



### Post MRM Radiotherapy in Early Stage Carcinoma Breast with 1-3 Positive Axillary Nodes.

Dr Manoj Gupta, IGMC, Shimla

Early stage breast cancer is defined as stage I & II or tumor less than 5cm with or without axillary node metastasis. Older randomized studies have demonstrated that in early stage breast cancer in the absence of radiotherapy (RT), loco regional recurrences (LRR) can occur in approximately 25%-40% of node-positive patients, and up to 15%-20% of node-negative patients, who do not receive systemic therapy(1,2). The recurrence will further depends upon the number of nodes involved in axilla. The loco regional recurrence may go up to 15% in 1-3 positive nodes and up to 50% in 4 or more than 4 positive nodes. The most frequent site of loco regional recurrence (LRR) is the chest wall (>50%), followed by supraclavicular nodal regions (20-40%). In an adequately dissected axilla up to level I & II lymph nodes, the chances of recurrence in axilla is very low and is usually less than 5%. Clinical detection of internal mammary (IM) nodal recurrences is rare, as they are primarily detected by imaging (3). The overall risk of LRR, including the chest wall and nodal sites, is influenced by tumor size, tumor grade, the presence or absence of lymphovascular space invasion, surgical margin status, involvement of the fascia or skin, the number of involved lymph nodes (LNs), and the percentage of nodal involvement (or nodal ratio). With the increasing understanding of importance of biologic subtype in breast cancer, retrospective data suggest that estrogen receptor (ER)/ progesterone receptor (PR) negative and HER-2 positive tumors have higher LRR as compare to hormones receptor positive or HER-2 negative tumors(4,5). Multiple trials over the last several decades have demonstrated that adjuvant postmastectomy radiotherapy (PMRT) reduces the risk of LRR. However, prior to the publication of the relatively recent randomized trials from the British Columbia Cancer Agency and the Danish Breast Cancer Cooperative Group, the use of PMRT was thought to improve local control only, without a significant effect on survival. These large prospective randomized trials, initially published in 1997 and 1999 and subsequently updated in 2005 and 2006, were the first trials using modern radiation techniques to demonstrate not only an improvement in local recurrence with the use of PMRT, but also an improvement in survival (6-10).

Danish 82b trial is a two arm randomized study which includes around 1700 pre menopausal women with T1 & T2 tumor (85%) with pathological positive axillary nodes (two third of patients having 1-3 positive nodes). The one arm was treated with CMF chemotherapy alone while the other arm was treated with CMF along with post mastectomy radiotherapy to chest wall and all regional nodal areas like axilla, supraclavicular and internal mammary. The 10 year disease free survival was 34% vs 48% with a p value of <0.001, and 10 year overall survival was 45% vs 54% with a p value of <0.001 which was statistically significant. Multivariate analysis confirmed that irradiation after mastectomy was a statistically significant factor in improving DFS and OS rate. This finding was observed across all patients irrespective of size of the tumor, number of positive lymph nodes or tumor grade and the advantage of PMRT were maintained with longer follow up. Danish 82c trial was similar in design but include post menopausal women only. Around 1400 patients with majority of T1 & T2 tumor (87%) with positive nodal metastasis in axilla (58% having 1-3 positive nodes) were randomized into PMRT + Tamoxifan arm and Tamoxifan alone arm. At a median follow up of 10 years the patients treated with PMRT had better DFS (36% vs

From the office of Secretary General, AROI, ICRO and Editorial Board

Dear Colleagues

As academic activities of zonal chapters have already kicked in, it is time to prepare for annual AOI meet in Manipur, a scenic, unexplored and mystic North East state which will be humming with academic activities in Nov. 2014.

Also these three months of the year are full of fun and festivities as we prepare ourselves to celebrate Diwali, Eid, X-mas and New Year. From AROI offices we wish you all great celebrations ahead.

AROI teaching programs have shown good attendance and reports from teaching centres are very encouraging. We look forward to setting great standards of learning from these programs to set the bar high for Radiation Oncology.

