05:40 PM	Can Adaptive Radiotherapy improve outcome to justify its cost and complexity in Cancer Cervix ? Speaker - Dr Swarupa Mitra
05:40 PM - 06:20 PM	Panel Discussion - Case based Panel Discussion on Recurrent Cancer Cervix Moderator- Dr Shraddha Raj Panelists - Dr. Surabhi (Path), Dr Aishwarya Singh (RD), Dr Arunav Kumar (Nuclear), Dr Anjili Kumari (GynOnc), Dr Abhishek Anand, (MO), Dr Sonia Tiwari (RO), Dr Shiv Shankar Mishra(RO), Dr Kanchan Singh (RO)
06:20 PM - 06:30 PM	Quiz Session (Quiz on Session 3 & 4)
07:30 PM Onwards	Gala Dinner with Musical Evening

AGENDA

DAY 2
Saturday 10th October

08.00 AM	**Registration**
08:00 AM Onwards	**Best Oral Paper Presentation**
	Session Coordinators - Dr Anjali Kumari, Dr Jitesh Kumar
09:30 AM - 11:00 AM	**Session 5 - Head and Neck Cancer**
	Chairpersons - Prof (Dr) Rajiv R Prasad, Dr Aftab Alam Ansari, Dr Mitali Dandekar Lall Prof (Dr) Sanjay Kumar
09:30 AM - 09:50 AM	Adaptive RT in Head & Neck Cancer: Evidence, Workflow & Clinical Impact Speaker- Prof (Dr) Sarbani Ghosh Laskar
	Chairpersons - Dr Neha Gupta, Dr Sneha Jha, Prof (Dr) Sarita Kumari Mishra, Dr Pratik Anand
09:50 AM - 10:10 AM	Curative treatment of locally advanced Carcinoma Nasopharynx - An Update Speaker- Dr Cessal T Kainickal
	Chairpersons - Prof (Dr) Rajesh Kumar Singh, Dr Abhijit Mandal, Dr Subhra Kanti Kundu, Dr Deepali Bhaskar Patil
10:10 AM - 10:30 AM	Artificial Intelligence in Head and Neck Radiation Therapy Speaker- Prof (Dr) Amit Bahl
10:30 AM - 11:00 AM	Panel Discussion - Controversies in Head and Neck Cancer Practices Moderator- Dr S P Shrivastava Panelists - Dr Amar Kumar Singh(RD), Dr Ravishwar Narayan(Nuclear), Dr Zikki Hasan Fatima(OncoPath), Dr. Burhanuddin N Qayyumi (H&N Surgeon), Dr Srinjeeta Garg (SO), Dr Amit Kumar (MO), Dr Rashmi Singh (RO), Dr Tejas Pandya (RO), Dr Sucheta Sharma (RO)
	Chairpersons - Prof (Dr) Biswajit Sanyal, Prof (Dr) S K Suman, Prof (Dr) Sushma Agrawal, Prof (Dr) Shailesh Kumar
11:00 AM - 11:10 AM	From Experience to Precision: Lessons from the Old Era of Radiation Therapy in the Age of Modern Technology Speaker - Prof (Dr) Uday Pratap Shahi
	Chairpersons - Prof (Dr) Seema Devi, Dr Saket Sharma, Prof (Dr) Sheil Avneesh, Dr Nishant Gaurav
11:10 AM - 11:30 AM	SBRT in Lung Cancer (Talk of Day 1 Lung Cancer Session) Speaker - Dr Kanhu Charan Patro
	Chairpersons - Dr Sneha jha, Dr Rashmi Singh
11:30 AM - 11:40 AM	Rapid Arc Dynamic - Rethinking VMAT with a New Approach (Supported by Varian - Siemens Healthineers) Speaker - Dr Tapo Sundar Majumdar
11:40 AM - 12:20 PM	**Dr A D Singh Oration** Chairperson - Prof (Dr) Bindey Kumar, Prof (Dr) Satyajit Pradhan, Prof (Dr) Ranjit Guha, Prof (Dr) P N Pandit, Prof (Dr) Rajiv R Prasad, Prof (Dr) Anup Kumar

