

CASE REPORT

Pitfalls of single-site tattooing of suspicious or significant polyps at colonoscopy in patients undergoing colectomy

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Abstract

This is a case report of a single-site tattooing opposite the index lesion at colonoscopy. At laparoscopic surgery, the tattoo was not visible intraabdominally and on-table flexible sigmoidoscopy revealed that the tattoo was proximal to the scar tissue. Had tattoo been visible, this could have led to adverse effects with the resection point being proximal to or through the lesion. As endoscopic mucosal resection is done in patients lying flat, while surgical procedures are performed in a 30° Trendelenberg, this could have led to relative differences in the position of the tattoo and index lesion. It should become standard practice that all lesions that need tattooing should be done circumferentially distal to the index lesion. When only single-site tattooing is done, if the patient needs surgery, then a preoperative distal tattooing should be done.

Keywords: *Colonic polyps; Colonoscopy; Tattoo*

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Colorectal cancer is the second most common cause of cancer-related death in the UK (1). Colonoscopy is the gold standard investigation for large bowel, and it aids diagnostic and therapeutic intervention (2). The National Bowel Cancer Screening programme (BCSP) promotes the use of endoscopic tattoo to aid localisation of potential malignant lesions and facilitate bowel resections (3). Recent study by the BSCP team reported less than 60% adherence to the guideline and has encouraged active involvement of the endoscopist with colorectal multidisciplinary team (MDT) to improve this tattoo service (4). The BCSP guidelines leave the decision as to the site and numbers of tattoos relative to the lesion to the local unit (2). It is suggested to use four tattoo markings distal to the lesion in patients being prepared for surgery and a single tattoo opposite the lesion in those being marked for endoscopic follow-up (5). This case report highlights the danger of single-site tattooing in patients who subsequently need surgery.

Case summary

A 60-year-old woman had a colonoscopy as part of national health service (NHS) National BCSP following a positive faecal immunochemical test. At colonoscopy, a 28-mm lateral spreading tumour broad-based polyp in the sigmoid colon was lifted with a mixture of Gelofusin,

Indigo Carmin, and 1:10,000 adrenaline. An endoscopic mucosal resection (EMR) was done with a hot snare piecemeal, and an endoclip was used on a bleeding vessel (Fig. 1).

It was deemed to be completely resected. The endoscopist then placed one tattoo with Carbon black tattooing ink (SpotR Ex) opposite the polypectomy site in the submucosa (Fig. 2) to aid follow-up endoscopic surveillance.

Histology showed a tubovillous adenoma with high-grade dysplasia, with the excision margin involved with invasive adenocarcinoma. There was intramural lymphovascular invasion, and it was classified as a Kikuchi SM2–SM3. Staging CT scan showed no sign of metastasis. The colorectal MDT advised colonic resection. The patient was seen in clinic and pros and cons of surgery, or of endoscopic surveillance, was discussed with her. She decided to have a surgical resection.

Six weeks after her colonoscopy, she underwent a laparoscopic high anterior resection. At laparoscopy, the tattoo could not be seen intra-abdominally. On-table flexible sigmoidoscopy revealed the scar tissue from the EMR. The tattoo was also visible endoscopically, but it was proximal to the scar tissue (Fig. 3).

Under the guidance of the scope, a couple of endoclips were applied to the serosal surface of the colon distal to the scar tissue, and a laparoscopic anterior resection

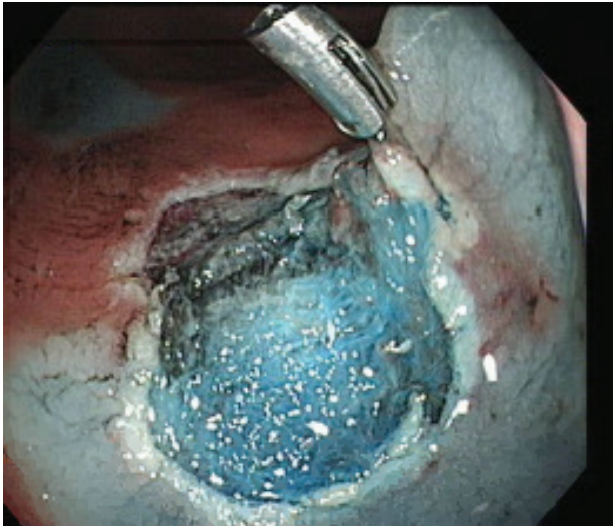


Fig. 1. Endoscopic mucosal resection site.