Best wishes always,

Dr. Rajesh Vashistha  
Secretary General AROI

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24%) and OS (45% vs 36%), which was highly statistically significant.

The Canadian trial also examined the outcomes for node positive pre menopausal patients randomized to CMF chemotherapy alone versus CMF along with post mastectomy radiotherapy to chest wall and all nodal regions. Total number of patients was 318 with majority having T1 & T2 tumors and positive axillary nodes (around 60% having 1-3 positive nodes). At median follow up period of 15 years, the disease free survival (33% vs 50%) and overall survival (46% vs 54%) was higher in patients treated with PMRT. This advantage of PMRT was maintained even for longer follow up of 20 years as reported in updated results of British Columbia Study in 2005 (8). These three landmark trials clearly showed the impact of PMRT not only reducing the loco-regional recurrences but also to improve the overall survival in early breast cancer patients with positive nodes. Though none of the three trials address the issue of PMRT in 1-3 positive nodes but since two third of patients in these trials had 1-3 positive nodes, the same advantage may be expected in this subgroup of patients as well.

These three trials were criticized mainly by the inferior surgical procedure done on these patients which was reflected from high loco-regional recurrences in patients treated with surgery alone. The loco-regional recurrence was 30% in Danish trial and 33% in Canadian trial while it was between 10 to 20% in other early breast cancer trials where surgery alone was done. The Eastern Cooperative Oncology Group (ECOG) reported around 13% LRR in its chemotherapy prospective study of similar population of the patients (11). Similarly, the National Surgical Adjuvant Breast and Bowel Project (NSABP) reported up to 15% local recurrences in patients with early breast cancer with 1-3 positive nodes (12). The median number of axillary lymph nodes removed in Danish and Canadian studies was 7 and 11 respectively while the median number of nodes removed in ECOG and NSABP trials was 15 and 16. The less number of nodes will underestimate the true nodes involved by metastasis and will overestimate the impact of local radiotherapy on outcome. To overcome this criticism, the Danish breast Cancer Group reanalyzed their data from 83b and 83c trials and included the patients in whom the number of lymph nodes removed was more than eight (13). The patients were further subdivided into two groups. One with 1-3 positive nodes and other with 4 or more than 4 positive nodes. The patients with 1-3 positive nodes showed the reduction in LRR from 27 to 4% at 15 years follow up with an improvement in overall survival from 48 to 57% which was statistically significant. Similarly in patients with 4 or more than 4 positive nodes, the reduction in LRR was from 51 to 10% while overall survival was improved from 12 to 21% at 15 years which was again significant. These findings clearly show that PMRT not only improve the local control but also overall survival in patients with 1-3 positive nodes.

The other interesting observation from this subgroup analysis was that in patients with 1-3 positive nodes the absolute gain in Local control by PMRT was 23% which translated in an absolute gain in overall survival of 9%. In patients with 4 or more than 4 positive nodes the corresponding figures are 41% and 9%

