

## Brachytherapy an immortal art!!

I have been hearing time and again at the oncology conferences here or other places that brachytherapy is dying! I wanted to reemphasize to my colleagues and my fellow persons that it's not true and that is why I wanted to convey IBS members and all those who can visit our, web page through my desk as president of IBS; first thing first and started the message with this title.

Brachytherapy is clinical use of radioactive isotope. It is a specialized form of radiation therapy that entails the precise placement of short-range of an emitting radiation source in immediate proximity to macroscopic tumor and/or adjacent tissue at risk of harboring microscopic disease. It requires expertise, specialized applicators and technical procedure that are specifically designed for each anatomic site or clinical circumstance into body cavities and tissues. It's a special tool in the armamentarium of radiation treatment, for the radiation oncologist and adds to external radiation treatment (EBRT) competency. It allows to reduce the toxicity of radical EBRT and aiding in preservation of anatomical organ and physiological function to a great extent when used as boost and even better when used as radical curative method (when indicated). It allows preservation of anatomical organ and function better, compared to surgical methods which is known to leave a stale effect of lost part of body along with moderate to severe morbidity from disfigurement with respect of site.

Brachytherapy faced challenge from its 'own everyday tool' EBRT, having parallel advancement in the development of delivery of radiation beam with availability of IMRT/VMRT/4D techniques which has excited and mesmerized (from this powerful sophisticated techniques) the present Radiation Oncologist and has possibly grown antiquity/apathy about Brachytherapy in them to the extent it made them to think as being inappropriate modality in today's time and 'word' is circulating, brachytherapy is dying/fading?. Not to enforce but to remind and remember, in many ways, that, brachytherapy has been in use over a century and has statistical support for its efficacy and is still envisioned as the "ultimate form of conformal radiation therapy" with its unparalleled ability to direct a large dose of radiation to the tumor (only a much localized area around the radiation sources) while minimizing exposure to surrounding sensitive normal healthy tissues and vital structures (OAR) and delivering sufficient dose to potential subclinical disease at the periphery of GTV. There is additional advantage of brachytherapy over EBRT that avoids motional inaccuracies associated with it since radiation source retains their correct positions despite patient's movement or physiological movement of organ (harboring tumor) during the treatment. Not to overemphasize

that it plays a major role today in the management of several cancer types and I strongly put, brachytherapy is an immortal art.

Historically Radiation has been in use since the discovery of Radium by Marie n Pierre Curie in 1898. S.W. Goldberg and EfimSemenovich London used it to treat basal cell carcinomas with surface applicators in 1903. Interstitial after loading techniques too were developed in the same year, and so to speak for it, a first clinical use was described for carcinoma of tongue published in 1903/4. BT suffered major disadvantage, because of radiation exposure to the medical caregivers. This disadvantage and the advent of high voltage Tele-therapy for deep seated tumors led to a decline in the use of BT in the 1950s. 'Manual after loading' was introduced to reduce the radiation exposure hazard using hollow needles to be replaced by tubes with dummy catheters. This helped increasing the accuracy and reducing the radiation exposure to caregivers. Sievert first proposed the concept of 'remote controlled after loading' in 1937 [3]. Today with regular use of remote controlled after loading method of brachytherapy has completely taken away a fear of exposure to medical caregivers.

Last half of century has seen major research production of various radionuclides [Radium to Iridium (acceptable energy and half-life)] for clinical use, from manual to remote after loading procedures (avoiding radiation hazard even to personnel), LDR – HDR as also from 2D dosimetry to 3D computerized controlled dosimetry (with understanding better optimized distribution in CTV/ITV as desired) with the passing time as on today, for the purpose of brachytherapy. Recently there has been use of Micro cobalt source ( $^{60}\text{Co}$ ) [having longer half-life and not much difference in isodose distribution] as radionuclide for brachytherapy at few centers.

