ENHANCING FUNCTIONAL RECOVERY WITH LOCAL FK506 HYDROGEL TREATMENT IN PERIPHERAL NERVE INJURY

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INTRODUCTION

- Nerve injuries result in loss of function with prolonged recovery.
- FK506 (tacrolimus) was found to have neurotrophic properties.
- However, systemic side effects limit its clinical applications.
- Aim: To assess functional recovery after systemic and local FK506 therapy with hydrogel following sciatic nerve injury on a rat model.

METHODS

- Sciatic nerve transaction and repair surgery was performed in all.
- Groups were followed up to 7 weeks with weekly FK506 blood level measurements and walking track/gait analysis.
- Gastrocnemius tetanic force was assessed at the endpoint.

RESULTS - 1

- Blood FK506 levels in the systemic group were within the therapeutic range (5-15 ng/mL) throughout the experiment.
- Levels in the local hydrogel-treated group were below detectable levels, after the mild initial burst following the surgery (3-7 days).

RESULTS - 2

- At 7 weeks, hydrogel group achieved greater functional index than its control.

RESULTS - 3

- The hydrogel and the systemic groups generated similar forces.
- The hydrogel group generated greater force than its respective control.

CONCLUSION

- Local FK506 delivery with hydrogel has the potential to improve functional outcomes after nerve injury, while negating systemic side effects.
- This hydrogel can be easily applied under direct visualization and could be injected under ultrasound guidance.

ACKNOWLEDGEMENTS

- This project was funded by the American Foundation for Surgery of the Hand (AFSH) Basic Science Grant, 2018.