respectively which reflects that though the impact of PMRT in reducing the LRR was much higher (41%) than in patients with 1-3 positive nodes (23%) but this did not translate into proportionate increase in improvement of overall survival as both group had similar survival advantage of 9%. To explain this clinically interesting fact, the group generated a hypothesis. As per this hypothesis, higher the metastatic potential of the tumor less is the impact of local radiotherapy in improving the survival. That is why, the patients with 4 or more than 4 nodes had disease with high metastatic potential with relatively less impact of local RT on overall survival as compare to patients with 1-3 nodes who had disease with less metastatic potential and thus relatively more impact of local RT in improving overall survival. To validate this hypothesis another subgroup analysis by the same group was published in 2009 (14). All the patients from 83b and 83c trials were categorized in three risk group. Good risk patients have any four of the five favorable features like size <2cm, <=3 nodes, grade 1, ER & PR positive and HER2-neu negative. The Poor risk category includes patients with two of the three unfavorable features like size > 5cm, grade III and nodes > 3. The intermediate risk group includes all the patients who do not qualify to enter into previous two groups. They found that the local recurrence in surgery arm alone is highly dependent on this risk category, with 50%, 26% and 11% LRR in good, intermediate and poor risk patients respectively. They further studied the impact of PMRT on reducing the local recurrence at five year and reducing the breast cancer mortality at 15 year. In the category of good risk patients, the five year LRR is reduced from 11% to 0% (absolute gain 11%) which translate into reduction in breast cancer mortality at 15 years from 33% to 22% (absolute gain 11%). In intermediate risk patients, the absolute gain in improving the local control was 21% (LRR reduced from 26 to 5%) which translated into an absolute improvement in disease specific survival of 11% (the breast cancer mortality reduced from 61 to 50%). The absolute gain in local control in poor risk category was highest i.e. 36% (LRR reduced from 50 to 14%), but reduction in breast cancer mortality was nil as with or without PMRT, the breast cancer mortality was 81% in both arm. This clearly reflects that as the metastatic potential of the tumor increases from good risk category to poor risk category, the impact of PMRT in reducing the local recurrence increases but this does not translate into proportionate increase in disease specific survival. These clinical findings validate the hypothesis that tumor with more metastatic potential will have least impact of local control on survival and treatment for early disease should be aggressive for better local control which will also improve the survival.

Another important data for PMRT in early stage breast cancer with positive axillary nodes come from Early Breast Cancer Trialists Cooperative Group (EBCTCG) meta analyses popularly known as Oxford Review which is published at regular intervals. Oxford 2005 meta analysis involving 8500 patients with nodal metastasis showed that at five years the local recurrences are reduced from 22.8% to 5.8% by PMRT which translate into reduction in breast cancer mortality from 60.1% to 54.7% and improvement in overall survival at 15 years from 35.8% to 40.2% (15). Based on these clinical findings, they put forward the rule of

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4:1 which says that for every four local recurrences avoided at 5 years one breast cancer death is avoided over the following 15 years. Another important observation of this meta analysis was that the advantage of PMRT in reducing the breast cancer death is maintained with time but the same advantage in overall survival diminishes with time. This reflects that with time the incidence of non cancerous death increases which is attributed to the late side effect of PMRT specially the radiation induced cardiac related deaths. Though this meta analysis clearly shown that PMRT not only improve the local control but also improve the survival in patients with positive nodes, but did not address the issue of impact of PMRT in patients with 1-3 positive nodes. Recent Oxford meta analysis published this year addressed this specific population of breast cancer (16). In this meta analysis only patients with 1-3 positive nodes were included in whom adequate lymph node dissection up to level II was done. Total 1133 patients included. The results showed that the PMRT reduces the local recurrence at 10 years from 21% to 4.3% which was statistically highly significant. This translates into reduction in breast cancer mortality from 49.4% to 41.5% at 20 years which was again statistically significant. This advantage was seen irrespec-

tive of number of lymph nodes involved among patients with 1-3 positive nodes.

All these data make strong case for post mastectomy radiotherapy in patients with early breast cancer with 1-3 positive nodes. The early breast cancers are being treated by breast conservative treatment these days but in India, still majority of the patients are treated with modified radical mastectomy. So we encounter this issue more commonly as compare to our counterparts in western world. Moreover, in our country, breast surgery is done by all kind of surgeons like general surgeons, endocrine surgeons and onco surgeons sitting in periphery or in district hospital or in tertiary care center. This results into the quality of surgery varying widely across the patients. This makes our patients similar to patients accrued in Danish and British Columbia Trials, where the impact of PMRT was highest. Moreover the loco regional recurrences after mastectomy are a very debilitating disease and hard to manage successfully. All these factors and strong evidence available in the literature strongly support the use of post mastectomy radiotherapy in patients with early breast cancer with 1-3 positive nodes.

