

Intraoperative Radiation Therapy Market Assessment, By Products and Services [Products, Services], By Technology [Electron IORT, Intraoperative Brachytherapy], By Application [Breast Cancer, Brain Tumor, Gastrointestinal Cancer, Head and Neck Cancer, Colorectal Cancer, Cervical Cancer, Lung Cancer, Other Cancer Types], By End-user [Hospitals, Specialty Clinics, Others], By Region, Opportunities and Forecast, 2018-2032F

Market Report | 2025-04-22 | 235 pages | Market Xcel - Markets and Data

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Report description:

Global intraoperative radiation therapy market is projected to witness a CAGR of 6.10% during the forecast period 2025-2032, growing from USD 60.15 billion in 2024 to USD 96.60 billion in 2032. The market's growth is augmented by the increasing investments towards developing novel technological solutions, rising cancer cases, the introduction of supportive government policies and initiatives, expansion of the ageing population, and increasing acceptance of intraoperative radiation therapy. Various governments across the globe are increasingly investing in enhancing their country's healthcare infrastructure, positively influencing the expansion of the intraoperative radiation therapy market. For instance, under the Vision 2030 program, the government of Saudi Arabia is focusing on the modernization of healthcare equipment and services, improving access to healthcare facilities, and increasing the role of investments from the private sector. Such efforts are expected to bolster the requirement for advanced therapeutic solutions and services including intraoperative radiation therapy and provide lucrative growth opportunities for the market.

Growing emphasis on clinical trials for intraoperative radiation therapy is also supporting the market's expansion as clinical trials are allowing the establishment of treatment protocols and increasing confidence in the procedure. Clinical trials have also demonstrated the various benefits of intraoperative radiation therapy including improved patient outcomes, minimal exposure to

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normal tissues, and limited treatment intervals.

Rising investments towards technologically advanced imaging processes are allowing the development of imaging solutions that aid in the precise targeting and visualization of tumors during surgical procedures, enhancing the efficacy and precision of intraoperative radiation therapy. Such efforts are further augmenting the adoption of the procedure and positively influencing the expansion of the market.

Moreover, recent studies and findings have also shown that combining intraoperative radiation therapy with surgery and chemotherapy improves treatment outcomes, increasing its appeal to medical professionals and patients. The deployment of intraoperative radiation therapy is rapidly soaring as the procedure minimizes the damage caused to the health of surrounding tissues.

Surging Investments in Healthcare Infrastructure and Oncology Research

The growing emphasis on enhancing healthcare infrastructure and cancer research activities is another major factor supporting the growth of the global intraoperative radiation therapy market. Various public and private healthcare institutions and governments are significantly investing towards expanding oncology treatment centers and integrating advanced treatment options including novel radiation therapy technologies. As the healthcare sector witnesses the upgradation of technology and expansion of capabilities, the acceptance and adoption of intraoperative radiation therapy are expected to increase significantly. Additionally, various researchers are being rewarded with grants to improve cancer treatments, further providing lucrative growth opportunities for the market by fostering innovation and augmenting the availability of advanced treatment options. For instance, in January 2025, two projects led by the University of Wollongong's (UOW) Centre for Medical Radiation Physics (CMRP), were awarded over USD 2 million in funding from the National Health Medical Research Centre (NHMRC). Such efforts improve patient outcomes while supporting the rising adoption of innovative radiation therapies in different clinical settings.

Robust Product Pipeline and Promising Clinical Trials Support Market Expansion

The rising number of clinical trials for intraoperative radiation therapy is bolstering the growth of the market as they aid in propelling the applications of intraoperative radiation therapy for various types of cancer such as colorectal, lung, breast, and brain, among others. Additionally, clinical trials also play a crucial role in showcasing the various benefits associated with intraoperative radiation therapy as opposed to conventional radiotherapy. Thus, various healthcare companies, cancer research institutes, and research organizations are significantly investing in clinical trials.

