[0034] In aspects, one or more of the feedback signals may be related to an electrode impedance, a bioimpedance, a local electrical field, and/or an electrophysiological response to the pulsatile and/or radio frequency signal, an analyte level, a hormone level, water concentration, tone, blood oxygen saturation of local tissues, evoked potential, stimulation/sensing of nervous activity, electromyography, temperature, blood pressure, vasodilation, vessel wall stiffness, muscle sympathetic nerve activity (MSNA), central sympathetic drive (e.g. bursts per minute, bursts per heartbeat, etc.), tissue tone, blood flow (e.g. through an artery, through a renal artery), a blood flow differential signal (e.g. a significantly abnormal and or sudden change in blood flow within a structure of the body, a vessel, an organ, etc.), blood perfusion (e.g. to an organ, an eye, etc.), a blood analyte level (e.g. a hormone concentration, norepinephrine, catecholamine, renine, angiotensin II, an ion concentration, a water level, an oxygen level, testosterone, etc.), a state of inflammation within an organ, a change in growth rate of an organ, nerve traffic (e.g. post ganglionic nerve traffic in the peroneal nerve, celiac ganglion, superior mesenteric ganglion, aorticorenal ganglion, renal ganglion, carotid body, splanchnic nerve, hypogastric nerves, testicular plexus, vesical plexus, prostatic plexus, and/or related nervous system structures), combinations thereof, and the like.

[0035] In aspects, the control unit may be configured to locate a target treatment site with respect to one or more components of the surgical tool based upon one or more of the signals, and/or to exclude an anatomical site from a surgical procedure based upon one or more of the signals.

[0036] According to aspects there is provided, a method for altering the physiological function of a tissue site in the vicinity of a prostate of a subject including altering the function of one or more nerves or neural receptors belonging to and/or coupled to a prostatic plexus of the subject.

[0036A] According to aspects there is provided a method for altering a recording of electrophysiological signals generated by one or more nerves or neural receptors belonging to and/or coupled to a prostatic plexus of a subject, comprising: delivering energy and/or a chemical substance to a tissue site in the vicinity of a prostate of the subject; and recording one or more electrophysiological signals in the vicinity of the

nerves, the neural receptors, the prostatic plexus, the prostate, a penis, a testicle, or a neural structure related thereto.

[0037] In aspects, the altering of function may be accomplished via delivery of energy, and/or delivery of a chemical substance to the nerves, the receptors, the prostatic plexus, or a neural structure coupled thereto.

[0038] In aspects, the altering of function may be accomplished via an ablation, an excision, a cut, a burn, a radio frequency ablation, a cryoablation, a radiosurgical

WHAT IS CLAIMED IS:

1. A surgical tool for monitoring and/or altering electrophysiological activity within the vicinity of a prostate within a body, the surgical tool comprising:

- an elongate member with a distal tip, the distal tip shaped and dimensioned so as to fit within a lumen of the body, the elongate member shaped and dimensioned so as to extend from outside the body, through an entry site on the body and into the lumen; and
- the distal tip comprising one or more sensing elements, energy delivery elements, and/or chemical delivery elements arranged there upon and coupled to the distal tip such that biasing of the distal tip towards the prostate, engages one or more of the elements with a wall of the lumen.

2. The surgical tool in accordance with claim 1, comprising one or more imaging elements coupled to the distal tip, configured to couple with tissues in the vicinity of the prostate upon biasing of the distal tip towards the prostate.

3. The surgical tool in accordance with claim 2, wherein the imaging element comprises one or more of an ultrasound transducer array, an ultrasound element, a transducer, a piezoelectric element, an optical coherence tomography (OCT) element, a capacitive micromachined ultrasound transducer, a camera, an infrared camera, a near infrared camera, a deep tissue penetrating imaging element, a fiber optic array, or a combination thereof.

4. The surgical tool in accordance with claim 2 or 3, wherein the imaging element is configured to convey information about a neural structure in the vicinity of the prostate to an operator during operation of the surgical tool.

5. The surgical tool in accordance with claim 4, wherein the information pertains to the location, health state, a quantity, blood flow to, blood flow through, temperature, a stiffness, and/or changes therein, of an artery, a vein, a nerve, a neural plexus, a prostatic plexus, a prostatic artery, a dorsal nerve, a cavernous nerve, a vesical plexus, a hypogastric nerve, a splanchnic nerve, a pudendal nerve, an organ, a urethra, the prostate, a reference point, or a combination thereof.

