Positive surgical margins after RARP: Are there different learning curves for different margin locations?

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Introduction & Objectives: The objective of this study was to explore the learning curves (LC) for overall and site-specific positive surgical margin (PSM) after robot-assisted radical prostatectomy (RARP) of multiple surgeons within a step-structured mentor-initiated training program.

Materials & Methods: The study included consecutive patients undergoing RARP, performed by three surgeons: a mentor and his two trainees. Prospectively collected patients' data were retrospectively analyzed. The cumulative summation (CUSUM) method was used to generate the LC for overall and site-specific PSM. Turning points were identified to mark the number of cases necessary to reach the proficiency level. To evaluate the association between PSM and surgical experience, adjusting for case mix we built, for each surgeon, a multivariate model regressing the overall and site-specific SM status on surgical experience and the independent predictors of PSM in our series.

Results: A total of 761 consecutive patients were included between Jan. 2013 and Dec. 2019, 370 treated by the mentor, 247 and 144 treated respectively by the two trainees. Mentor and trainees had similar PSM rates (31.6% vs 28.0% vs 31.3%, p=0.6). CUSUM charts (Figure 1) showed different LC shapes for different PSM locations (posterolateral, bladder neck, apex and multifocal or >3mm PSM). Surgical experience was significantly associated with overall (OR=0.38; p<0.01), posterolateral (OR=0.26; p<0.01) and multifocal/>3mm (OR=0.12; p<0.01) PSM for the mentor surgeon, but not for his trainees, who reached their turning points after far fewer cases both for overall (respectively 12 and 31 cases VS 153 cases of the mentor), posterolateral (respectively 24 and 30 cases vs 120 cases of the mentor) and multifocal or >3mm PSM (respectively 9 and 31 cases vs 153 cases of the mentor).
**Conclusions:** The achievement of stable SM proficiency takes different caseloads with distinct LC depending not only on cancer features but also on the prostatic location being considered. A step-structured mentor-initiated RARP training can reduce PSM rate and extension within safe limits in the early phase of training. Monitoring site-specific LC can indicate the surgical steps for which there may be still room for further technical refinements.