Intra Operative Radiation Therapy (IORT), a Dedicated Procedure, Just Flying or Landing?

Malignant diseases are among prevalent health problems in developing and developed countries. Cancer is the second cause of death in developed countries and the third or fourth in developing countries depending on the age pattern of communities and fronting them with risk factors. Therefore, cancer management is of prime importance and deserves more attention from health policy makers and managers worldwide. Health policy makers should keep an eye on the changes in incidence, prevalence, and burden of malignant diseases, and should also monitor changes in cancer diagnosis and treatment. With a history of more than 50 years, radiation therapy has become one the most efficient and popular procedures in cancer management in recent decades. More than 60% of cancer cases need radiation therapy. Different rays such as: X-Ray, Gamma Ray, Electron, and so on are used treat different types of cancer. Linear accelerator machines are more popular in radiation departments as they have provided great opportunity for cancer management, and improved the use of new X-Ray machines for treating special cases. The main goal of radiation therapy is as follows:

1) Dose distribution between tumors
2) Dose limiting normal tissue
3) Respect normal tissue tolerance

These goals are more accessible and practical if radiation therapy is performed during surgery when the site of radiation is clear and all the neighboring tissues are protected. Therefore, much effort was done by surgeons and radiation therapists to emerge the operating and radiation rooms; however, they were not fully satisfied. Nowadays, as mobile machines have been produced and used by surgeons with collaboration of radiation oncologists and physicists in theater rooms, the dream of using intra operative radiation therapy in operation rooms is about to come true. Now the X=Ray and Electron ( ) mobile machines are available and cancer surgeons use them for all kinds of malignancies such as esophagus, stomach, colorectal, pancreas, prostate, Gyns, cholangiosarcoma, and retroperitoneal sarcomas. Breast cancer is a more popular site managed by IORT by breast surgeons. Although there are many scientific documents and text books supporting the intra operative radiation therapy, it is not practiced throughout the world, and some reasons for this lack of use are as follows:

1- Expenses of machines
2- Limitation of manufacturers
3- Limitation of education
4- Team work is not well defined
5- Business and economic issues
6- Short time follow up for some types of cancers

Some advantages of using IORT are as follows:

1- The most appropriate site is radiated
2- The procedure is guided by a surgeon who is more close to the site as an involved specialist
3- No delay in treatment
4- Other organs are not radiated
5- external radiation complication(s) are avoided
6- Protect none involved organs and avoid complications
7- Time limitation and time saving for patients and involved departments managing the case, whether it is used as complete radiation or as boost(this method is absolutely accepted)
8- Cost efficiency and beneficence for patients, insurance companies, and public and private sectors.

Therefore, the question remains whether IORT is flying or is just landing? and whether it has established as a well accepted procedure in cancer management?

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