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**Risk of colorectal neoplasia after removal of conventional adenomas and serrated polyps**

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Colorectal cancer (CRC) is a significant global health concern, with high incidence and mortality rates. Screening and polypectomy are effective strategies for reducing CRC risk by removing precursor lesions, such as adenomas and serrated polyps. However, appropriate risk stratification for optimal surveillance of high and low-risk polyps remains unclear.

This prospective study enrolled 156,699 patients who underwent colonoscopy between 2007 and 2017 in a large integrated healthcare system. Using multivariable Cox proportional hazard models, the study estimated CRC and high-risk polyp recurrence risks based on index polyp characteristics, colonoscopy quality, patient demographics, and surveillance use following polyp removal. Over a median follow-up of 5.3 years, 309 CRC and 3053 high-risk polyp cases were identified.

Patients with high-risk adenomas or serrated polyps had significantly increased CRC risk during follow-up, peaking at three years post-polypectomy (HR (hazard ratio) 5.44, 95% CI 3.56–8.29 for high-risk adenomas; HR 8.35, 95% CI 4.20–16.59 for serrated polyps). Surveillance colonoscopy was associated with a reduced CRC risk among patients with high-risk polyps (HR 0.61, 95% CI 0.39–0.98) and low-risk polyps (HR 0.57, 95% CI 0.35–0.92).

Among 1548 patients with high-risk polyps at both index and surveillance colonoscopies, 65% of the index polyps were in the proximal colon, and 30% had recurrence in the same segment, suggesting that incomplete resection and missed lesions contributed to interval neoplasia. These findings emphasise the need for individualised, risk-based surveillance intervals and improved colonoscopy quality, focusing on detection and resection techniques to effectively reduce CRC risk and prevent interval neoplasia.