Robotic surgical approach to partial nephrectomy – rather than renal mass complexity – is the main driver of shorter length of hospital stay: Results from a single center series

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Introduction & Objectives: Length of hospital stay (LOS) after surgery is a factor of paramount importance for health care systems. The cost of each day of hospitalization is variable and may range from 750 to 1000 euro for surgical patients, according to local institution. Several factors can be associated with a prolonged hospitalization. The purpose of this study is to analyze LOS of partial nephrectomy performed at a single center and to evaluate factors associated with a prolonged hospitalization.

Materials & Methods: Data from 109 patients who underwent PN were retrospectively collected (113 renal masses). Mean age of patients was 63 years (DS 12), mean radius of masses was 33 mm (DS 14), mean Padua score was 7 (6-10). Twenty-seven patients had an open PN whereas 82 patients had a robotic procedure. Age, CCI, ECOG score, the size of renal masses, Padua score and Renal score were similar between surgical approaches. Overall, mean LOS was 6.1 days (DS 2.5). The primary endpoint of the study is to analyze which variables are related with a prolonged LOS (≥ 6 days). To this purpose, after a descriptive analysis of all covariates, the association between continuous and categorical variables and the presence of a LOS >6 days was assessed using a logistic regression model.

Results: Despite the size of renal mass was not significantly different, patients with LOS ≥ 6 had a higher Padua (7.5 vs 7.1) and Renal score (6.7 vs 6.0) compared to patients with a lower LOS. Age, ECOG and CCI were similar between groups. Operative time and WIT were longer in patients with LOS ≥ 6 (216 min vs 193 and 16 vs 13, respectively; p= 0.03). LOS after robotic PN was lower than those after open PN (5.2 vs 8.9, respectively, p=0.00). Overall, 38% of patients experienced a complication, that was mostly a Clavien I (fever w/without pleural effusion in 82%); patients with a prolonged LOS had a higher complication rate compared to patients with a short LOS (64% vs 21%, p=0.00). At MVA, including age, gender, ECOG(cat), CCI(cat), Padua and RENAL(cat), radius of the mass, OT, WIT, Clavien(bin) and approach (robot vs open), independent predictors of LOS ≥ 6 are the surgical approach (OR 0.05; 95%CI 0.006-0.4; p=0.008) and the presence of a Clavien complication (OR 3.8; 95%CI:1.2-11-0.8; p=0.02). However, if considering Clavien as a categorical variable, the surgical approach remains the only independent predictor of LOS ≥ 6 days.

Conclusions: Urology is the surgical field mostly advantaging from the robotic approach. The 2021 EAU Guidelines suggest that “robotic assisted and laparoscopic PN are associated with shorter LOS and lower blood loss”. The current retrospective analysis suggests that the impact of a robotic surgical approach may outperform all renowned factors traditionally related to prolonged hospitalization.