For instance, the University of California is conducting an interventional study to evaluate the side effects of intraoperative radiation therapy and its effectiveness in patients suffering from breast cancer who are undergoing breast-conserving surgery. The study is expected to conclude in December 2028 with a primary objective of systemically assessing long-term and acute toxicity, and outcomes of intraoperative radiation therapy in a broader cohort of patients.

Breast Cancer Accounts for Significant Share of the Market

Breast cancer treatment is expected to account for a significant share of the market over the forecast period owing to the increasing acceptance of intraoperative radiation therapy in comparison to conventional radiation therapy for treating early-stage breast cancer. After the removal of the cancer cells from the breast, the intraoperative radiation therapy machine is placed at an appropriate location for determining the required dosage for radiation based on evidence-based guidelines. The radiation is aimed at where the risk of cancer recurrence is the highest.

Due to the rising prevalence of the condition, the demand for effective treatment options that eliminate or reduce the chances of cancer recurrence is significantly increasing. As per the estimates of the National Breast Cancer Foundation, in 2024, 2,800 men and 310,720 women were diagnosed with invasive breast cancer in the United States. The foundation also estimates that approximately 1 in 8 women in the country will be diagnosed with breast cancer during their lifetime. Thus, various medical device and pharmaceutical companies are focusing on collaborating with oncology centers to commercialize and develop intraoperative radiation therapy solutions for breast cancer, further providing lucrative growth opportunities for the market.

North America Region Holds Major Market Share

The expansion of the North America intraoperative radiation therapy market can be attributed to the increasing incidences of cancer, the rising availability of advanced therapeutic solutions, and growing investments in the healthcare sector. According to the statistics released by the National Cancer Institute in May 2024, approximately 2,001,140 new cancer cases were expected to be diagnosed in the United States in 2024. Additionally, the growing preference for minimally invasive procedures in the region is

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also bolstering the demand for intraoperative radiation therapy. The therapeutic procedure allows the delivery of a high dose of radiation at the tumor bed during the surgical procedure, reducing the duration of the treatment and improving patient outcomes. Additionally, the strong presence of leading research institutions and market players supports the market's expansion in North America as they significantly invest in research and development activities, ensuring the availability of advanced treatment options in countries such as the United States and Canada. Furthermore, the increasing awareness among the patient population and healthcare professionals about the various advantages of intraoperative radiation therapies is also augmenting their adoption in North America. Healthcare institutions across the region are actively investing in training medical professionals on using intraoperative radiation therapy.

Future Market Scenario (2025 - 2032F)

-□As per the global intraoperative radiation therapy market analysis, the market is expected to witness significant growth over the forecast period due to the rapid expansion of the healthcare industry, increasing preference for minimally invasive technologies, rising cases of cancer, and growing focus on the development of advanced therapeutic solutions.

-□According to the estimates of the American Cancer Society, the number of cases of cancer is expected to reach 35 million, by 2050. This increase is expected to bolster the utilization of intraoperative radiation therapy as the procedure uses innovative equipment for delivering intraoperative radiation therapy, electron beams, or x-rays directly, immediately eliminating cancer cells after the surgery.

-□Technological innovations including electronic brachytherapy devices and mobile line accelerators are enhancing the accessibility and efficacy of intraoperative radiation therapy systems. Such advancements are expected to aid in precisely targeting tumor cells during surgical procedures, ensuring improved patient outcomes due to minimization of damage caused to healthy tissues.

-□The increasing efforts of governments of various countries to enhance their healthcare sector and boost the availability of advanced medical technologies are also expected to provide lucrative growth opportunities for the market.

Key Players Landscape and Outlook

The market's key players are actively engaging in mergers and acquisitions to strengthen their position and ensure the availability of advanced technologies in various regions across the globe. In February 2023, Viewpoint Molecular Targeting, Inc. and Isoray, Inc. announced the successful completion of their merger. The companies adopted a new name Perspective Therapeutics Inc. and are focusing on the advancing of cancer treatments with the help of imaging technologies, radiopharmaceuticals, and radiation therapies. Perspective Therapeutics is also developing a novel pipeline of proprietary targeting peptides for diagnosing tumors and delivering Targeted Alpha Therapies (TATs).

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*Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work.

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