Project title: From Value-Based Cancer Care To Precision Medicine In Oncology
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Timing of Colostomy and Colostomy Closure, Survival, and Medical Utilization in Rectal Cancer Patients who Received Surgery

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Objective: The aims of this study were to determine whether the timing of colostomy affected patient outcomes and which factors were associated with the timing of colostomy closure. We used a hospital-based database on rectal cancer patients to retrieve demographics, clinical information, post-operative outcomes and patient survival.

Methods: This study used a retrospective cohort design. Clinical, demographic data and post-operative outcomes recorded in the Koo Foundation Sun Yat–Sen Cancer Center database were used in the analysis. Newly diagnosed rectal cancer patients who received surgery between 1st January 2006 and 31st December 2011 were identified and included in our study. Patients with no surgery and those who received surgery before 2006 or after 2011 were excluded. The timing of colostomy was divided into three groups: colostomy before surgery, colostomy during surgery and colostomy after surgery. Survival of the patients were estimated by calculating the time between surgery and loss of follow up, end of the health insurance coverage, end of the observation period, or event of death, whichever occurred first.

Results: 427 patients with rectal cancer met inclusion criteria and were including in this study. Among them, 338 (79.2%) received low anterior resection and 89 (20.8%) received abdomino-perineal resection. 218 (51.1%) of them received colostomy during the period of investigation. Receiving colostomy had increased from year 2006 to 2011. Among the 218 patients who received colostomy, 156 (71.6%) had successful colostomy closure. In a Kaplan-Meier analysis, the patients who had colostomy during surgery had the best 5-year overall survival (78.3% vs. 44.0% & 66.7%, $p < 0.0001$ by the log-rank test) as compared to those who had colostomy before and after the surgery. Patients with colostomy during surgery also had the shortest post-operative length of stay in hospital than the other two groups (9.1 days vs. 10.0 days & 15.4days). Colostomy during surgery was also associated with highest colostomy closure rate (78.9%, 138/175) and shortest time lag before closure (6.5±3.8 months).

Conclusion: Rectal cancer patients receiving colostomy during surgery were associated with better survival as compared to those who had colostomy before or after surgery. Colostomy during surgery was also associated with a shorter length of stay in hospital and a lower 30-day readmission rate.