6. The surgical tool in accordance with any preceding claim, wherein one or more of the sensing elements are configured to monitor one or more physiological signals associated with a tissue in the vicinity of the prostate while engaged with the wall, the electrophysiological signals related to one or more of water concentration, tissue tone, evoked potential, remotely stimulated nervous activity, sympathetic nervous activity, an electromyographic signal [EMG], a mechanomyographic signal [MMG], a local field potential, an electroacoustic event, vasodialation, vessel wall stiffness, muscle sympathetic nerve activity [MSNA], central sympathetic drive, nerve traffic, or a combination thereof.

7. The surgical tool in accordance with claim 6, wherein one or more of the sensing elements comprises an electrode for monitoring one or more of the physiological signals.

8. The surgical tool in accordance with any preceding claim, wherein one or more of the sensing elements are electrically coupled with a microcircuit, the microcircuit configured to condition one or more of the signals conveyed therefrom.

9. The surgical tool in accordance with claim 8, wherein the microcircuit is embedded into the surgical tool and at least a portion of the electrical coupling is provided via the elongate member.

10. The surgical tool in accordance with any preceding claim, wherein one or more of the sensing elements comprises a microelectrode configured to interface with an adjacent tissue volume within or beyond the wall of the lumen while engaged with the wall, the microelectrode having an area of less than 5000squm, less than 1000squm, less than 250squm, or less than 100squm.

11. The surgical tool in accordance with any preceding claim, comprising a plurality of sensing elements arranged upon and coupled to the distal tip, the sensing elements configured to collectively map electrophysiological activity in the vicinity of the prostate while engaged with the wall.

12. The surgical tool in accordance with any preceding claim, wherein one or more of the energy delivery elements is configured to provide a radio frequency current, a microwave current, thermal energy, cryoablating action, and/or ultrasound energy, to a volume of tissue in the vicinity of the prostate while engaged with the wall.

13. The surgical tool in accordance with any preceding claim, one or more energy delivery elements comprises one or more stimulating electrodes electrically and mechanically coupled to the distal tip and/or the elongate member, the stimulating electrodes configured to provide a stimulating and/or ablating current to a tissue site in the vicinity of the prostate while engaged with the wall.

~~14. The surgical tool in accordance with claim 13, wherein one or more of the stimulating electrodes have an area of greater than 0.1sqmm, 0.5sqmm, 1sqmm, 2sqmm, or 10sqmm.~~

~~15.~~14. The surgical tool in accordance with any preceding claim, comprising a fluid delivery means for providing a coupling fluid to the distal tip to enhance the engagement of one or more of the sensing elements, imaging elements, and/or energy delivery elements with the wall when biased there against, and/or to protect the wall during the passage of energy there through.

~~16.~~15. The surgical tool in accordance with any preceding claim, wherein one or more chemical delivery elements comprises one or more probes mechanically, fluidly, and/or electrically coupled with the distal tip, arranged so as to penetrate through the wall upon engagement there with or upon a deployment procedure, one or more of the probes comprising a lumen configured to deliver a diagnostic and/or therapeutic substance to a tissue site beyond the wall of the lumen.

~~17. The surgical tool in accordance with claim 16, one or more of the sensing elements configured to monitor the effect of the diagnostic and/or therapeutic substance on the tissue site and/or tissues related thereto.~~

~~18.~~16. The surgical tool in accordance with any one of claims 16 or 17, wherein the diagnostic and/or therapeutic substance is selected from a chemical, a drug substance, a neuromodulating substance, a neuroblocking substance, an acid, a base, a denervating agent, or a combination thereof.

~~19.~~17. The surgical tool in accordance with any one of claims 16 – 18, wherein the therapeutic substance is a selected from a ~~neutotoxin~~neurotoxin, a botulinum toxin, a

tetrodotoxin, a tetraethylammonium, a chlorotoxin, a curare, a conotoxin, a bungarotoxin, arsenic, ammonia, ethanol, hexane, nitric oxide, glutamate, resiniferatoxin, alchohol, phenol, capaicin, an anesthetic, lidocaine, tetanus toxin, quaternary ammonium salts, a pachycurare, a leptocurare, acetylcholine, aminosteroids, or a combination thereof.

~~20. The surgical tool in accordance with any preceding claim, wherein a function of one or more of the energy delivery elements is coordinated with information from one or more of the sensing elements and/or imaging elements so as to focus energy on a target tissue site in the vicinity of the prostate while minimizing energy delivery to an adjacent tissue site.~~

~~21.~~ 18. The surgical tool in accordance with any preceding claim, wherein the lumen is a rectum, a urethra, an artery, a vein, or a duct.