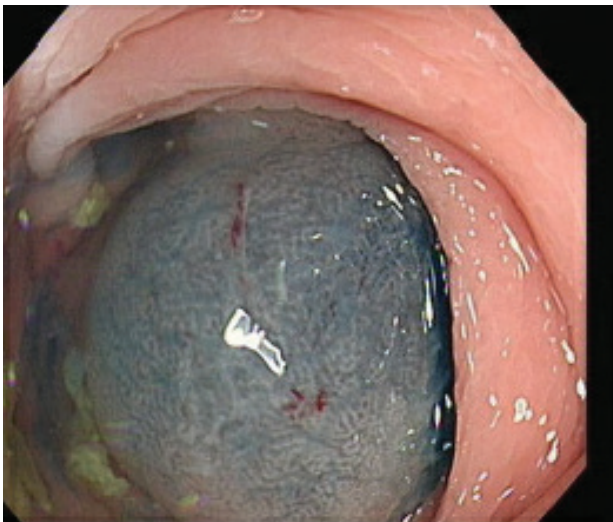


Fig. 2. Submucosal tattooing opposite excised lesion.

was completed. Patient was discharged on the seventh post-operative day suffering with a minor wound infection. Histology revealed no residual tumour in the scar tissue, 1 of 16 lymph nodes was involved and there was extramural lymphatic invasion. The patient was referred for adjuvant chemotherapy.

Discussion

The BCSP guidelines on tattooing at-risk polyps and cancer is left to local MDT meeting to determine the number and sites of tattooing relative to the lesion [1]. Variable practices have emerged, which include distal circumferential tattoos, proximal and distal tattoos, or tattooing the wall opposite the lesion [2, 3]. Tattooing aids the accurate marking of suspected malignant lesions and resection sites, to guide future surgical resection and/or endoscopic

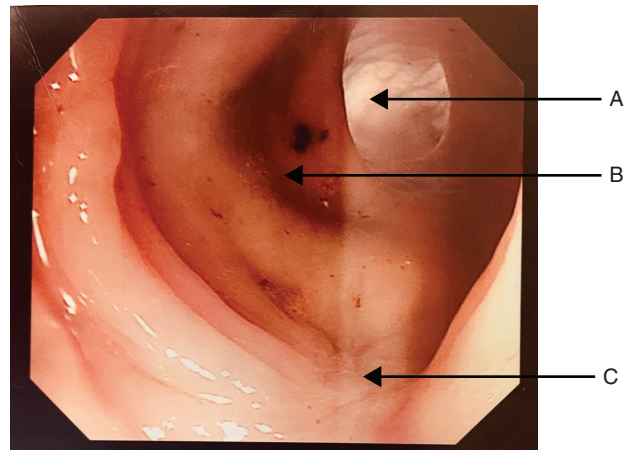


Fig. 3. Endoscopic view. (A) Light from the laparoscope in the abdomen. (B) Tattoo. (C) Scar tissue from the EMR.

surveillance [1], and it advised in all lesions 20 mm and above and/or suspicious of cancer outside the rectum and caecum.

The majority of endoscopists tattoo lesions distally [2–5], which aids the operating surgeon in identifying the distal resection margin, and it is important to indicate the distance of the tattoo from the distal end of the lesion [2]. While less than 2% of endoscopist tattoo lesions both proximally and distally [3], the advantages of this are not clear, and it will require the surgeons to identify two sites [2].

Tattooing at the site of the lesion is uncommon [3], but it has been suggested that the wall opposite the lesion can be tattooed when marking a benign lesion for later endoscopic resection [2]. This happened in the current case, but the lesion turned out to be a stage 3 cancer despite adequate EMR (Fig. 1). The tattoo that was placed opposite the lesion at the time of the endoscopy was found to be proximal to the scar tissue (Fig. 3) at the time of surgery. The likely explanations for this are positional and gravity and of course endoscopist error. Colonoscopies are performed with the patient on a level trolley, while surgical resection is done with the patient in the Lloyd-Davies position, which is about 30° Trendelenberg; as such, there could be relative movement of walls on opposite sides.

In this case, had the tattoo been evident at laparoscopy, the resection point of the bowel could have conceivably been proximal to or through the scar tissue. This would have been of significant consequences to the patient. As the cases of single-site tattooing are uncommon [2–5], we suggest the use of distal circumferential tattooing for all relevant lesions. It will also be prudent that, when a single tattoo has been placed at the time of endoscopic removal and if such patients need surgery, a repeat endoscopy with a distal circumferential tattoo should be undertaken prior

to surgery. Ideally, first place 0.5–1.0 mL of submucosal bleb of saline and then a needle to deliver the tattoo into the saline bleb. This ensures that the tattoo enters only the submucosa [2]. It is best to inject all four quadrants of the lumen, and it should always be distal to the lesion.

Ethics statement

A written consent was given by the patient for the use of the images in this paper.

Conflict of interest and funding

The author reports no conflicts of interest.

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