*Dr. Manoj Gupta, IGMC, Shimla*

## CME at Ahmedabad on Re-irradiation—from limits to options

Recurrences after radiation have become a common problem and the fact is that more than 50 percent of loco regionally advanced cancer recurs in initial few years after treatment. Having seen a good number them in our daily practice it is frustrating for the treating physician or surgeon. To comprehensively address this issue HCG cancer center Ahmedabad conducted national CME the theme for which was Re-radiation- From limits to options on 30<sup>th</sup> and 31<sup>st</sup> August 2014.

Reirradiation is not a new concept. With the technological revolution in Radiation Oncology like image guided Radiotherapy, IMPT, SBRT, image guided brachytherapy with better imaging to define the target, concept of biological target volume and better understanding of radiation biology- it is showing promise to be a safe and effective modality in carefully selected patients.

The purpose of this scientific meeting was to share UP TO DATE information pertaining to the topic and to estab-

lish guidelines for the practice and prospective evaluation of RE-Radiation patients. Renowned international and national faculty covered the topics in a very focused and succinct manner. Dr Suresh Senan came from Netherlands VUMC who besides talking on Lung reradiation also spoke on 'Role of Particle Radiotherapy in Reradiation'. Head and neck recurrences constitute the maximum load of patients at any clinic. Hence full half day on 31<sup>st</sup> August was allotted to discuss all aspects of this including surgical and chemo perspective and this was followed by panel discussion which was moderated well by Dr J.P. Agarwal

Overall this was a good scientific meet as this issue was addressed for the first time at National level comprehensively. Clear take home message was given as to when, which cases and sites and how the Reradiation has to be delivered.

*Dr Vivek Bansal*

*Director and Head, Radiation oncology*

## Maharashtra Chapter & Central India, Joint AROI Conference, 2014 at Nagpur on Aug 15-18

The theme of the conference was "The Multiplex of Radiation Therapy Modalities, Defining the Role". Four major sessions were held on Head & Neck, Lung, Gynaec & Breast cancers & 2 minor sessions on Esophagus & Prostate. A session on 'Radiation Technology' was held where all the latest technological developments in the field of radiation oncology were discussed. Lectures on E-LORA & Cancer Registry were also included. More than 152 delegates attended the conference. The conference ended with an excursion to Pench Tiger Reserve near Nagpur



**G C Pant Young Doctor Award**

Sr. No	LM No.	Name	Institute
1	1311	Dr. Suparna Kanti Pal	IPGE&R, Kolkata
2	1754	Dr. Milind Shetty	MSRC, Bangalore
3	1672	Dr. Animesh Shah	TMC, Kolkata
4	1485	Dr. Ajeet Gandhi	AIIMS, New Delhi
5	976	Dr. Ashu Abhishek	Medanta,Gurgaon,
6	1504	Dr. Irfan Bashir	BH&MRC, New Delhi
7	1413	Dr. Yashpal Verma	MSRMC, Bangalore
8	1620	Dr. Mayank Aggarwal	BLKSSH, New Delhi
9	1776	Dr. Pavan Kumar	NIMS, Hyderabad
10	915	Dr. Shikha Goyal	Medanta Gurgaon
11	1316	Dr. Mranalini Verma	SGPGI, Lucknow,
12	1627	Dr. Naveen Bellutagi	KCTRI, Hubli
13	2149	Dr. Ahitagani Biswas	AIIMS, New Delhi
14		Dr. Rajender Kumar	Max Salet, New Delhi