~~22. A system for monitoring and/or altering electrophysiological activity within the vicinity of a prostate within a body, comprising:~~

~~a surgical tool in accordance with any one of claims 1 21, configured to perform a surgical procedure, image tissues, and/or monitor electrophysiological activity in the vicinity of the prostate generating one or more signals therefrom; and~~

~~a control unit configured to accept one or more of the signals from the surgical tool, and to adjust or plan the surgical procedure dependent upon the signals, to display the signals, to evaluate the surgical procedure dependent upon the signals, to plan a surgical path for the surgical~~

~~procedure dependent upon the signals, and/or to determine the extent of the procedure dependent upon the signals.~~

~~23. The system in accordance with claim 22, wherein the surgical procedure is selected from an ablation, an excision, a cut, a burn, a radio frequency ablation, a cryoablation, a radiosurgical procedure, delivery of energy, an ultrasonic ablation, an abrasion, a biopsy, delivery of a substance, or a combination thereof.~~

~~24. The system in accordance with claim 22 or 23, comprising a stimulation and/or ablation electrode configured so as to convey a pulsatile and/or radio frequency signal to a tissue in the vicinity of the prostate or a site coupled thereto via the control unit, the surgical tool configured to convey one or more feedback signals related to the pulsatile and/or radio frequency signal back to the control unit.~~

~~25. The system in accordance with claim 24, wherein one or more of the feedback signals are related to an electrode impedance, a bioimpedance, a local electrical field, and/or an electrophysiological response to the pulsatile and/or radio frequency signal.~~

~~26. The system in accordance with any one of claims 22 – 25, wherein the control unit is configured to locate a target treatment site with respect to one or more components of the surgical tool based upon one or more of the signals.~~

~~27.~~19. ~~The system in accordance with any one of claims 22 – 26, wherein the control unit is configured to exclude an anatomical site from a surgical procedure based upon one or more of the signals.~~

~~28.~~20. A method for altering the physiological function of a tissue site in the vicinity of a prostate of a subject comprising: altering the function of one or more nerves or neural receptors belonging to and/or coupled to a prostatic plexus of the subject.

21. A method for altering a recording of electrophysiological signals generated by one or more nerves or neural receptors belonging to and/or coupled to a prostatic plexus of a subject, comprising: delivering energy and/or a chemical substance to a tissue site in the vicinity of a prostate of the subject; and

recording one or more electrophysiological signals in the vicinity of the nerves, the neural receptors, the prostatic plexus, the prostate, a penis, a testicle, or a neural structure related thereto.

~~29.~~22. The method in accordance with claim ~~28~~19 or 20, wherein the ~~altering of function~~alteration is accomplished via delivery of energy, and/or delivery of a chemical substance to the nerves, the receptors, the prostatic plexus, or a neural structure coupled thereto.

~~30.~~23. The method in accordance with ~~claim 28 or 29~~any one of claims 19 to 21, wherein the alteration~~altering of function~~ is accomplished via an ablation, an excision, a cut, a burn, a radio frequency ablation, a cryoablation, a radiosurgical procedure, an ultrasonic ablation, an abrasion, delivery of a substance, or a combination thereof.

~~31.~~24. The method in accordance with any one of ~~claims 28—30~~claims 19 to 22, comprising accessing the nerves, the receptors, or the prostatic plexus with a

guidewire or surgical tool inserted into a prostatic artery or an artery coupled thereto, and/or a prostatic venous plexus or vein coupled thereto.

~~32. The method in accordance with claim 31, wherein the altering of function is provided at least in part by the guidewire or the surgical tool.~~

~~33. The method in accordance with any one of claims 28—32, comprising inserting a guidewire or a needle into a hyperplastic lobe of the prostate, the altering of function accomplished at least in part by the guidewire or the needle.~~

~~34.~~25. ~~The method in accordance with any one of claims 28—33, comprising inserting a surgical tool into a rectum of the subject, the altering of function provided at least in part by the transrectally inserted surgical tool.~~

~~35. The method in accordance with any one of claims 28—34, comprising inserting a surgical tool into a urethra of the subject, the altering of function provided at least in part by the transurethrally inserted surgical tool.~~

~~36. The method in accordance with any one of claims 28—35, comprising locating the prostatic plexus or one or more neural structures coupled thereto with an imaging modality selected from computed tomography with or without fluoroscopy, MRI, PET, and/or ultrasound.~~

~~37. The method in accordance with any one of claims 28—36, wherein the step of accessing is assisted by injection of a contrast agent into a prostatic artery or an artery coupled thereto.~~

~~38.~~26. The method in accordance with ~~any one of claims 28—37~~claim 19, comprising recording one or more electrophysiological signals in the vicinity of the nerves, the neural receptors, the prostatic plexus, the prostate, a penis, a testicle, or a neural structure related thereto.

