A. Spikefrequency AUC/respiratory cycle B. Spike frequency AUC/minute **Female** Male **Female** Male 1.5 1.5 1.5 1.5 P = 0.0029P = 0.0386Ratio to baseline P = 0.0142Ratio to baseline 1.0 1.0 0.5 0.5 0.5 0.5 lpsi (N = 3)lpsi(N = 4)Ipsi Sham (N = 4)Sham (N = 3)Sham Contra (N = 4)Contra Contra (N = 4)0.0 0.0 **Baseline Postop** Baseline Postop Baseline Postop Baseline **Postop** C. JPhr AUC/respiratory cycle D. JPhr AUC/minute **Female** Male Male **Female** 1.5 2.0 1.5 1.5 P = 0.0261P = 0.0142Ratio to baseline Ratio to baseline 1.5 1.0 1.0 1.0 0.5 0.5 0.5 0.5 Ipsi Ipsi Sham Sham Contra Contra 0.0 0.0 0.0 0.0 Baseline **Postop** Baseline Postop **Baseline** Postop **Baseline Postop** F. TI:TE E. Central respiratory rate Male **Female Female** Male 1.5 1.5 1.5 1.5 ¬ P = 0.0062Ratio to baseline Ratio to baseline 1.0 1.0 1.0 0.5 0.5 0.5 Ipsi Ipsi

Figure S7. Subgroup analysis by sex: the short-term effect of the upper abdominal incision on efferent phrenic nerve activity (Protocol A). **(A-F)**: Spike frequency area-under-the-curve (AUC)/respiratory cycle (A), spike frequency AUC/minute (B), integrated phrenic neurogram ($\int Phr$) AUC/respiratory cycle (C), $\int Phr$ AUC/minute (D), central respiratory rate (E), and inspiratory-to-expiratory duration ratio ($T_1:T_E$; F) were evaluated one hour after the upper abdominal incision (Postop). The "Ipsi" and the "Contra" group respectively represent nerve activity recorded from the phrenic nerves on the same side and the opposite side of the abdominal incision. The control group underwent the sham incision ("Sham" group). Data are presented as median with interquartile range. Sample sizes are given in (A). †P < 0.05 vs. Sham by Kruskal-Wallis test followed by post hoc Dunn's multiple comparison tests.

0.0

Sham

Contra

Postop

Baseline

0.0

Baseline

P = 0.0306

Postop

Sham

Contra

Baseline Postop

0.0

Baseline Postop