**Dr. M S Gujral and Dr. J M Pinto Gold Medal**

1	1853	Dr. Arjit Sen	RGKMCH, Kolkata
2	2019	Dr. Saptarshi Ghosh	GSLMCGH, Rajamundry
3	1968	Dr. Vishal Manik	MMC, Chennai
4	1947	Dr. Rahul Misra	GCRI, Ahmedabad
5	1948	Dr. Jyoti Poddar	GCRI, Ahmedabad
6	1851	Dr. Arnab Bhattacharjee	RGKMC , Kolkata
7	2005	Dr. Raviteja	PGIMER, Chandigarh
8	1993	Dr. Dulalakiran Mondal	IMS, BHU, Varanasi.
9	1841	Dr. Monodipa Mondal	MC Kolkata
10	2033	Dr. Parna Basu	RGKMCH, Kolkata
11	1849	Dr. Akhil Kapoor	SPMCH Bikaner
12	2049	Dr. Suchanda Bhaumik	KMIO, Bangalore
13	1852	Dr. Soumadip Panda	RGKMCH, Kolkata
14	2204	Dr. Bharat	AIMS, Kochi.
15	1986	Dr. Avinash Pillar	TMH, Mumbai
16	2151	Dr. Karan Chanchlani	PGIMER, Chandigarh.
17	1989	Dr. Archya Das Gupta	TMC, Mumbai
18	1954	Dr. Ritika Harjani	MSRMC, Bangalore
19	2225	Dr. Jyostha Elagandula	MSRMC, Bangalore
20	2095	Dr. Lalitha Nillore	JH, Mumbai
21	1955	Dr. Ram Abhinav	MSRMC, Bangalore
22	2187	Dr. Vamsi Raj Kota	IGIMS, Patna
23	1935	Dr. Arvind Murthy	MSRMC, Bangalore
24	1995	Dr. Richa Tiwari	KMIO, Bangalore
25	2132	Dr. Mani Kandan	AIIMS, New Delhi
26	2029	Dr. Swetha Ninutha	breast cancer

**Dr. M S Gujral and Dr. J M Pinto Gold Medal**

Sr. No	LM No.	Name	Institute
27	1982	Dr. Santanu Samanta	CMC, Vellore
28	1998	Dr. Maneesh Singh	GGSMCH , Faridkot
29	2073	Dr. Sivasubramaniam	PGIMER, Chandigarh
30	1972	Dr. Nithin Bhaskar	BMCRI, Bangalore
31	1987	Dr. Arpita Bindal	TMH Mumbai

**Medical Physics Gold Medal**

1	1741	Mr. Amrinder Chabbra	MSSH, Bathinda
2	2229	Ms. Manimala	MDOH, Lushiyana
3	2240	Mr. Ebnezer	CMC, Vellore

**Excellent Proferred paper <40 years**

1	1351	Dr. Saikat Das	CMC Vellore
2	997	Dr. Kanhu Charan	MGCHRI, AP
3	1158	Dr. Manjinder	Max, Bathinda
4	1232	Dr. Sharaddha	VMMC&SH, Delhi
5	2052	Dr. Deep Shankar	SRHU, Dehradun
6	1090	Dr Kailash Mittal	UPRIMS&R, Etawah

**Excellent Proferred paper > 40 years**

1	814	Dr. Rohini Sethi	DRMLIMS, Lucknow.
2	803	Dr. U Suryanarayna	GCRI, Ahmedabad
3	224	Dr. Vijay Anand Ready	Appolo, Hedrabad
4	130	Dr Sankara M Doddala	Omega, Hyderabad
5	1068	Dr C G Prameela	AIMS. Kochi.
6	1289	Dr. Amit Kumar	MTMH, Jamshedpur

**Neill Joseph Fellowship**

1	1862	Dr. Chandrima Banrjee	IPGMER, Kolkata
2	1859	Dr. Rituparna Biswas	IPGMER, Kolkata
3	1968	Dr. Vishal Manik	MMC, Chennai
4	1966	Dr. A Ramya	MMC, Chennai
5	2204	Dr. Bharat	AIMS, Kochi.
6	1911	Dr. Nihkila	BMC, Bengaluru
7	2007	Dr. Vijay Karan Reddy	CI, Chennai.
8	1845	Dr. Tanmoy Ghosh	MC, Kolkata
9	1843	Dr. Sreya Mallik	MC, Kolkata
10	1841	Dr. Monodipa Mondal	MC, Kolkata
11	1844	Dr. Debottam Barman	MC, Kolkata
12	1851	Dr. Arnab Bhattacharjee	RGKMC, Kolkata
13	2036	Dr. Anbarsi	CI, Chennai
14	2025	Dr. Ravindra Nandhana	GSLMC,Rajahmundry,
15	1720	Dr. K Chandrlekha	CMC, Vellore
16	1852	Dr. Soumadip Panda	Kolkata
17	1871	Dr. Anirban Helder	IPGMER, Kolkata