~~39.~~27. The method in accordance with claim ~~38~~20 or 24, comprising confirming, and/or determining the extent of the altering of function based upon the recording.

~~40.~~28. The method in accordance with any one of claims ~~38~~20, 24 and 25~~or 39~~, comprising determining an adverse effect of the altering of function on one or more of the related neural structures based upon the recording, the adverse effect being related to a change in function of the related neural structures.

~~41. The method in accordance with claim 40, comprising halting or adjusting the altering of function if the adverse effect is substantial.~~

42. A method for altering the physiological function of a tissue site in the vicinity of a testicle of a subject comprising altering the function of one or more nerves or neural receptors coupled to the testicle.

43. The method in accordance with claim 42, comprising altering the function of one or more nerves or neural receptors belonging to a testicular plexus of the subject.

44. The method in accordance with claim 42 or 43, wherein the altering of function is accomplished via delivery of energy, and/or delivery of a chemical substance to the nerves, the receptors, the testicular plexus, or a neural structure coupled thereto.

45. The method in accordance with any one of claims 42—44, wherein the altering of function is accomplished via an ablation, an excision, a cut, a burn, a radio frequency ablation, a cryoablation, a radiosurgical procedure, an ultrasonic ablation, an abrasion, delivery of a substance, or a combination thereof.

46. The method in accordance with any one of claims 42—45, comprising accessing the nerves, the receptors, or the testicular plexus with a guidewire or surgical tool inserted into a testicular artery or an artery coupled thereto.

47. The method in accordance with claim 46, wherein the altering of function is provided at least in part by the guidewire or the surgical tool.

48. The method in accordance with any one of claims 42—47, comprising transcutaneously inserting a needle into the testicular plexus or a neural structure coupled thereto, the altering of function accomplished at least in part by the needle.

49. The method in accordance with any one of claims 42—48, comprising recording one or more electrophysiological signals in the vicinity of the nerves, the neural

~~receptors, the testicular plexus, the testicle, a ductus deferens, a penis, or a neural structure related thereto.~~

~~50. The method in accordance with claim 49, comprising confirming, and/or determining the extent of the altering of function based upon the recording.~~

~~51. The method in accordance with claim 49 or 50, comprising determining an adverse effect of the altering of function on one or more of the related neural structures based upon the recording, the adverse effect being related to a change in function of the related neural structures.~~

~~52. The method in accordance with claim 51, comprising halting or adjusting the altering of function if the adverse effect is substantial.~~

~~53. Use of a method in accordance with any one of claims 42—52 to alter testosterone production in a body.~~

~~54. Use of a surgical tool in accordance with any one of claims 1—21, a method in accordance with any one of claims 28—41, a system in accordance with any one of claims 22—27, or a method in accordance with any one of claims 42—52 to treat a disease of the lower urinary tract.~~

~~55. Use of a surgical tool in accordance with any one of claims 1—21, a method in accordance with any one of claims 28—41, or a system in accordance with any one of claims 22—27 to treat prostate cancer (PrCa), benign prostatic hyperplasia (BPH), and/or chronic prostatitis (CP).~~

~~56. Use of ipsilateral, contralateral, and/or bilateral neuromodulation, sympathectomy, partial sympathectomy, parasympathectomy, and/or partial~~

~~parasympathectomy to treat prostate cancer (PrCa), benign prostatic hyperplasia (BPH), and/or chronic prostatitis (CP).~~

~~57. Use of a percutaneously deliverable ablation catheter and/or an ablation guidewire to treat prostate cancer (PrCa), benign prostatic hyperplasia (BPH), and/or chronic prostatitis (CP).~~

~~58. Use of a neuromodulating substance, a neuroblocking substance, a denervating agent, or a combination thereof to treat prostate cancer (PrCa), benign prostatic hyperplasia (BPH), and/or chronic prostatitis (CP).~~

~~59.~~29. ~~Use of a surgical tool in accordance with any one of claims 1—21, to monitor and/or alter electrophysiological activity in the vicinity of a wall of a bowel, a rectum, an intestine, or a combination thereof.~~