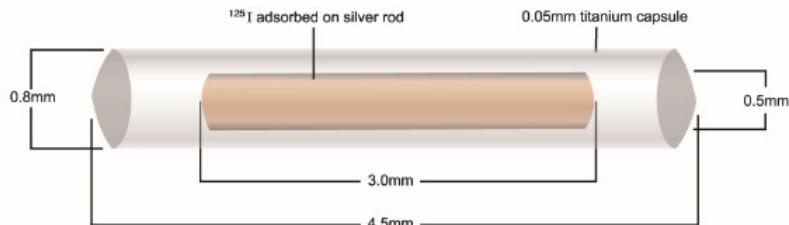


碘[¹²⁵I]密封籽源 | Iodine-125 Seeds



碘[¹²⁵I]密封籽源结构图 structural diagram of Iodine-125 Seeds

Process characteristics

Titanium tube at both sides with high-precision laser welding cut, there are showed a pyramid-shaped and smooth burr under 60 times microscope; unique technology to ensure the uniformity size of the seeds, no leaks, no block needle, and effectively improve the puncture strength of the seeds in the organization. So make the entire implant process easy and effort; uniform patent iodine adsorption, so that iodine-125 be firmly adsorbed on silver rods, reducing the space dose rate calculation error and activity standard error.

Materials excellent

Imported high purity iodine-125>99.95, iodine-126<0.005%; imported high purity thick-walled titanium tube, high compressive strength, good biocompatibility, uniform thickness, reducing self-absorption errors; selection of high quality silver rods, high fluorescent visibility, clear video image tracer.

Quality Control

test the sealing of each seed by Boiling immersion method; detected activity of each seed by U.S. CRC-15 radioactive living meter; high-precision quality testing system to ensure that the activity of the seed is accurate, supplier activity standard deviation control within $\pm 5\%$.

the decay of Iodine-125 through the way of electronic capture, release the γ -ray 35.5Kev and X-ray 21.1 ~ 31.5Kev, electronic be shielded by titanium tube; half-life is 59.43 days, HVL 0.025mmPb; initial dose rate 7cGy/hr, Relative Biological Effectiveness is 1.4, the tissue penetration ability is 1.7cm, the dose decay out 94% after 240 days; common seed activity is 0.3mCi 0.8mCi.

Clinical application

Iodine-125 sealed seed is implanted permanent brachytherapy of prostate cancer in the organization has become the standard treatment method, the treatment of pancreatic cancer can be comparable with the classical radical surgery; the more applications in the prostate tumor, brain tumor, lung cancer, head and neck cancer, pancreatic cancer, liver cancer, gynecologic oncology, renal and adrenal tumors and orbital tumors (malignant melanoma, retinoblastoma cell tumor, etc.), soft tissue tumor therapy.

Indications

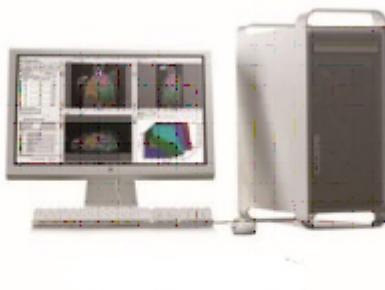
the diameter Less than 7cm, the higher degree of differentiation, lower rays moderately sensitive malignant solid tumors; unresectable residual tumor lesions, postoperative isolated tumor metastases; locally advanced tumor with external beam radiotherapy; effect of external irradiation good or failure of remedial treatment; palliative cancer treatment; need to retain a functional organization or surgery involving the vital organs of the tumor treatment.

Contraindications

Cachexia, hollow organs, lymphatic drainage area, severe diabetes with caution.

New technology highly appropriate form low-energy low-dose rate brachytherapy

Iodine -125 sealed seed will enable the division cycle of tumor cells implanted between the permanent organization to obtain uniform irradiation, accurate cloth source can increase the tumor and normal tissues of the dose distribution ratio, so that the radiation cover the tumor target normal and tumor edge sub-clinical areas within the organization, improve the killing of the tumor as a whole; high rate of local control, complications, easy to protection; suitable for large, medium and small types of hospital applications.

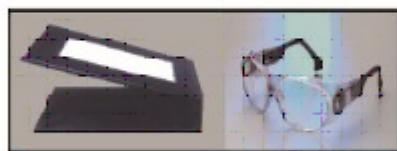
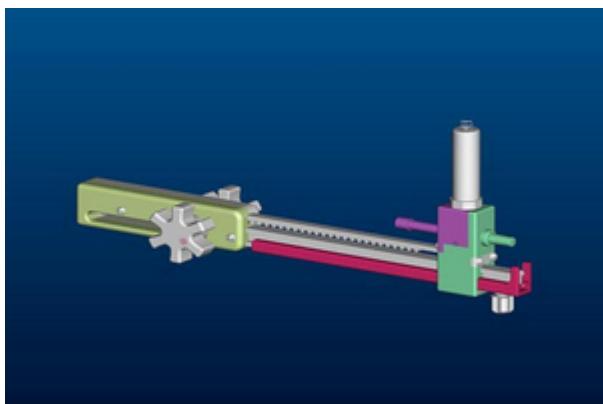


Treatment plan

Before implantation of the seed source, the use of ultrasound, CT, MR imaging facilities to determine the tumor target in the radiotherapy treatment planning system (TPS) to calculate the number of seeds, activity, space release, the prescription dose and the implantation path; can be uniformly the dense center of the release or the margin of sparse method cloth source; uniform cloth source, seed source spacing 0.7cm dose conformal index better meet the dose homogeneity index and the premise of the low cold spot rate.

The implantation procedure

Implanted needle inserted from the rear edge of the start of the target under the guidance of the imaging facilities, the order of the implants back implanted seed source; different parts of cancer treatment with the stent and fixed template, the minimally invasive treatment of prostate cancer be implanted in the special facilities; TPS quality after implantation to verify the systematic assessment of the dose distribution of the target area and the quality of treatment, and to supplement the implantation.



Ray protection

Iodine-125 sealed seed belongs to a class of low specific activity solid radioactive material stored in the container to screen out the rays; loaded seeds seed source operating reverse tweezers length of 10cm or more in the lead glass screen after more than 15mm thickness; implanted medical staff, or contact with the seed source should wear a 0.18-0.25mm lead equivalent protective gel coat with a collar, left chest protective clothing to wear personal dosimeters to wear protective glasses and thin protective gloves; detailed records of surgery seeds the number of patients with γ -ray measuring instrument to monitor the work area; superficial implantation in patients with care when the surface coverage of 0.18-0.25mm lead equivalent rubber cloth or wear protective clothing. Discharged patients do not need special protection, 1 meter distance protection with the public, six months later without protection.



security of Clinical application

The entire process of implantation is carried out under the seal of the short time sterile; implants ray shielding, radiation leak rarely operating in simple protective shield about 95% of the radiation dose; COSTIND a radioactive dose of station testing, health care workers and accompany staff radiation doses far lower than the effective dose limits prescribed by the national standard of protection is a relatively safe cancer treatment new technology.