nephron loss, cardiac dysfunction and heart failure due to left ventricular hypertrophy and myocyte loss, stroke, and even diabetes. Therefore, modulation (reduction/removal) of this increased sympathetic activity can slow or prevent the progression of these diseases.

[0005] Although ablation of such nerves can have positive effects on drug resistant hypertension and glucose metabolism abnormality, current methodologies for denervation (e.g. ablation) are conducted without adequate feedback (with respect to the site of a denervation event, the extent of denervation, the effect of denervation on local physiology, etc.).

SUMMARY

[0006] One objective of this disclosure is to provide a microsurgical tool for monitoring, evaluating, mapping, and/or modulating electrophysiological activity in the vicinity of an organ or a vessel within a body. Another objective is to provide a system and method for evaluating the sympathetic tone of a subject. Yet another objective is to provide a system for neuromodulating an anatomical site in the vicinity of an organ or vessel within a body. Another objective is to provide an implantable device for monitoring and/or performing a neuromodulation procedure.

[0007] The above objectives are wholly or partially met by devices, systems, and methods according to the appended claims in accordance with the present disclosure. Features and aspects are set forth in the appended claims, in the following description, and in the annexed drawings in accordance with the present disclosure.

[0008] According to a first aspect there is provided, a microsurgical tool for monitoring electrophysiological activity within the vicinity of an organ within a body, the microsurgical tool including an endoscopically deliverable elongate structure configured so as to extend from an entry site within the body to the vicinity of the organ; and at least one sensing tip electrically and mechanically coupled to the elongate structure, the at least one sensing tip being configured: to interface with tissues in the vicinity of the organ; to measure local neural activity associated with the tissues in the vicinity of the organ and to convey one or more electrophysiological signals associated with the local neural activity; wherein the at least one sensing tip comprises a clamp structure having an

inner surface configured to interface with the tissues in the vicinity of the organ and an outer surface opposite the inner surface; and wherein the at least one sensing tip comprises: a plurality of electrodes arranged on the inner surface of the clamp, the plurality of electrodes comprising one or more sensing electrodes configured to measure the local neural activity associated with the tissues in the vicinity of the organ; andone or more additional electrodes arranged on the outer surface of the clamp, the one or more additional electrodes arranged on the outer surface of the clamp being configured to determine a reference signal used by the at least one sensing tip to cancel out ambient environmental action potentials and noise from measurements of the local neural activity by the one or more sensing electrodes on the inner surface of the clamp.

[0009] In aspects, the electrophysiological signals may be related to one or more of water concentration, tissue tone, evoked potential, remotely stimulated nervous activity,