



State University  
of Campinas  
São Paulo, Brazil



# TENSION-FREE VEIN PATCHED NERVE REPAIR

Authors: Heitor J. R. Ulson, MD - Luiz G Dadalt, MD

## OBJECTIVES

This paper studies an alternative technique to alleviate tension at the suture site in nerve gap repairs, by employing a vein-patched neurorrhaphy. Comparisons are made with two other techniques: an end-to-end suture under tension of a 10mm gap and nerve graft interposition.

## METHOD – THE DOG MODEL

Thirty four adult mongrel dogs of both sexes were studied according to the ethical protocols in three different procedures:  
1) – A tension-free vein patched repair; 2) – An end-to-end tensioned repair and 3) - A nerve graft.



*Nervus peroneus communis*    *Ramus cranialis, Vena saphena lateralis*



*Nervus peroneus communis - Neurectomy*



*Ramus cranialis, Vena Saphena lateralis*



*vein-patched nerve repair*



## RESULTS

1. There were no significant differences between the mean number of axons or in the "G" ratio, present in the proximal and distal portions of the nerves. Neither was there any significant difference in the mean number of myelinated fibers.
2. The vein-patched nerve repair has a higher rigidity and maximum resistance of at least twice as that of the end-to-end suture under tension.

## METHOD - BIOMECHANICAL TESTING

Another nineteen adult dogs were operated on to compare the biomechanical behavior of the repaired common peroneal nerve, using both the vein-patched sutures and the end-to-end sutures under tension (n=19), using progressively greater longitudinal loads on specimens. In a testing machine.

## METHOD - MORPHOMETRY



Programa Sigmascan  
Measurement,  
Jandel Co.; Sausalito,  
CA, EUA.  
5640 X

## CONCLUSION

### Advantages

- A single interface barrier for transposition;
- Easily harvested ipsi-lateral vein ;
- Avoids denervated areas from nerve harvesting;
- Nerve graft can be avoided;
- Facilitates early mobilization;
- Optical technique: loupe or microscope;

### Disadvantages

- Longer Procedure
- Additional incision may be necessary to reach the vein.

## CLINICAL CASES OF VEIN - PATCHED NERVE REPAIR



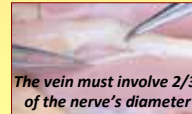
*The nerve gap*



*Vein-patched nerve repair*



*Maximun elasticity of the vein must be reached*



*The vein must involve 2/3 of the nerve's diameter*