

General Information about the department

(Summary about the milestones of the Department, academic facilities, research facilities, staff, no. of Post graduate students, Fellowship students, various courses including Allied health sciences & Paramedical courses and services provided by the department)

DEPARTMENT OF RADIATION ONCOLOGY (Estd 1965).

VICTORIA HOSPITAL

BANGALORE MEDICAL COLLEGE & RESEARCH INSTITUTE

The department of **radiotherapy** was inaugurated by the then **Prime Minister Lal Bahadur Shastri** on 23 January **1965**. The **Telecobalt** machine was a gift from the **Canadian Government** to this department. It is the **first radiotherapy center** in Karnataka. The **First Deep X ray therapy** unit was used here. **Radium** was used here for brachytherapy procedures. **Post graduate** courses started in **1973**.

Presently at the Department of Radiotherapy there are **1 Professor, 2 Assistant Professors, 2 Senior Resident** and 3 Radiotherapy Technologist 1 Medical Physicist cum Radiation Safety Officer.

The primary aim of radiotherapy is to deliver a certain well-defined dose of radiation to the tumor volume with maximum sparing of the surrounding normal tissues. The developments in radiation planning and delivery technology over the years are targeted towards fulfilling this aim.

We **register** about **600 new Cancer cases**, every year & **3000 follow up** cases every year. We get patients from primary health care centre, secondary health care centre and also in house references from the department of ENT and General Surgery.

Head & Neck cancer require **high precision radiotherapy** technique like 3DCRT, IMRT and electrons which are the standard of care for **early stage cancers** with a **very good outcome**.

Mould room facilities are essential for all patients treated with radiotherapy and are the accepted **standard of care**.

Carcinoma cervix which is the **commonest** in our country requires **brachytherapy** which forms an **integral part** of the management of disease.

Cancer breast the next commonest cancer in women **requires simulation** for appropriate **planning** of treatment to **prevent radiation induced toxicity**.

Brachytherapy is used in the management of cancer. The radiation is delivered from within or very close to the tumor compared to from a distance in case of external radiation delivered through a linear accelerator (LINAC). Its commonly used as:

- i. **Definitive** in case of early stage cancers of head & neck, oesophagus
- ii. **Adjuvant** as in breast cancer and sarcomas.
- iii. **Boost** for carcinoma cervix, oesophagus, endometrial cancers, nasopharyngeal cancer
- iv. **Palliative** in recurrent, residual disease, cholangiocarcinoma and oesophagus.
- v. **Benign tumor** conditions like the Keloids pterygium

HDR Brachytherapy (High Dose Rate Brachytherapy – Remote after loading) – Radiation source used in **Cobalt-60**

Steps of treatment:

1. In operation theatre under anesthesia the steel needles or tubes as the case may be are inserted inside the tumor as planned by the radiation oncologist.
2. Post recovery the region of interest is imaged using Computerized Tomography (CT) or MRI and transferred to the treatment planning system dedicated exclusively for the purpose.
3. The area to be treated is marked / delineated by the radiation oncologist and dose is prescribed (standard dose and fractionation based on the area of treatment is chosen).
4. Treatment planning is done by the Medical Physicist cum RSO (Radiation Safety Officer).
5. The plan is reviewed by the treating radiation oncologist ensuring the tissues / organs are receiving dose within the tolerable limits and approves the same.
6. The plan is transferred to the treatment console of the Brachytherapy machine.
7. Patient is shifted to the treatment room (radiation shielded room) and the transfer tubes are connected to the steel needles or tubes and the room is secured ensuring none other than the patient is in the room. However, the patient is monitored through CCTV / 2way audio from the treatment console.
8. The 1st fraction of treatment is delivered as per the plan approved for a specified duration of time remotely through the console through the movement of the radiation source through a guide wire and pulley mechanism. After treatment the radiation source retracted back to the vault inside the machine. Each fraction is delivered after a minimum gap of 6 hours.
9. After all the planned fractions are delivered the applicator/ steel needles or tubes are removed. The patient is discharged within few hours.
10. Often patients of boost and definitive treatment requires to be admitted in the hospital for couple of days and preferably nearby to the treatment area to avoid displacement of steel needles or tubes.

