A STUDY OF THE EFFECTS OF ULTRA-VIOLET RADIATION IN PRE-OPERATIVE AND POST OPERATIVE CARE AND TREATMENT

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I certify that this dissertation has been prepared under my supervision by Sri G.V.Lakshmipathi, a candidate for the Master of Veterinary Science Degree (Surgery - Main) 1964, and that it incorporates the results of his independent study.

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ABSTRACT

Ultra-violet ray therapy in Veterinary practice although reported as early as 1925, has yet to be tried to find out the effects of these rays in pre-operative and post-operative care and treatment of wounds. Literature available on this topic is very limited though work has been done on Ultra-violet radiation and its use in the human and Veterinary practices. These rays bring about quick healing in post-operative wounds by controlling infection and promoting the general body's defence mechanism.

The effects of Ultra-violet radiation in pre and post-operative care and treatment were studied on 50 experimental dogs, and 29 clinical cases. 10 experiments were conducted to study the erythema reactions and dosage computation. For this the ventral abdominal area was exposed at eight square regions for durations of 1 to 8 minutes with the aid of a device that was improvised. From these it was noticed that an exposure of 3 to 4 minutes at 18" and 24" focal distance was necessary to produce the second degree erythema, which was found effective in the treatment of post-operative wounds. The change in the distance from 18" to 24" did not produce visible changes in the effects of these rays. 20 experiments were conducted on experimental dogs to study the changes in the blood cellular elements and haemoglobin content after general body irradiation. The ventral abdominal areas in all the dogs were exposed to Ultra-violet radiation at 24" focal skin distance for 20 minutes. Haemograms recorded after one week, and at weekly intervals

for three weeks showed a definite and gradual increase in Haemoglobin content, R.B.C. and W.B.C. count from 7 to 21 days after exposure.

The effects of pre-operative Ultra-violet rays exposure were studied on 9 dogs. It was found effective in sterilization of the operation site. But this produced hyperaemia and there was oozing during the operative techniques. The effects of post-operative Ultra-violet radiation on wound healing was studied on 20 experimental dogs and 20 clinical cases. In 6 cases the histopathological studies of healing in both Ultra-violet ray exposed wounds and control wounds on the same day post-operatively, were made. Histopathological examination of the wounds exposed to Ultra-violet radiation revealed that the healing was complete. This was evidenced by the continuity of the epithelial lining, with no cellular infiltration.

Histopathological examination of the control wounds made on the same day post-operatively revealed that the healing was still under progress, indicated by the incomplete epithelial lining and more cellular infiltration in the dermal layers.