Methods for siting emergency stomas in the absence of a stoma therapist

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ABSTRACT

INTRODUCTION Stomas often have to be sited in emergencies by trainees who may have had little training in this. Emergency stomas and stomas where the site has not been marked preoperatively by a stoma therapist are more prone to complications. These complications may severely affect a patient's quality of life. Advice in the literature on how to best site stomas is conflicting. We compared two easy anatomical methods of siting stomas to sites chosen by a stoma therapist and looked at how this site was affected by the patients' body mass index (BMI).

METHODS Patients undergoing elective colorectal surgery were seen either pre or postoperatively. Each patient's BMI was recorded and the positions of three different potential stoma positions (site G: the gold standard, marked by a stoma therapist; site S: marked using a pair of scissors against the umbilicus; site H: halfway between the umbilicus and anterior superior iliac spine) were compared.

RESULTS The two fixed anatomical methods described (method S and method H) both gave poor results. The most common reason for poor siting was the proximity of a skin crease. There was a statistically significant correlation between the patient's BMI and the laterality of the gold standard site.

CONCLUSIONS The two simple anatomical methods described here do not provide a shortcut to effective siting. A more effective method may be calculating the laterality of the site using the patient's BMI, and then moving up/down to avoid a skin crease and improve the patient's view for changing the bag. This deserves further study.

KEYWORDS

General surgery – Colostomy – Ileostomy – Surgical stoma – Ostomy – Humans

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Various studies have reported stoma complication rates of 21–70%.¹ Approximately a fifth of stomas have to be sited in emergencies; 15% go to theatre without the stoma site having been marked in advance.² Studies differ in the importance they attach to these factors but most find that stomas sited at unplanned surgery are more likely to have complications¹ while preoperative site marking by a stoma nurse is protective against complications (half as likely to have a major stomal complication, with $p < 0.01$ in one study of 1,216 patients).⁵

Stomas may have to be sited by trainees, who are often unaware of the principles behind stoma siting.⁴ There are many papers published on this topic but nearly all are in the form of case series analysed retrospectively; very few randomised controlled trials have evaluated different methods of siting.

The advice in the literature can be confusing. Some studies advise that any stoma has to be brought out through the rectus sheath^{5,6} while others have found it makes no difference.^{1,7} Similarly, some papers recommend siting a stoma halfway along a line from the umbilicus to

the anterior superior iliac spine (ASIS)⁸ whereas others recommend going only a third of the way along this line.⁶ Another general principle on which the literature agrees is that stomas should be sited with the patient in different positions (sitting, standing, bending) to check that the patient has a good view for changing the bag and to check it is sited away from skin creases.

The aim of this study was to evaluate two different methods for siting stomas in emergencies that could easily be carried out by a trainee without a stoma therapist present. We also wished to see if there were any more general rules that could be applied to site stomas appropriately and that could be used with the patient lying flat on the operating table, and with minimal training. The audit was approved by the hospital audit committee.

The gold standard chosen for comparison was that of siting by a professional stoma nurse as this is the method that has been associated most consistently with significantly better outcomes in the literature.¹ Our stoma nurses usually meet the patients twice preoperatively. Initially, they mark in an area halfway between the ASIS and umbilicus, and

Figure 1 Stoma siting method S

then move around according to a variety of different factors such as size of the patient’s abdomen, movement of the area in different body postures, ease of changing a dummy bag for the patient and comfort of a dummy bag, which the patient wears at home between visits.

Methods

Two methods of siting stomas anatomically were compared with the gold standard (method G: sited by a professional stoma nurse). Method S (for scissors) had been used in the past at our hospital and sites the stoma under the lateral handle of a pair of 5 Mayo scissors when placed lateral to the edge of the umbilicus (Fig 1). Method H (for halfway) sites the stoma halfway between the ASIS and the centre of the umbilicus (Fig 2).

Twenty-one consecutive patients being counselled preoperatively by a stoma nurse were evaluated, after the nurse had marked site G. Sites S and H were also then marked on the patient, and the positions of each site measured relative to the umbilicus on a 1cm grid (maximum error 0.5cm). Furthermore, the stoma nurse was asked to evaluate whether sites S and H were acceptable or poor, and the reason for each evaluation. The patient’s body mass index (BMI) was also recorded. Comparisons were made between BMI and stoma placements using Students’ t-test.

Figure 2 Stoma siting method H

Results

Generally, methods S and H gave poor results. On average, site S was further away from site G (3.6cm) than site H (2.6cm) (Fig 3). Method S gave slightly more acceptable sites (10 out of 21) than method H (8 out of 21) but the positive predictive value for a good site was still only 0.48 compared with 0.38 for method H. The most common reason given for a site being poor was that it was situated on a skin crease (9 cases). Other reasons were: patient unable to see site (7 cases); clothing reasons (6 cases); too close to wound (2 cases); site on ribs (1 case); too high for young active person (1 case); and site in radiotherapy field (1 case). Three patients had more than one reason why sites S or H were considered poor.

As the patients’ BMIs increased, site G became more and more lateral to the umbilicus. This was a reasonable correlation ($r=0.476$) and the patient’s BMI was able to predict the distance lateral to site G to within a significant degree of accuracy ($p=0.0327$, ie the probability of such a correlation arising by chance being approximately 1 in 30). Using linear regression, the points fitted the formula

$$\text{cm lateral to centre of umbilicus} = 0.131 \times \text{BMI} + 3.9$$

with an r^2 value of 0.2264. There was a weaker relationship between BMI and distance below the umbilicus, showing almost no correlation between the two ($r=-0.13$).

Discussion

Stoma siting is complex with differing advice in the literature. The two fixed anatomical methods evaluated here, of which one is not widely used, were poor and not able to take individual patient variation into account. There is a significant correlation between the distance laterality of a good stoma site and the patient’s BMI that has not been documented previously in the literature.

It seems that siting lateral to the umbilicus, using the above formula depending on the patient's BMI and then moving down to avoid skin creases, would provide better results than methods S or H. This method would still be simple enough for trainees to use in emergencies and removes a lot of the ambiguities mentioned in differing studies. It is recognised that in patients with a higher BMI, the stoma bag may need to be moved up rather than down in order for the patient to see it; however, as a reason for poor stoma siting, this was of secondary importance compared with the problems caused by skin creases.

Skin creases are sometimes not obvious with the patient lying flat on the operating table and so the operating surgeon would still need to remember to evaluate the creases while the patient was awake. If the patient was awake and able to get out of bed, it would also enable accurate determination of the patient's BMI. If the patient was not able to get out of bed, accurate determination of the BMI would be difficult but it might still be possible to ask patients their height and last known weight as well as determine skin creases and their view of their own abdomen while seated. This method has not been discussed previously in the literature and deserves evaluation in a prospective audit.

Conclusions

The two simple anatomical methods described here do not provide a shortcut to effective siting. A more effective

method may be calculating the laterality of the site using the patient's BMI, and then moving up/down to avoid skin creases and improve the patient's view for changing the bag.

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