The radiation cobalt source (1mm diameter x 5mm in length) delivers radiation (through a computerized planning system) inside the tumor through steel needles and tubes inserted into the tumor (as delineated using CT scan images – 3D planning).

Teaching faculty

(Unit wise data)

Sl. No	Name	Qualification	Designation
1.	Dr Amrut S Kadam	MDRT, PGDHHM, FIACA, FAROI	Prof & HOD
2.	Dr Chendil.V	MDRT	Assistant Professor
3.	Dr Rajesh.Javarappa	DMRT, MDRT	Assistant Professor
4.	Dr Aruna	MDRT	Senior Resident

Non teaching faculty

Sl. No	Name	Qualification	Designation
1.	Mrs Mahitha K C	MSc Radiation Physics	Radiation Physicist and Radiation Safety Officer
2.	Mr Suresh	BSc Radiotherapy	Radiotherapy Technician
3.	Mr Tulasi Ramu	BSc Radiotherapy	Radiotherapy Technician
4.	Mr Raja	BSc Radiotherapy	Radiotherapy Technician

Services given by the department (Include specialty clinics, outreach programmes, Community programmes, any other services etc.)

Sl. No.	Programmes/Services	Concerned staff	Time/Period
1	Day Care Chemotherapy	Teaching Staff	9:00 to 16:00 hrs
2	Cancer Screening	Teaching Staff	9:00 to 16:00 hrs
3	Consultation and new patient work up	Teaching Staff	9:00 to 16:00 hrs
4	Second opinion on treatment	Teaching Staff	9:00 to 16:00 hrs
5	Daily Radiation treatment (Telecobalt)	Teaching and non teaching staff	9:00 to 16:00 hrs
6	Follow up of cancer patients	Teaching Staff	9:00 to 16:00 hrs
7	High Dose Rate Brachytherapy	Teaching Staff	9:00 to 16:00 hrs

Academic Activities

Teaching programme

For the month of		
Sl. No	UG (numbers/--month)	PG (numbers/month)

Theory classes	NA	8
Practical classes	NA	3
Seminars	NA	4
Journal club	NA	1
Guest lectures	NA	1
Case presentations	NA	3
Any others (Specify)	NA	NA

Research Activities

Research Projects—2019, 2020 (ongoing) (Exclude Dissertation)

Sl. no	Title of the project	Name & Designation of the Principal investigator

Publications of the faculty and students 2019, 2020

Sl. No	Publication in Vancouver style	National/ International
1	Sindhu Nagaraj, Rajesh Javarappa, V. Chendil et al. Changes in Pulmonary Function and Development of Clinical Radiation Pneumonitis in Breast Cancer Patients following Post Mastectomy Radiation Therapy. Journal of Analytical Oncology, 2020, 9, 88-93	National
2	Rajesh Javarappa, Ramesh Bilimagga, V. Chendil et al. Acute Haematological Variations in Patients Receiving Radiotherapy and its Correlation with Volume of the Bone Marrow and Radiation Dose. Journal of Analytical Oncology, 2020, 9, 82-87	National
3	Manoj Raju, Arun Aswath, Amrit Kadam et al. Automatic Detection of Tuberculosis Using Deep Learning Methods. Advances in Analytics and Applications, Springer Proceedings in Business and Economics, https://doi.org/10.1007/978-981-13-1208-3_11	International Book
4	Kiran Kumar B. R, V. Chendil, P. Shylini. Et al Spindle Cell Sarcoma of the Uterine Cervix: A Case Report and Review of Literature .International Research Journal of Oncology 3(4): 44-48, 2020.	International

Conference presentations of 2019, 2020