

Commentary

Oncology: Preservation of Organ Function

Wamer Alina*

Department of Medical Science, Yale University, USA

**Address Correspondence to Wamer Alina, Email: alina@gmail.com*

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Description

Oncology represents a groundbreaking field in the fight against cancer, offering minimally invasive procedures that directly target and treat tumors. While traditional cancer treatments like surgery, chemotherapy, and radiation therapy have been primary approaches for many years, interventional oncology introduces a range of innovative techniques aimed at delivering precise and effective therapies while minimizing damage to healthy surrounding tissues. Interventional oncology encompasses a spectrum of image-guided procedures that utilize advanced imaging technologies to diagnose, treat, and manage cancer. These procedures are performed by highly specialized interventional radiologists who possess expertise in both imaging and minimally invasive therapies. Ablation involves the destruction of tumors using extreme temperatures (heat or cold) or other methods to eliminate cancer cells. Techniques like radiofrequency microwave ablation and irreversible electroporation are utilized, each having its unique mechanisms to destroy cancerous tissues. Embolization involves the intentional blocking of blood vessels that supply tumors with nutrients and oxygen. Transarterial chemoembolization and radioembolization are common procedures where embolic agents and/or chemotherapy drugs are precisely delivered to the tumor site through blood vessels, cutting off its blood supply and effectively targeting the cancerous cells. Interventional oncology includes procedures to obtain tissue samples for diagnosis, often through percutaneous biopsies using imaging guidance, aiding in understanding the nature and characteristics of the tumor for better treatment planning. Interventional oncology also encompasses the delivery of targeted therapies directly into the tumor site, reducing systemic side effects often associated with traditional chemotherapy. This includes delivering chemotherapy or immunotherapy drugs precisely to the tu-

mor site using specialized techniques. One of the significant advantages is the minimally invasive approach, resulting in smaller incisions, reduced pain, shorter hospital stays, and faster recovery times compared to traditional surgeries. Interventional oncology techniques aim to specifically target cancerous cells, thereby minimizing damage to surrounding healthy tissues and organs. Many of these procedures are repeatable, allowing for multiple treatments if necessary. They can also be combined with other cancer therapies like surgery, chemotherapy, or radiation for a more comprehensive treatment approach. Interventional oncology techniques are particularly valuable for patients who may not be eligible for surgery due to the tumor's location, size, or the patient's overall health condition. While interventional oncology has demonstrated promising outcomes, challenges persist. These include refining and expanding the application of these techniques, improving patient selection criteria, and enhancing long-term efficacy data. The future of interventional oncology is poised for remarkable advancements, with ongoing research focusing on refining existing techniques, developing novel technologies, and exploring personalized treatment approaches tailored to individual patient needs. Interventional oncology stands as a dynamic and evolving field, offering a range of minimally invasive procedures that significantly impact cancer treatment. As research and technology continue to advance, this field holds the promise of providing more precise, effective, and personalized therapies for cancer patients, ultimately improving outcomes and quality of life.

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None.

Conflict of interest

None.