Intralesional Application of Autologous Bone Marrow Stem Cells with Scaffold in Canine for Spinal Cord Injury

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A three year old male non-descriptive companion dog was presented to the Small Animal Orthopedic Unit of Madras Veterinary College Teaching Hospital (MVC) with paraplegia of fourth degree neurological deficit of hind limbs due to automobile trauma. Radiographic views were suggestive of dislocation at T8-T9 vertebral segment with fracture of L2 vertebra. Myelography confirmed the signs of abrupt stoppage of the contrast column cranial to dislocated area and was interpretive of transected spinal cord at L2 level. Construct was prepared with bone marrow mononuclear cells (BMMNC) isolated from bone marrow aspirate of femur and the cells were seeded in Thermoreversible Gelatin Polymer (TGP) at the cell processing facility of Nichi-In Centre for Regenerative Medicine (NCRM) as per GMP protocols and was engrafted after hemilaminectomy and durotomy procedures in the MVC. Postoperatively the animal was clinically stable; however the animal died on the 7th day. Autopsy revealed co-morbid conditions like cystitis, nephritis and transmissible venereal tumor. Histopathology of the engrafted area revealed sustainability of aggregated stem cells that were transplanted revealing an ideal biocompatibility of the construct prepared with bone marrow mononuclear cells and polymer hydrogel for spinal cord regeneration in dogs. Further studies in similar cases will have to be undertaken to prove the long term efficacy.