**Neill Joseph Fellowship**

Sr. No	LM No.	Name	Institute
18	1947	Dr. Rahul Misra	GCRI, Ahmedabad
19	2033	Dr. Parna Basu	RGKMC, Kolkata
20	1982	Dr. Santanu Samanta	CMC, Vellore
21	1853	Dr. Arjit Sen	RGKMC, Kolkata
22	1948	Dr. Jyoti Poddar	GCRI, Ahmedabad
23	2151	Dr. Karan Chanchlani	PGIMER, Chandigarh
24	1954	Dr. Ritika Harjani	MSRMC, Bangalore
25	1955	Dr. Ram Abhinav Gujral	MSRMC, Bangalore

**Age Group < 35 year**

1	1485	Dr. Ajeet Gandhi	AIIMS, New Delhi
2	1308	Dr. Supriya	AIIMS, New Delhi
3	1394	Dr. Anshuma Bansal	RDIMS, Amritsar

**Age Group 35 –40 years**

1	1350	Dr. Saikat Das	CMC Vellore
2	1436	Dr. Arshad Manzoor	SKIMS, Srinagar J&K
3	937	Dr. Pankaj Kumar	MSSH, Mohali
4	944	Dr. Partha Sarthy	MGCH Vishakhapatnam,
5	1504	Dr. Irfan Bashir	BHMRC, New Delhi
6	1140	Dr. Anis	MCH, kolkata.
7	934	Dr. Shbab Angurana	GMC, Jammu
8	915	Dr. Shikha Goyal	Medanta , Gurgaon,
9	1471	Dr Sandeep Kaur	GMC, Jammu

**Age Group 40-50 years**

1	928	Dr. Manish Gupta	IGMC Shimla.
2	262	Dr. Shaleen Kumar	SGPGI Lucknow
3	787	Dr. Gautam K Sharan	MNBCI, IBH, Pune
4	783	Dr. Piyush Kumar	SRMSMS, Lucknow
5	814	Dr. Rohini Sethi	DRMLIMS, Lucknow.

**Age Group >50 years**

1	87	Dr. Kishore Singh	MAMC& LNH, Delhi
2	803	Dr. U Suryanarayn	GCRI, Ahmedabad
3	769	Dr. K K Singh	PIMS, Loni
4	401	Dr. Dinesh Singh	ACH, Delhi

**Medical Physicists Fellowship**

Sr. No	LM No.	Name	Institute
1	2226	Mr. Christy Alekchander	MSSH, Bathinda

**Radiotherapy Technologist Fellowship**

1		Mr. Govind Kumar	MSSH, Bathinda
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Due care has been taken in preparation of list. In case of E&O, please report to AROI secretariat.

**AROI members going places**

Pleased to inform you all that Dr. J K Singh from Patna has been elected as National Vice-President of IMA (Indian Medical Association) New Delhi for 2014-2015. It is matter of great pride for all of us and we congratulate him on this achievement.

**Top Cancer Center in the U.S. Honors Dr. Nori**

Memorial Sloan-Kettering Cancer Center, one of the top cancer centers in the world, honored Dr. Nori with the "Distinguished Service Award" for his outstanding contributions and pioneering work at Memorial as Chief of the Brachytherapy Service. Dr. Nori introduced many innovative cancer programs for breast, lung, gynecological and genitourinary cancers which have become the standard of care at the present time.

