

EXPERIMENTAL SURGERY FOR STUDYING THE EFFECT OF INFRA-RED IRRADIATION.

Four surgical models of facial nerve section-suture were performed.

Docteur Catherine VIDAL

Hafsa ER ROUASSI DOCTORANTE

Chantal ADOU

Georges LAMAS CCS Salpêtrière



Prototype N
(Qlarity Hong Kong)

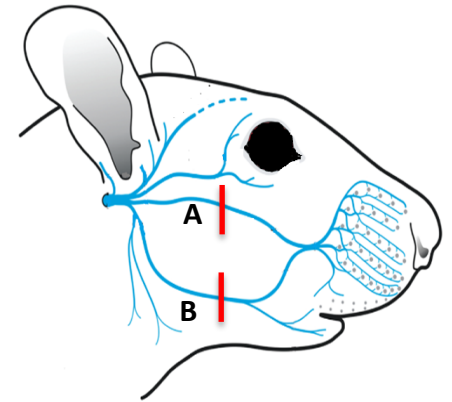
EXPERIMENTAL SURGERY: MODEL A

The buccal and marginal mandibular branches of the left facial nerve were sectioned, an end-to-end epineural suture was performed with 10/0 monofilament.

During the post-surgical period, the animals were submitted to observation of facial movement (whisker movement and nasal deviation)

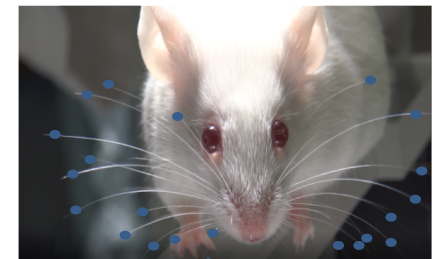
In the treated group, the animals were subjected to infrared irradiation with an exposure time of 2 x 120 sec per day. The exposure was done at in the perpendicular surgical area on the skin's surface. This was conducted one day after surgery and for a total of 16 days.

The second treated group underwent the same treatment in addition to a second exposure time of 2 x 120 sec on the whiskerpads of the injured side. This group showed a promising result for nasal deviation.

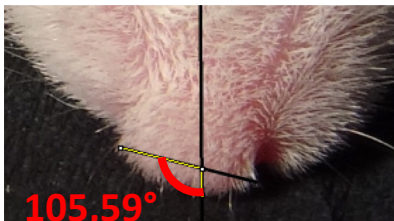


A- Distal section and end-to-end suture

Buccal and marginal mandibular branches. A: Buccal branch, B: marginal mandibular branch



Whisker movement



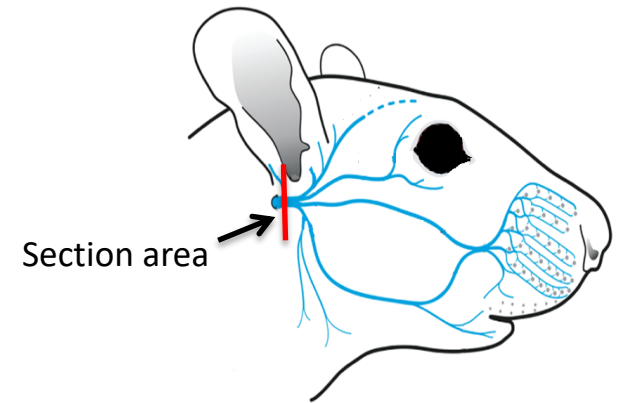
Nasal deviation

EXPERIMENTAL SURGERY: MODEL B

The main trunk of the left facial nerve was sectioned, an end-to-end epineural suture was performed with a 10/0 monofilament.

During the postsurgical period, the animals were submitted to observation of facial nerve recovery (whisker movement, nasal deviation and blink reflex) and the date of occurrence of the scyncinesia.

During infrared irradiation, the prototype was placed above the three irradiated areas: (1) injured area of the left facial nerve (main trunk) with an exposure time of 120 sec, (2) corresponding part of the brainstem (120 sec), and (3) corresponding vibrissae muscle (120 sec). This was conducted one day after surgery and for a total of 16 days.



B- Proximal section and end-to-end suture
Second portion of the facial nerve (main trunk)



Blink reflex

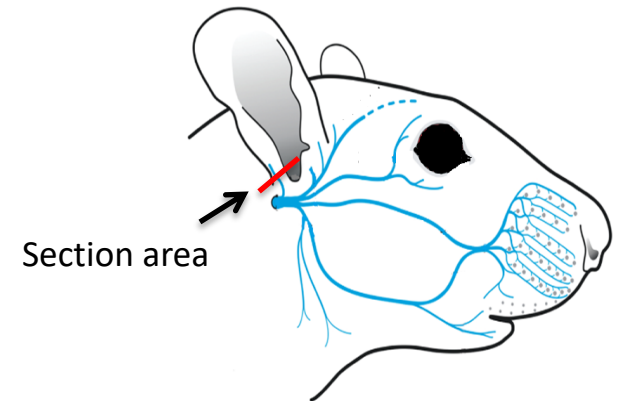
EXPERIMENTAL SURGERY: MODEL C

The posterior auricular nerve (PAN) is an isolated branch of the facial nerve which has been confirmed as the sole motor branch innervating the interscutularis muscle.

The PAN of the left side was sectioned, an end-to-end epineural suture was performed with 10/0 monofilament.

During the post-surgical period, the animals were submitted to observation of facial nerve recovery (ear movement under stress). After section of the PAN and in case of stress, the ear of the injured side is unable to retract back.

In the treated group, the animals were subjected to infrared irradiation with an exposure time of 2 x 120 sec on the surgical area on the skin's surface. This was conducted one day after surgery and for a total of 16 days.



C – Section and end-to-end suture Of the posterior auricular nerve



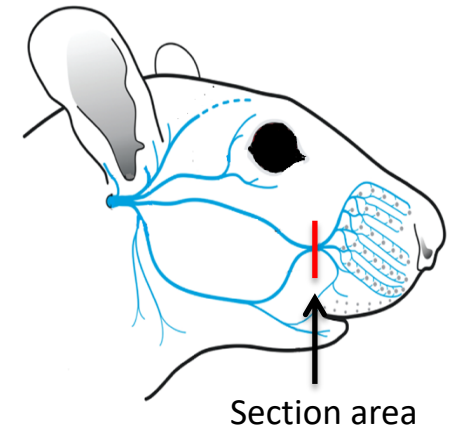
Auricular palsy

EXPERIMENTAL SURGERY: MODEL D

A section of the distal Pes (convergence of the buccal and marginal mandibular branches) was performed and an end-to-end epineural suture was done with a 10/0 monofilament.

During the post-surgical period, the outcomes measures of the facial nerve recovery were the whisker movement and the nasal deviation.

In the treated group, the animals were subjected to infrared irradiation with an exposure time of 2 x 120 sec on the surgical area on the skin's surface which allows irradiation of both the injured area and of the whiskerpads. This was conducted one day after surgery and for a total of 16 days.



D - Section and end-to-end suture
Distal Pes (convergence of the buccal and marginal mandibular branches)