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Neurosurgical Clinical Areas of Interest or "AOIs"

High Level Tumor AOIs

1. Areas of interest in tumor include all primary and secondary tumors.
2. Evaluating the clinical impact of NICO technologies in the following surgical approaches:
    a. Minimally Invasive Parafascicular Surgery "MIPS"
    b. Endoscopic
    c. Expanded Endo Nasal/Skull base
    d. Open
3. Evaluating the clinical impact of NICO's technologies in combination with other technologies such as imaging, tissue differentiation technologies and drug delivery etc.

High Level Enabling NeuroOncology and Precision Medicine AOIs

1. Areas of interest in NeuroOncology include:
    a. Evaluating the impact of immediate intraoperative biological tissue and microenvironment preservation in the preanalytical phase on the quality and value of tissue obtained
    b. Evaluating the impact of increased volume and regionalized sampling to improve the viability of heterogeneous tissue collected for research, assay testing & novel therapeutic development/testing
    c. Evaluating the benefit of standardizing the tissue collection and biological process from a scientific and operational impact

High Level Vascular AOIs

1. Areas of interest in vascular include ICH, IVH, and Cavernous Malformations.
2. Evaluating the clinical impact of NICO technologies in the following surgical approaches:
    a. Minimally Invasive Parafascicular Surgery "MIPS"
    b. Endoscopic
3. Evaluating the clinical impact of NICO's technologies in combination with drug delivery
4. Clinical investigation toward advancing intervention and care for traumatic ICH
5. For post-ENRICH related AOIs, please visit the ENRICH Investigator Initiated Study Page (link)

High Level Economic and Operational Efficiency AOIs

1. Surgical treatment conversions via the use of NICO technologies:
    a. Non-operable to operable
    b. Conventional to MIPS, Endoscopic or EEA
    c. Elimination of secondary procedures (no cranioplasty)
2. MIPS surgeon's value to the healthcare system & impact to practice & patient
3. Surgical efficiencies as an economic measure

High Level Future and Miscellaneous AOIs

1. Development of new teaching or practice models for neurosurgery
2. Novel uses or applications for brain access or therapeutic delivery using NICO's technologies
3. Evaluating the long-term impact of MIPS surgery versus conventional on cognitive recovery
4. Evaluating the impact of the reduction or elimination of post corticosteroids with MIPS

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Neuro Pre-Clinical Areas of Interest or "AOIs"
Intracranial, Extracranial, Malignant or Benign Investigation

High Level AOIs for Various Tumors and Abnormalities

1. Progress of disease, biological changes, or therapeutic response without animal sacrifice measuring:
    a. Metabolic profiles, stability of individual metabolites, and global metabolic function
    b. Chemokines/cytokines
    c. Drug levels of intact abnormality throughout disease intervention
2. Standard of maintaining tissue quality and microenvironment/immune environment to advance research:
    a. Volume of tissue/cells obtained
    b. Accuracy of needle placement and subsequent regions
    c. Tumoral cellular yield
3. Identification of potential therapeutic targets for post-resection intracavity delivery beyond the blood brain barrier and cellular architecture
4. Biologically preserved regionalized tissue collection and annotation confirmed by molecular/genetic measures

High Level Enabling Oncology and Precision Medicine AOIs

1. Standardized method for tissue transfer cross-institutionally while maintaining biological integrity of samples for increased collaboration
2. Development of live tissue/new-age biobanking against historical techniques and challenges
3. Investigation of unique markers from active biological tissue toward enhanced methods of tissue differentiation via imaging, fluorescence, or other novel concept
4. Variety of high-quality fresh tissue PDX models or avatars enabling research to increase understanding in molecular biomarkers and tissue microenvironment/immune environment
5. Longitudinal genomic profiling to understand impact of initial treatment at molecular level providing information on mutation of primary disease and impact on treatment adjustment
6. Intracavity delivery and/or evaluation of novel therapeutics

High Level Vascular AOIs

1. Potential pathophysiological targets in tissue (obtained via APS) for attenuating secondary injury
2. Options in development and intracavity delivery of neuroprotective agents or other therapeutics following ICH removal based on biomarker observation
    a. Toxicity and dosing
    b. Delivery beyond the blood brain barrier and cellular architecture

High Level Economic and Operational Efficiency AOIs

1. Extended survival of pre-clinical models from patient derived tissues
    a. Efficient, reproduceable, standardized methods of serial biopsy over disease progression in one animal
    b. Evaluate economic impact of long-lasting tissue models
2. Measure of operational differences of APS versus traditional laboratory techniques and correlation to economic impact
    a. Tissue harvest
    b. Sample preparation/processing
    c. Growth and culture
    d. Animal model survivability

High Level Future and Miscellaneous AOIs

1. Observations matched to scientific data on impact of instrumentation and other environmental factors on key protein and genetic information
2. Projects related to facilitating direct delivery or placement of:
    a. Targeted therapeutics bypassing blood brain barrier/cellular architecture
    b. Brain computer interface