Dattatreya Nori, M.D., FACR, FACRO, is Professor and Chairman of the Radiation Oncology Department at New York Hospital Queens and Professor and Executive Vice-Chairman of the Radiation Oncology Department at New York-Presbyterian Hospital-Weill Cornell Medical Center.

Dr. Nori established Shirdi Sai cultural and community centers, one in New Jersey and one in New York which conduct free educational classes on weekends for all grades, from all ethnic groups, to impart moral and ethical values and to educate on American and Indian history.

**17th ICRO Program at TMC, Mumbai**

Tata Medical Center was proud to host the 17th ICRO program, focussing on Lung Cancer management. The design of the program was holistic with a view to deliver an all round view to lung cancer care, starting from warning signs, diagnosis routine management and a peep in to higher techniques. Experts who specialise on each of the management of

lung cancer were available to discuss each of their lectures with the students and a hands on workshop was organised to enable students get a practical experience of radiation therapy in Lung cancers.

Evening dinner was ice-breaker between It was our pleasure to host the 17th ICRO and we would like to take the opportunity to thank the ICRO central body, AROI central and state chapters for their cooperation. Sponsorship from Sun pharma must be acknowledged.

Dr. Sanjoy





## Forthcoming Events 2014

### National

#### November 2014

##### 20-22 AMPICON-2014

Rural Medical College, Pravara

Email : [ampicon2014@gmail.com](mailto:ampicon2014@gmail.com)

Website : [www.pravara.com/ampicon2014.html](http://www.pravara.com/ampicon2014.html)

#### December 2014

##### 26-28 ISMPOCON-2014

Hotel Hyatt Regency, KOLKATA

Email : [ismpocon2014@gmail.com](mailto:ismpocon2014@gmail.com)

Website : [www.ismpo.org/ismpocon](http://www.ismpo.org/ismpocon)

Jan 10<sup>th</sup>-11<sup>th</sup> 2015, Bhubaneswar  
**YROC 2015**  
*learn, share & grow*  
[www.yroc2015.com](http://www.yroc2015.com)

Compilation by :Dr. Pardeep Garg, Faidkot

### ICRO PG teaching course: Conducted in RCC, Trivandrum on 27<sup>th</sup> and 28<sup>th</sup> September 2014

The 18<sup>th</sup> ICRO PG Teaching Course was conducted on 27<sup>th</sup> and 28<sup>th</sup> of September 2014 in RCC, Trivandrum jointly by the Division of Radiation Oncology of RCC and the Department of Radiotherapy, Medical college, Trivandrum. The Programme was inaugurated by Prof M Krishnan Nair, founder Director Of RCC at 8.45 am on the 27th. The chief guest was Prof Paul Sebastian, Director RCC, Trivandrum., Dr Ramesh Billimaga and Rajesh Vashistha, President and Secretary of AROI and Dr Jose Tom, President AROI Kerala chapter gave felicitation. The Chairman of ICRO, Dr Vijayanand Reddy made introductory remarks and Dr GV Giri thanked all.

The programme focussed on cancers of oesophagus, stomach and rectum. It covered multidisciplinary management of all these cancers. The faculty included Prof Iqbal Ahmed, Dr Roshini Shyam,

Dr M Udayakumar Maiyya Prof Subhashini John, Dr CD Sivanandan, Dr Chandramohan, Dr A Sajeed, Dr MK Mahajan, Prof Sela Luxmi, Dr Ramesh Rajan, Prof Mahadevan R, Dr Jayaprakash Madhavan, Dr Reena Engineer, Dr Sreejith M Nair and Dr Cessal Thomas Kainickal.

84 post graduate students from different states of India attended the programme. There was a quiz programme at end of the course on 28<sup>th</sup> afternoon.

We express our gratitude to Sun Pharmaceuticals for the unrestricted educational grant.

