Jun 06, 2022

Methods for Visualization of Pig Vagus Nerve "Vagotopy" Using Ultrasound

DOI
dx.doi.org/10.17504/protocols.io.bp2l61m4zvqe/v1

Megan Settell[1], Rex Chen[1], Kip Ludwig[1]

[1]University of Wisconsin - Madison

SPARC
Tech. support email: info@neuinfo.org

Megan Settell
University of Wisconsin - Madison, Mayo Clinic Graduate Scho...

DOI: https://dx.doi.org/10.17504/protocols.io.bp2l61m4zvqe/v1

Protocol Citation: Megan Settell, Rex Chen, Kip Ludwig 2022. Methods for Visualization of Pig Vagus Nerve "Vagotopy" Using Ultrasound. **protocols.io https://dx.doi.org/10.17504/protocols.io.bp2l61m4zvqe/v1**

Protocol status: Working
We use this protocol and it's working

Created: May 18, 2022

Last Modified: June 06, 2022

Protocol Integer ID: 62824

Keywords: visualizing pig vagus nerve vagotopy, pig vagus nerve vagotopy, pig vagus nerve, using ultrasound, histology method, ultrasound, ultrasound this protocol, methods for visualization, visualization

Abstract

This protocol describes the surgical, ultrasound, and histology methods for visualizing pig vagus nerve vagotopy.

Troubleshooting

Preparing Surgical Pocket for Vagus Nerve Ultrasound

1 Surgically Expose the Vagus Nerve

1.1 Place subject in dorsal recumbence position.

1.2 Expose the length of the cervical vagus nerve by creating an incision (15-20 cm long) approximately 3 cm lateral and parallel to midline starting at the level of the mandible.

1.3 Divide tissue using blunt dissection to expose the carotid sheath, identifying and removing connective tissue from the carotid artery, vagus nerve and jugular vein.

1.4 Particular attention should be paid to clearing the vagus nerve at the most cranial point of interest (superior cervical ganglion, nodose/inferior cervical ganglion) to the caudal region of interest.

2 Place wire under the vagus nerve every 2-3 cm, where histology samples will be taken.

2.1 Depending on the diameter and type of wire, artifact will be created in the ultrasound to allow for histological matching. (ex: Silver (Ag) 0.015'' bare wire)

3 Fill the surgical pocket with room temperature/heated 0.9% Sodium Chloride (saline).

4 Collect ultrasound in regions of interest, or along the length of the vagus nerve.

Histology of Vagus Nerve Following Ultrasound

5 Pat the vagus nerve dry with surgical gauze, or cotton tipped swabs above each wire.

6 Place histology dye as desired to mark the location of each wire along the length of the vagus nerve.

6.1 Recommended Histology Dye: Bradley Products, Inc., Davidson Marking System, Bloomington, MN.

7 Once histology dye has been placed in the desired locations, remove the vagus nerve and place in 10% Neutral Buffered Formalin for histological processing.

8 For Gomori's trichrome staining, please see our previously published protocol: **dx.doi.org/10.17504/protocols.io.9ieh4be**