

Relationship between hospital volume and short-term outcomes: a nationwide population-based study including 75,280 rectal cancer surgical procedures

Oncotarget, 2018, Vol. 9, (No. 24), pp: 17149-17159

Pucciarelli S, Zorzi M, Gennaro N, Marchegiani F, Barina A, Rugge M, Zuin M, Perin A, Maretto I, Bergamo F, Boso C, Urso EDL, Frambach P, Corti MC

Abstract

There is growing interest on the potential relationship between hospital volume (HV) and outcomes as it might justify the centralization of care for rectal cancer surgery. From the National Italian Hospital Discharge Dataset, data on 75,280 rectal cancer patients who underwent elective major surgery between 2002 and 2014 were retrieved and analyzed. HV was grouped into tertiles: low-volume performed 1-12, while high-volume hospitals performed 33+ procedures/year. The impact of HV on in-hospital mortality, abdominoperineal resection (APR), 30-day readmission, and length of stay (LOS) was assessed. Risk factors were calculated using multivariate logistic regression. The proportion of procedures performed in low-volume hospitals decreased by 6.7 percent ($p < 0.001$). The rate of in-hospital mortality, APR and 30-day readmission was 1.3%, 16.3%, and 7.2%, respectively, and the median LOS was 13 days. The adjusted risk of in-hospital mortality (OR = 1.49, 95% CI = 1.25-1.78), APR (OR 1.10, 95%CI 1.02-1.19), 30-day readmission (OR 1.49, 95%CI 1.38-1.61), and prolonged LOS (OR 2.29, 95%CI 2.05-2.55) were greater for low-volume hospitals than for high-volume hospitals. This study shows an independent impact of HV procedures on all short-term outcome measures, justifying a policy of centralization for rectal cancer surgery, a process which is underway.

Keywords: rectal cancer, hospital volume, volume-outcome relationship, short-term outcomes, population study

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