AGENDA

DAY 2
Saturday 10th October

	Topic - Purpose, Passion and Perseverance Orator- Padma Shri Dr P Vijay Anand Reddy
	Session Coordinators - Dr Kumar Anupam, Dr Sujit Kumar
12:20 PM - 01:20 PM	**Session 6 - Pediatric Oncology**
	Chairpersons - Prof (Dr) Vijayendra Kumar, Prof (Dr) Richa Madhawi, Dr Amit Kumar, Prof (Dr) Anita Kumari, Prof (Dr) Himanshu Mishra
12:20 PM - 12:40 PM	Optimizing Local Control in Ewing's Sarcoma Speaker- Dr Nehal Khanna
	Chairpersons - Dr Avinash Kumar Singh, Prof (Dr) Rakesh Kumar, Dr Shambhavi Sharan, Prof. (Dr) Manish Kumar
12:40 PM - 01:00 PM	Risk Stratification and Management of Rhabdomyosarcoma Speaker- Dr Amita Mahajan
	Chairpersons - Dr Dharmendra Singh, Prof (Dr) Vinit Thakur, Dr Santosh Shubham, Dr Ashutosh Kr Verma
01:00 PM - 01:20 PM	Recent Advances in Radiation in Wilm Tumour Speaker- Dr Sambit Swarup Nanda
01:20 PM - 01:40 PM	**MOM (Miracle of Mind) - Isha Foundation**
01:20 PM - 02:10 PM	**Lunch**
	Session Coordinators - Dr Sourav Raj, Dr Sudhir Kumar
02:10 PM - 03:40 PM	**Session 7 - Gastro Intestinal Malignancies**
	Chairpersons - Prof (Dr) C Khandelwal, Dr R N Tagore, Dr Nitesh Kumar, Dr Usha Singh
02:10 PM - 02:30 PM	Wait & Watch Strategy after TNT Protocol in Rectal Cancer: How far we Succeeded Speaker - Prof (Dr) Pritanjali Singh
	Chairpersons - Dr V P Singh, Prof (Dr) Sanjeev Jha, Prof (Dr) P K Jha, Dr Vinita Trivedi, Dr Tejas Pandya
02:30 PM - 02:50 PM	SBRT in Hepatocellular Carcinoma Speaker- Dr Kaustav Talapatra
	Chairpersons - Dr Lalit M Aggarwal, Dr Aditya Prakash, Dr Shekhar kumar Keshri, Dr Harihar Nath Tiwary
02:50 PM - 03:10 PM	Oesophageal Cancer: From One-Size-Fits-All to Personalised Radiotherapy Speaker - Prof (Dr) Sunil Choudhary
03:10 PM - 03:40 PM	Panel Discussion - Multidisciplinary Approach in Gall Bladder Cancer Moderator- Dr Sushma Agrawal Panelists - Dr Pallavi Mehra (Path), Prof (Dr) Rajeev Nayan Priyadarshi (RD), Prof (Dr) Rakesh Kumar Singh (GIS), Dr Avinash Pandey (MO), Dr Satyendra Narayan Sinha (MO), Dr Richa Chauhan (RO), Dr Nilesh Mani (RO), Dr Sweta Kumari (RO)
03:40 PM - 04:00 PM	**Quiz Session (Quiz on Session 5, 6 & 7)**
04:00 PM - 04:30 PM	**Valedictory and Vote of Thanks**
04:30 PM - 04:45 PM	**GBM Followed by Official Closure**
04:45 PM - 05:00 PM	**High Tea**

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1 Departmental Profile & Brief History

The Department of Radiation Oncology at the State Cancer Institute, IGIMS, Patna is Bihar's leading centre for advanced cancer care. Over the years, the department has undergone a remarkable transformation — moving from conventional 2D radiotherapy to a full suite of modern techniques including 3DCRT, IMRT, IGRT, and beyond. The newly constructed SCI building houses a TrueBeam Linear Accelerator, Clinac IX, GammaMed brachytherapy unit, CT Simulator, PET-CT, and dedicated MRI — bringing world-class cancer treatment within reach of patients from Bihar, Jharkhand, and beyond. With an active MD Radiation Oncology programme, the department is as much a centre of education and research as it is of clinical care.

3 Infrastructure & Facilities

Equipment

- TrueBeam & Clinac IX Linear Accelerators
- CT Simulator | PET-CT | Dedicated MRI
- GammaMed HDR Brachytherapy Unit
- Treatment Planning System (TPS)
- Quality Assurance Equipment
- Immobilisation Devices

Facilities

- Radiation OPD
- Day Care Services
- Brachytherapy Suite
- Pain & Palliative Care OPD
- Physics Section | Mould Room
- Patient Waiting Area

Treatment Techniques

- 3DCRT
- IMRT
- VMAT
- IGRT
- Adaptive Radiotherapy

The department runs a recognised MD Radiation Oncology training programme alongside BMRT training, building a skilled oncology workforce for the region. Academic activity is sustained through regular tumour board meetings, journal clubs, CME programmes, and participation in national and international workshops and conferences. The State cacner Institute IGIMS, Patna runs Hospital based cancer registry as well as the state's first Population based cancer registry, funded by Indian Council of Medical Research (ICMR).

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