

Appendix 1

Silverman integrated approach (SIA) score calculation

The power analysis for the study was based on the SIA as described in Dai *et al.* (7). SIA measures the pain a patient is experiencing, considering the amount of morphine he or she self-administers. Therefore, higher doses of morphine are taken as an indication of more pain. The SIA measurement during coughing was constructed as follows:

- (I) Pain during coughing is transformed into pain rankings (across study arms, ties solved as average rankings).
- (II) Morphine use is transformed into morphine use rankings (across study arms, ties solved as average rankings).
- (III) The pain during coughing [visual analog score (VAS)] rank is transformed into a percentage of the mean rank (a number between -100 and 100, where the median patient gets a value of 0).
- (IV) The morphine rank is transformed into a percentage of the mean rank (a number between -100 and 100, thus, the median patient gets a value of 0).
- (V) The pain during coughing and morphine percentage scores are summed up to obtain the SIA score (between -200 and 200).

The average of all the patients' measurements was taken and used to calculate their SIA score.

Pain scores (VAS) when coughing over 24 hours were statistically significantly lower in the lidocaine group compared to placebo group (4.60 ± 1.64 vs. 5.52 ± 1.65 ; $P=0.024$). Morphine consumption over 24 hours tended to be lower in the lidocaine group (lidocaine 18.22 ± 12.87 vs. placebo 21.26 ± 9.39 mg; $P=0.266$). Therefore, the calculated SIA score over 24 hours, when coughing, was significantly lower in the lidocaine group (-22.01 ± 88.61 vs. 20.15 ± 78.85 ; $P=0.044$). *Figure S1* suggests a slightly higher variability in SIA (coughing) over 24 hours in the lidocaine group, but an *F* test yielded a *P* value of 0.57, indicating no statistical evidence against the null hypothesis of equal variances.

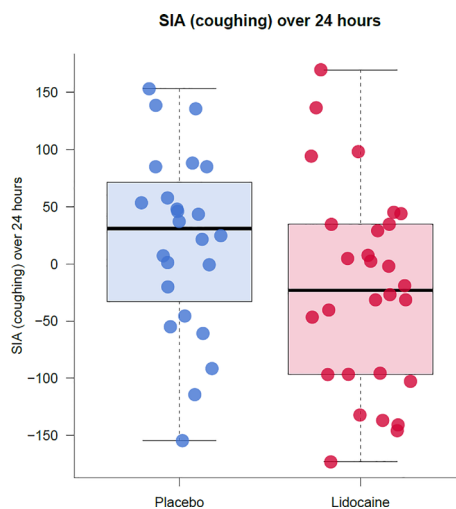


Figure S1 Box plot for SIA (coughing). Box plot for SIA score calculation (coughing) over 24 hours for lidocaine and placebo group. Boxes contain the 25% through 75% quantiles. The thick horizontal line is the median. Colored dots indicate individual patients. SIA, Silverman integrated approach.

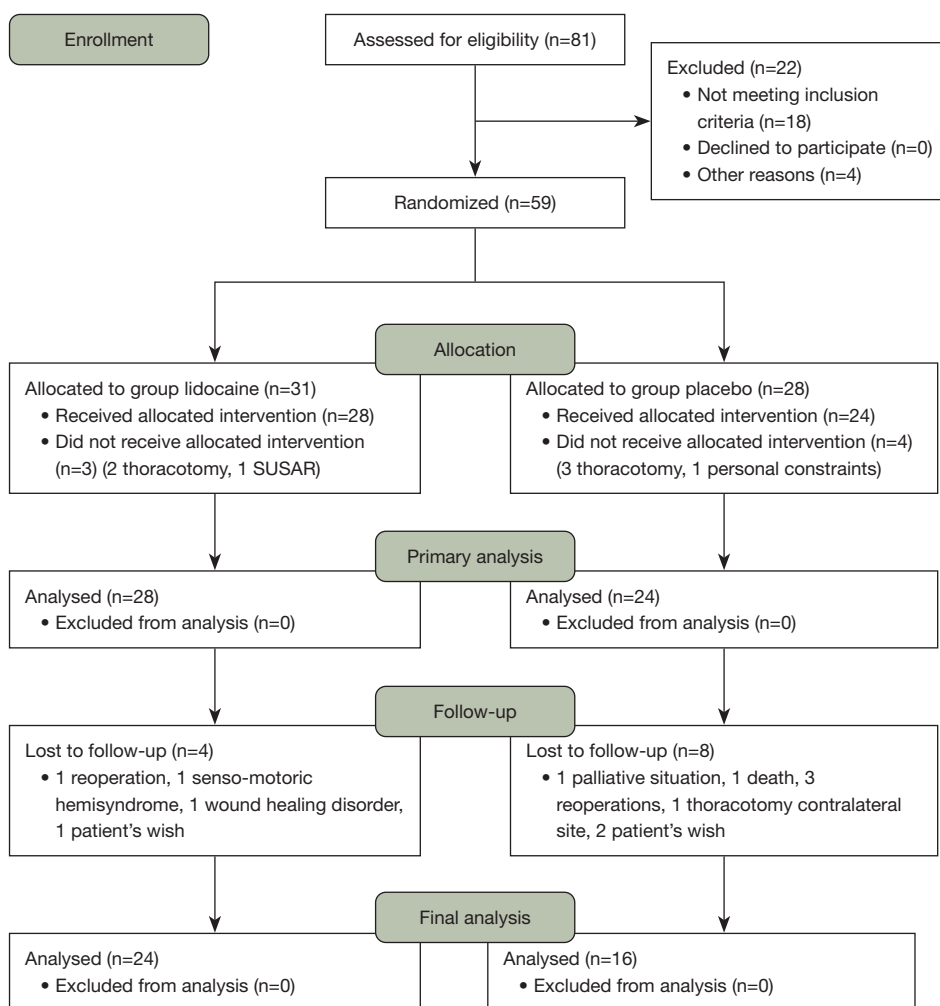


Figure S2 Study CONSORT 2010 Flow Diagram detailing the selection process for patients included in this randomized trial. SUSAR, suspected unexpected serious adverse reaction.