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SPARC Cat - Sham Control Chronic Implant Cat 4, Day 14

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ABSTRACT

This is a procedure for a sham control chronic implant cat experiment (Day 14) for cystotomy (bladder surgery). The cystotomy is performed and an inactive UroMOCA was placed in the bladder. The cat is 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 implantation. This protocol includes basic surgery, urodynamics and imaging for Day 14 in the chronic experiments.

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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.

Transport Cat

1 Transport cat from housing site to surgery site.

Animal Prep and catheter placement

2 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.

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

4 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.

5 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

The low urine volume may be due to the later starting time

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Observations

6 Initially, there appeared to be a small bump near the incision site. After the cat was anesthetized, the Cleveland Clinic veterinarian determined there was no hernia and the small bump was most likely a seroma that disappeared.

The cat acted normal and had no issues urinating the previous 14 days.

Cystogram - DYNA CT

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

Fill the bladder with **15 mL** contrast and take a single CT image.

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
- o Stop filling at 14.6 ml saline after detecting leak point=leakage around catheter
- o Spontaneous contractions seen on recording without pulling on catheter before leak
- o Removed 16.5 ml saline+urine, so the leak point may be closer to 16.5 ml

11 Empty Bladder

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Urodynamics/cystometry 2

12 Fill bladder with saline at 2ml/min

13 Fill bladder with saline and record pressure using pressure transducer connected to LabView
- o Stop filling at 12.1 ml saline after detecting leak point=leakage around catheter
- o Small spontaneous contractions seen on recording without pulling on catheter before leak
- o Removed 19.0 ml saline+urine, so the leak point may be closer to 19.0 ml

Wake and return cat

14 Wait for cat to wake up and return to housing site.

This cat has gone through puberty and is an adult cat. Previous cats may not have been adult.

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