**Appendix.**

We investigated the categorization methods for each risk factor in each procedure category. First, we converted the continuous variables of operative time and patient age into ordinal variables (quartiles) for each procedure category. Second, we graphically visualized the SSI incidence ratios for the different values of each risk factor, and selected candidate categorization methods. Also, when a linear relationship could be ascertained between the quartile points of continuous variables and SSI incidence ratios, the former was included as a continuous variable. Third, for categorical variables with multiple candidate categorization variants, we created contingency tables with the candidate categorization variants in the rows and the occurrence or non-occurrence of SSIs in the columns; we then used the χ-squared test and Cramer's coefficient of association to determine the optimal categorization method for each variable. In addition, all possible combinations of paired interactions between the covariates were examined as candidate variables in the final model.