

Laser Doppler imaging, thermographic imaging, and tissue oxygen saturation measurements detect early skin reactions

during breast radiotherapy

Harrison, David K.; Harrison, Eileen M.; Newton, David J.; Windsor, Phyllis M.;

AA(Dryburn Hospital) AB(Ninewells Hospital and Medical School)

Publication:

Proc. SPIE Vol. 4241, p. 435-444, Saratov Fall Meeting 2000: Optical Technologies in Biophysics and Medicine II, Valery V. Tuchin;

Ed.

Publication Date:

5/2001

Abstract:

A range of acute skin reactions, ranging from mild erythema to moist desquamation, can be seen in patients receiving standard fractionated radiotherapy to the breast for conservation therapy of breast carcinoma. In a number of cases these reactions can cause considerable discomfort and seriously affect the patient's quality of life. In previous studies we have used the techniques of laser Doppler imaging, digital thermographic imaging and lightguide spectrophotometry to study oxygen supply and blood flow in inflammatory reactions induced experimentally in forearm skin. The present study is an attempt to use the same techniques to investigate whether any or all of them can detect changes in breast skin very early on in the course of radiotherapy treatment. A further aim of the longer term study is to investigate to what extent these early changes may be able to predict the occurrence later of severe acute or delayed reactions.