

INFLUENCE OF THE GALLIUM-ARSENIDE (Ga-As) LASER THERAPY ON THE POSTLAMINECTOMY  
MEMBRANE FORMATION: QUANTITATIVE EVALUATION

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The natural and inevitable consequence of a laminectomy is the formation of an epidural scar referred as postlaminectomy membrane. This fibrous tissue may extend into dura mater and nerve roots, causing spinal cord compression and perineural fibrosis in dogs and humans. In an attempt to prevent this epidural fibrosis various methods and materials have been used, however the ideal method and material has not been found yet. In this experiment, it was used the gallium arsenide (Ga-As) laser therapy with the aim of limit the postlaminectomy membrane formation. Twelve adult dogs were used in two groups with six dogs each: control and laser. Two dogs of each group were euthanatized at days 15, 30 and 60. The anesthesia was carried out with acepromazine, sodium thiopental and halotane, and postoperative analgesia was made with epidural morphine. It was used sodium oxacilin for antimicrobial prophylaxis at the begin of the anesthesia. Modified dorsal laminectomy at T<sub>13</sub> and L<sub>1</sub> were performed. Gallium arsenide laser irradiation (6 joules per cm<sup>2</sup>) were made daily on the operated region, beginning immediately after surgery and for ten days. Neurologic examinations were carried out daily. Lumbar mielography utilizing iopamidol was performed in the last postoperative day, and after that, euthanasia was made. After necropsy the vertebral column was removed intact from T<sub>10</sub> to L<sub>4</sub>, and kept in formalin. Transverse sections were made in operated region (disk space T<sub>13</sub>-L<sub>1</sub>, center of T<sub>13</sub> and L<sub>1</sub>) and the cranial and caudal areas (disk space T<sub>12</sub>-T<sub>13</sub> and L<sub>1</sub>-L<sub>2</sub>, and center of T<sub>12</sub> and L<sub>2</sub>). The mean roundness index of the spinal cord was evaluated by measuring the vertical and horizontal diameters from the photographs of the transverse sections. Comparisons were made to identify decreases in dorsoventral diameter of the spinal cord. The results of neurological examinations showed no significant difference (P<0.05) between two groups, as well as, there was no significant difference (P<0.05) in the mielographic evaluation. The evaluation of the mean roundness index did not show significant difference (P<0.05), between the group control and laser. The results of this quantitative study could not show benefits of Ga-As laser therapy in the postlaminectomy membrane prevention.