ABSTRACT

Cryosurgery is a surgery technique for destroying cancer tissue using very cold liquid nitrogen. This technique uses a called cryoprobe. The purpose of cryosurgery is to maximize freezing of tumor tissue and to minimize the damage in the healthy tissue. In this final project, edge detection of renal tumor for cryosurgery simulation. The way to find the domain in the image of renal tumor is done using edge detection. The point (x, y) or the edge of the renal image will be in the process of using the bubble packing method. Bubble packing is used to optimize cryoprobe position in cryosurgery process of renal tumor. The freezing math formulas in tumor use bioheat transfer equations. The heat transfer in the tumor area using finite difference method. In the 6 cryoprobes, simulation the optimum position was obtained with the 0.007 bubble diameter and the heat transfer which was around 31.1940992 seconds. Numerical results provide important information for performing effective cryosurgery protocols.

Keywords : cryosurgery, bubble packing, renal, finite difference method