

Statistics will be performed with SPSS 25.0. (IBM Corp., release 2017; IBM SPSS Statistics for Windows, version 25.0, Armonk, NY, USA). Comparisons in univariate analysis carried out using χ^2 or Fisher's tests for categorical variables and Student's t-Test for continuous variables. Multivariable analysis was performed resorting to binary logistic regression, and the dimension reduction method, variables with $p < 0.05$ were included. The threshold for significance is set to 5% ($P < 0.05$).

The necessary sample for a two-sided test for non-superiority was calculated resorting to WinPepi® V11.65, aiming for statistical power (β) of 80% and an $\alpha < 0.025$. The described neurologic event rate in shunt patients / cerebral malperfusion patients is 4% and, an event rate of 1.8% for the controls was assumed. An event rate difference of 20% between groups is established as reasonable, resulting in an estimated minimum sample of 72 patients.

Variables with clinical relevance included in the multivariable analysis are those associated with the group with post-clamping neurologic changes in univariate analysis. The regressive final predictive model is created resorting to regression analysis and dimension reduction by the method of backward feature elimination.