Prof PG Jayaprakash was the organising chairman, Prof KL Jayakumar, Vice Chairman and Dr Francis V James, Organising secretary at Trivandrum, Kerala



## FMRI holds Fortis Radiation Oncology Annual meet

Fortis Memorial Research Institute, Gurgaon, organized second "Fortis Radiation Oncology Annual" on 30 -31 August 2014. The theme of the conference was "Hypofractionated Radiotherapy-Reduced time, enhanced gains". The CME dealt with various facets of hypofractionated radiotherapy (including SBRT and SRS) The CME was attended by oncologists, Radiation Oncologists, Medical Physicists, Radiation Therapy Technologists, Residents and research scholars. Interested topics from the same will be covered in future issues.

## 3D printers enter Radiotherapy field to enhance customized treatment

3D printers which work on additive manufacturing process have entered into medical field by storm. These printers have challenged not only the traditional manufacturing process but put rapid prototyping into the hands of user or literally on their desktop.

These printers work on very simple principles:

Design the product in 3D using Auto-cad, Solidworks or Sketchup alternatively

Load CT Dicom images into your TPS and segment structure contours as models using 3D Slicer RT and Meshmaker

Convert the model into .slt, or .obj format which are printer friendly.

Load make format of your model into printer.

Select the build material and building format (fill, raft, support)

Printer will make (print) your design in 3D to the scale or otherwise as desired.

Applications in radiation oncology could be customized phantoms, bolus, accessories or brachytherapy applicators.

At Max Patparganj we have explored potential of 3D printer (Makerbot, USA) for customized bite blocks and found their application encouraging. Further investigations are on.

Venkat K & D Arora, Max Patparganj, Delhi

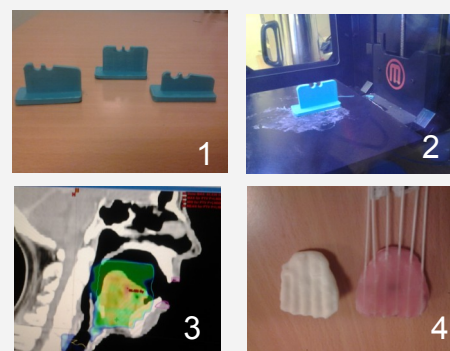


Fig.1 Different size 3D printed bite blocks

Fig.2 Bite Block being 3D printed

Fig. 3 Bite Block In-situ (hardly visible on CT)

Fig.4 BT Surface Mould 3D print (white)

## Response to last issue question

### Are we ready for incident free radiation treatment delivery ?

*Human endeavour has been to deliver services and products in perfection but none of the process or product is mistake-proof. If we take service industry like air travel or medical treatment, emphasis is to deliver services incident free. However sporadic incidents from time to time indicate that there is always a chance for improvement in service or product/process so that minimal non-value additions are there and client gets value for money with pleasurable experience.*

*Indian experience in Radiation Oncology on incidence reporting has been very dismal. With millions of radiation treatment hours across the country, there is hardly any reportage on incidences happening around, can we assume there is hardly any miss treatment or if happening, there is neither departmental nor hospital level incident reporting process.*

*Senior observers believe that for one reported incidence there could be six more which could have gone unreported. Reason for this could be that instead of finding out "Why it happened?", we try to find out "who did it?" and instead of fixing the problem or process, we try to "fix" the person itself. Result is that no one reports the incidence.*

*In my opinion, each Radiation Oncology department must have task force to handle the incidents, must have clear cut policies on what to call incident, how to report and how to judge its severity. Task force must do the process mapping to remove/strengthen the weak links from the chain of radiation treatment delivery.*

*An open forum must be created to share such incidents so that others can learn from the mistakes and ensure incident free radiation treatment delivery at their places.*

Deepak Arora

Consultant Medical Physicist, Max patparganj, New Delhi

Views expressed are personal by respondent to question of the issue.—Editor

## Question of this issue

### Potential of proton/ion therapy in Indian context ?

Please send your reply for publication in next issue of AROI newsletter to [deepak.arora3@maxhealthcare.com](mailto:deepak.arora3@maxhealthcare.com)