

Gold grain implantation gun: Royal Marsden Hospital

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Non-surgical cancer treatments have undergone a major shift since Röntgen discovered X-rays in 1895 and radiation was first used for cancer treatment in 1899. A more targeted regimen using external beam therapy and brachytherapy became the gold standard, and the advent of chemotherapy made further significant improvements in treating the disease.

The gold grain implantation gun in the Hong Kong Museum of Medical Sciences' collection (Fig) was an innovation in brachytherapy for the treatment of difficult or inoperable cancers of the prostate, bladder, uterus, pelvis, stomach and, particularly relevant for Hong Kong, nasopharyngeal carcinomas (NPC). The treatment worked by implanting short sections or 'grains' of radioactive gold encased in platinum into malignant neoplasms.¹ The Cantonese populations of Hong Kong and South China have the highest incidence of NPC in the world. Although trending downwards in Hong Kong over the past 40 years, in 2010, it ranked as the sixth most common cancer in men and thirteenth in women, accounting for 3.3% of all new cancer cases. Although external radiotherapy is the first line of defence, the sites of NPC make it exceedingly complex to target persistent and recurrent disease.²

The implantation gun was designed by researchers, Hodt, Sinclair, and Smithers at the Cancer Hospital (Free) in England in 1952.³ It was modified in 1965 by Jones, Taylor, and Stedeford to ameliorate the risks of radiation exposure to the hands, fingers, and eyes of the operator. It was slimmer, could be autoclaved, and had a more efficient ejection of radioactive gold grains to the specified site compared with the older model.⁴ This modified and improved 'gun' is the Museum's



FIG. The gold grain implantation gun was delivered to Queen Mary Hospital from the Medical Supply Association (London) on 3 May 1966 (Serial No. 260, patent No. 744691). It was donated by the Hospital to the Hong Kong Museum of Medical Sciences in 1996

artefact.

The Free Cancer Hospital located in Westminster, London was originally founded in 1851 by Dr William Marsden whose wife died from cancer. It was the first hospital in the world dedicated to cancer research. It was given a Royal Charter of Incorporation in 1910 and was renamed the Royal Marsden Hospital in 1954 in recognition of the founder's vision and dedication to finding answers to 'the study of the disease for we know absolutely nothing about it'.

Hong Kong has benefited from the innovative research of the Royal Marsden Hospital and astutely applied the results to ameliorating the suffering of those affected by cancer. The gold grain implantation gun is one of the significant milestones in the long history of research performed at the hospital.

References

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