

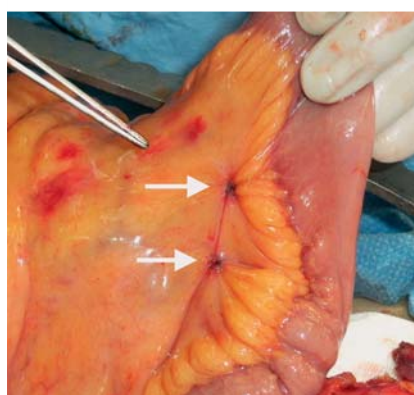
## Peritoneal deposits with carbon pigmentation associated with endoscopic submucosal tattooing of a rectal cancer

Endoscopic tattooing with India ink is considered to be an effective and safe method of tumor localization at the time of colonoscopy [1–3]. We report on a case where a rectal cancer was tattooed at colonoscopy and pigmented peritoneal cancer deposits were found at surgery.

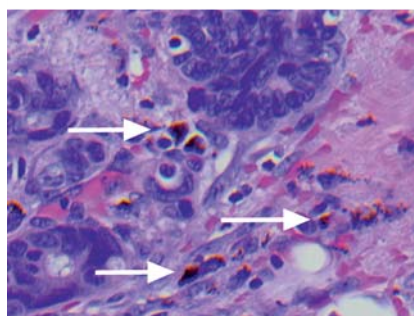
At colonoscopy in a 62-year-old man, a 35-mm ulcerated tumor was encountered 18 cm from the dentate line. With a single injection technique (25 gauge needle; TeleMed, Hudson, Massachusetts, USA) submucosal injection of 2 mL of India ink (SPOT; GI Supply, Camp Hill, Pennsylvania, USA) was performed proximally and distally to the lesion in what appeared to be unaffected tissue endoscopically (● Fig. 1). Staging magnetic resonance imaging (MRI), positron emission tomography (PET), and computed tomography (CT) confirmed locally advanced disease with para-aortic lymphadenopathy, and so two cycles of neoadjuvant chemotherapy were administered. At surgery, 75 days after diagnosis, tumor nodules were seen in the rectosigmoid mesentery as well as six small peritoneal deposits adjacent to the cecal pole. All peritoneal deposits were colored by the ink (● Fig. 2) but peritoneal ink staining, aside from at the primary tumor, was not seen. Histopathologic examination of the nodal tissue and peritoneal deposits revealed moderately differentiated adenocarcinoma. Black granular pigment consistent with carbon pigmentation was seen lying free and within the macrophages in sections of the peritoneal deposits (● Fig. 3). The mechanism by which the peritoneal deposits were stained with carbon pigment in our case is not clear. A needle contaminated at saline lift was hypothesized to have caused local tumor inoculation during tattooing in a previously described case [4]. In contrast our tattoo was made away from the tumor and before any biopsies were taken, thus contamination of the instrument channel seems unlikely. Gross leakage of ink during tattooing seems unlikely as no generalized peritoneal staining was seen at surgery; also the pigmented peritoneal deposits were away from the injection site. In conclusion, although tattooing is regarded as a safe procedure



**Fig. 1** Submucosal tattoo proximal to the lesion.



**Fig. 2** Dark colored peritoneal adenocarcinoma deposits seen at laparotomy (arrows).



**Fig. 3** Histopathology of peritoneal deposit with carbon pigment demonstrated (arrows) (hematoxylin and eosin; magnification × 400).

and is widely used, our case raises the possibility of causal association with peritoneal metastatic deposits.

**Competing interests:** None

Endoscopy\_UCTN\_Code\_CPL\_1AJ\_2AI

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### Bibliography

**DOI** 10.1055/s-0029-1244049

*Endoscopy* 2010; 42: E136

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