**Post-surgery pain management.**

Per the protocols established by the Animal Care and Use Committee at The Ohio State University (OSU) protocol all mice that underwent any surgical procedure were administered by pain killers intra and postoperatively as shown in Supplementary Table 1 and as discussed below.

Additionally, we performed a pain assessment on all mice that underwent any surgical procedure using the mouse grimace scale preoperative (Baseline). The assessment was performed every 6 hours during the day, and 12 hours during the nights after surgery for three days, then twice daily till the endpoint.

Clinically, we were not expecting organ function damage because the ligation causes a different outcome than the aortic cross clamping “open repair” surgeryS1 where ischemia reperfusion injury affects all organs below the site of cross clamping. The ligation surgery causes hypoperfusion at the level of the intercostal vessels that have been ligated, which predominantly affects only the spinal cord.

If the animal experienced seizures, labored breathing, more than 10% loss of body weight, or if the animal developed pain that was not responding to a dose of Meloxicam or Buprenorphine, the animal was humanely sacrificed.

Supplementary Table 1. Post-operative pain control agents, concentration, dose, and frequency.

|  |  |  |  |
| --- | --- | --- | --- |
| Drug  | Concentration  | Amount/Rout  | Timing  |
| Bupivacaine  | 0.25 %  | 0.1-0.2 ml subcutaneously   | Locally at site of incision before surgery  |
| Buprenorphine  | 0.1 mg/kg  | 1 ml subcutaneously  | At time of surgery then as needed  |
| Meloxicam  | 2mg/kg  | 1 ml subcutaneously  | At time of surgery then once daily for 72 hours then as needed  |