Learning Objectives
In this study we determined the effectiveness of recombinant human growth hormone on peripheral nerve injury in the Wistar rat.

Introduction
Several proposals have emerged to try to improve regeneration following peripheral nerve injury and these include stem cell transplantation, administration of immunomodulatory factors, fibrinolytic factors [1] and neurotrophic factors [2]. GH has an action on brain maturation, cognitive function and central nervous system myelination [3]. Furthermore, IGF-1 plays an important role in neuronal development, survival and regeneration. In vitro, this protein plays a role in proliferation, mobilization, and myelination [4].

Methods
Surgical procedure
The ulnar nerve was then completely divided and the proximal and distal ends of the transected nerve were sutured to Silastic tube using monofilament nylon 8.0. The union of the two ends of the nerve to the tube therefore left a 5 mm distance between the two. After 8 weeks of observation, the tubing was then carefully removed (Figure 1).

Neurophysiological studies
Registration was carried out by belly-tendon assembly using subdermal electrodes positioned in the thenar and hypothenar eminences of the hand.

The study was subsequently repeated at 2, 4, 6 and 8 weeks post-injury in each rat to ensure no variability. The parameters measured were motor potential amplitude and conduction velocity.

Results
Conduction velocity: During the period of observation in the group receiving GH, there was a mean increase of 3.25 m/s during each two-week interval until the 8th week. However, in the control group there was no increase from the 5-6th week onwards (Figure 2).

Motor potential amplitude: During the 8 week period of observation in the group receiving GH, there was a sustained mean increase of 0.95 mV at each screening interval until the 8th week.

Histological study (Growth hormone nerve group): Histological architecture of the middle nerve segment was characterized by a good nerve fiber density, an acceptable degree of myelination with little granulation tissue and endoneural fibrosis (Figure 3).

Conclusions
Our work demonstrates the positive effect of the administration of recombinant human growth hormone in obtaining significantly improved conduction velocities, and a greater improvement in nerve regeneration from the fifth week of monitoring when compared to the control group. Histological analysis in the group receiving growth hormone showed good nerve fiber regeneration.

References
Figure 1. Macroscopic nerve regeneration.
Figure 3. Nerve regeneration under hormone effect