Technological advancement over last half of century has raised potential for brachytherapy uses and continues to expand its potential application to a variety of clinical circumstances. It is highly important that we utilize it to maximum where and when it is suitable and evaluate its scope in other sites like that in form carcinoma cervix. It is more important in developing country for the sites where it can be utilized most (Head n Neck cancers besides other sites known all over) where HN cancers forms high incidence and is on rise and thus makes it more relevant in our country and also at all places world over where the tendency is same.

At the end, I offer my best wishes for the growth of IBS and its members and also wish the IBS membership to grow further and ROs working with radiotherapy be it in any form give a firm thought, 'brachytherapy is an immortal art' and use this best conformal radiation technique at its best.

It is my utmost pleasure to work as President of Indian brachytherapy society (IBS) and I thank all the members of the IBS who put a trust in me and gave an opportunity to work as president of society in 2013 and also allowed my whole team to continue till the next term: 2017, at the 5<sup>th</sup> IBSCON in Kolkata.

Brachytherapy is very close to my heart and mind. Members of IBS would agree that BRT is a blind procedure to large extent, and requires coordinated use of tactile/tangible (skin of finger tips) optical (eye) sensations and glial tissue (brain) {i.e. intelligence, wisdom, discernment (judgment) & acuity (insight)}. It remains a challenge as is with surgery and requires understanding its various forms intracavitary/intraluminal, surface mold, interstitial and practicing it to expertise the same to use it to its maximum, clinically where indicated. Brachytherapy in general has an important role to play in the management of various sites and has made its impact and forms a part of standard of care in the treatment of gynecological cancers.

I am proud to say that we have successfully conducted 2 workshops and one national annual conference in 2014, 15, 16 during my tenure as president and have seen 300 delegates registered at the last conference in Chennai. I am proud to say we conducted a live work shop on Base of tongue and soft tissue sarcoma on previous day ie.26<sup>th</sup> august, organized by Radiation Oncology Division of Dr. Kamakshi Memorial Hospital, Chennai in collaboration with Association of Radiation Oncologist of India Chapter (AROI – TN & PY). I am also proud to say we inaugurated the IBS website (<http://www.indianbrachytherapy.org>) during the last conf.

We all know use of brachytherapy entails 'cost of purchase' of radio-active isotopes; since it is imported from other country. <sup>192</sup>Ir has been use for brachytherapy many years in our country. Fluctuation in foreign exchange rate in increase in it cost in recent past has posed a problem in its uses by many centers. [Government (Govt.) charges import duty for radioisotope used for commercial purpose]. Today, Govt. who was not charging import duty for 'cobalt' source used

for/as tele-therapy and micro cobalt source; is now started charging same for micro cobalt source used for brachytherapy. Our society has taken up the issue at ministerial level (central parliament) to reduce the import duty since  $^{192}\text{Ir}$  or  $^{60}\text{Co}$  radio-isotope is used for medicinal purpose ie in treatment of cancer patient. We expect correction at the earliest.

Now I am sure all the members of IBS across the India would be able to make use of this website as it is intended. In my mind this will help in progression of brachytherapy in this country as per the need of ours, taking cue from others. Interested Radiation Oncologist in general and Brachy-therapist in particular will be able participate in induction of site wise prospective protocol and exchange clinical material and ideas.

I like to add here HNC are the next in line to probe and execute the joint study between hospitals/clinics, govt./municipal/private for use of brachytherapy alone or as boost for various head neck sites where brachytherapy is possible; to show its potential and though study show that brachytherapy can be part of standard of care for HNC similar to that for gynecological cancers. This allows the growth of brachytherapy in principle and IBS in general.

I would suggest members to upload cases and important information in relation to brachytherapy including problems and solution so that our colleagues get stimulus to do more and more brachytherapy where and when indicated.

I envisage to initiate teaching module within the IBS ie. 'IBS school' which will conduct a site specific courses on brachytherapy uses and will have the debate in its uses to improve its application across the India.

Wish all the members a happy and joyful deepavali and a prosperous new year VS 2073/2016-17.