May 18, 2021

SPARC Cat - Sham Control Chronic Implant Cat 4, Day 30

Brett Hanzlicek[1], Anna Rietsch[2], Margot Damaser[2]

[1]Advanced Platform Technology Center, Louis Stokes VA Hospital, Cleveland, Ohio;

[2]Department of Biomedical Engineering, Cleveland Clinic Lerner Research Institute, Cleveland, Ohio

 dx.doi.org/10.17504/protocols.io.bfz3jp8n

SPARC
Tech. support email: info@neuinfo.org

Brett Hanzlicek

ABSTRACT

This is a procedure for a sham control chronic implant cat experiment (Day 30-terminal) for cystotomy (bladder surgery). The cystotomy was performed and an inactive UroMOCA was implanted on Day 0. The cat was observed daily and imaged on day 0, 14 and 30 to track changes to the bladder and overall cat health in response to the cystotomy and device implant. This protocol includes , urodynamics and imaging for Day 30 in the chronic experiments.

DOI

dx.doi.org/10.17504/protocols.io.bfz3jp8n

PROTOCOL CITATION

Brett Hanzlicek, Anna Rietsch, Margot Damaser 2021. SPARC Cat - Sham Control Chronic Implant Cat 4, Day 30. **protocols.io**
https://dx.doi.org/10.17504/protocols.io.bfz3jp8n

CREATED

May 05, 2020

LAST MODIFIED

May 18, 2021

PROTOCOL INTEGER ID

36635

MATERIALS TEXT

Cat - Domestic short-haired cat. Male or female. 6-24 months; 3.5-5.0kg
Syringe Pump - Genie Touch; Kent Scientific
Pressure Transducer - Catalog # 503067
WPI Amplifier - 4 channel transbridge
WPI National Instruments multifunction I/O device - NI USB 6259
National Instruments Laptop with Labview software
Tubing - Masterflex L/S Platinum-Cured Silicone Tubing ID 3/16 "; Cole Parmer
BNC cables
Tubing to catheter - APIS
Laborie Catheter - Argyl Suction Catheter, 3.5 Fr Catalog # 8890703211
Covidien Sutures - 4-0 Vicryl Polysorb (Covidien UL212)
3-0 Prolene (Ethicon 8762)
2-0 Silk Syringe
60ml Contrast
Visipaque 320mg/ml
Surgilube
Surgical instruments

BEFORE STARTING

1 week before start of experiment - Confirm absence of bladder spasm; healthy cat

12 hours before experiment, start fasting the cat

You must transport the animal chart along with the cat to surgery site. The veterinary team will record all relevant data in the chart. The chart must then go back to the housing site.

Observations

1 Cat continued to be active and playful while the inactive device was in the bladder. There were no problems observed during urination

Transport Cat

2 Transport cat from housing site to surgery site.

Animal Prep and catheter placement

3 Animal is anesthetized and abdomen is shaved by the vet team. The cat is then moved into the surgery room and attached to monitors by the vet team.

4 Drape animal and perform betadine scrub on abdomen and genitals.

5 Put surgilube on 3.5Fr catheter and insert into bladder through the urethra. Advance the catheter until resistance is met, then pull back 2-3cm.

6 Use gentle suction with syringe to withdraw urine from bladder through the catheter. Measure the volume and save the urine for urinalysis.

5 mL urine removed

Citation: Brett Hanzlicek, Anna Rietsch, Margot Damaser (05/18/2021). SPARC Cat - Sham Control Chronic Implant Cat 4, Day 30. https://dx.doi.org/10.17504/protocols.io.bfz3jp8n

Cystogram - DYNA CT

7 Use 1:5 dilution of contrast to saline to visualize bladder.

Fill the bladder with **5 mL** contrast and take a single CT image (11:25:52)

Add another **10 mL** of contrast to the bladder (total of 15ml) and take a single image (11:26:55)

Take a 3D CT image with 15ml contrast:saline in the bladder

8 Empty Bladder

Urodynamics/Cystometry 1

9

Performed after cat is transferred from Isoflurane to propofol anesthetic.

Fill rate is 2ml saline/minute using syringe pump.

Data is recorded using Labview software.

Pressure is recorded using an external pressure transducer connected to syringe pump on one end and tubing that leads to the catheter on the other end.

10 Fill bladder with saline and record pressure using pressure transducer connected to LabView

Round 1 urodynamics

Fill to **15 mL**

o May have had spontaneous contraction at beginning of fill o More contractions around 13ml
o Stop filling at 15 ml saline (11:41 am) after detecting leak point=leakage around catheter
o Large leak volume when tugging on catheter

11 Empty Bladder

Urodynamics/cystometry 2

12 Fill bladder with saline at 2ml/min

Citation: Brett Hanzlicek, Anna Rietsch, Margot Damaser (05/18/2021). SPARC Cat - Sham Control Chronic Implant Cat 4, Day 30. https://dx.doi.org/10.17504/protocols.io.bfz3jp8n

13 o Stop filling at 14 ml saline (noon) after detecting leak point=leakage around catheter
o Spontaneous contractions seen on recording without pulling on catheter.
o Large leak volume when tugging on catheter
o 16ml withdrawn from bladder

Euthanasia

14 Cleveland Clinic animal team euthanizes the animal

Dissection/Histology

15 Bladder is removed and placed in formalin for histological analysis

Overall, the surgeons thought the bladder looked good.

Citation: Brett Hanzlicek, Anna Rietsch, Margot Damaser (05/18/2021). SPARC Cat - Sham Control Chronic Implant Cat 4, Day 30. https://dx.doi.org/10.17504/protocols.io.bfz3jp8n