## **AUTHOR'S REPLY**



## Reply to "Fluoroscopy during coccygectomy for rectal cancer"

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Dear Sir,

We are very grateful to Dr Foye et al. for their correspondence "Fluoroscopy during coccygectomy for rectal cancer" [1]. We note and appreciate their interest in this area and in our paper [2].

Graves et al. [2] have previously published on the value of a simple lateral radiograph in a similar context but in the field of paediatric sacrococcygeal teratoma. Unlike sacrococcygeal teratoma, a complete coccygectomy may not be necessary or prudent in abdominoperineal resection by extralevator abdominoperineal excision (ELAPE) and indeed not all patients need to have a coccygectomy at all. We do, however, agree with the suggestion that adopting the Graves et al. [2] approach with an intraoperative lateral X-ray once the patient is repositioned into prone may be an excellent idea when coccygectomy is being performed. As pointed out by Graves et al. [3], the key is to identify S5 and appreciate that everything distal to this may be removed if desired.

Our data revealed an appreciable retained coccygeal remnant and support the notion there may be a lack of appreciation of the extent and variability of the anatomy of the coccyx [4], its 3–5 moieties, intervertebral discs, variable levels and degrees of fusion, curvature and mobility. Previous publications by Graves et al. [2] and by Dr. Foye [5] would suggest that this lack of appreciation is not new or confined to colorectal surgeons.

Colorectal surgeons who perform the perineal component of an ELAPE in the prone position are often nervous about joining up with the prior abdominopelvic dissection from above and finding the swab that has deliberately been placed presacrally to guide perineal dissection. Not only would a lateral X-ray identify the coccygeal bony anatomy but it would also show this in relation to the presacral swab.

In short, there is much to be said for the suggestion and we are grateful for it.

## Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

**Ethical approval** This article does not contain any studies with human participants performed by any of the authors.

**Informed consent** For this form of study, formal consent is not required.

## References

- Foye et al (2020) Fluoroscopy during coccygectomy for rectal cancer. Tech Coloproctol. https://doi.org/10.1007/s10151-020-02305-7
- Simpson G, Marks T, Blacker S, Smith D, Walsh C (2020) Sacrococcygeal dimensions and curvature are associated with resection quality in rectal cancer excision. Tech Coloproctol. https://doi. org/10.1007/s10151-020-02273-y
- Graves CE et al (2017) Use of intraoperative lateral pelvic X-ray to localize and ensure coccyx removal during sacrococcygeal teratoma resection. Pediatr Surg Int 33(3):389–392
- Postacchini F, Massobrio M (1983) Idiopathic coccygodynia. Analysis of fifty-one operative cases and a radiographic study of the normal coccyx. J Bone Jt Surg Am 65(8):1116–1124
- Foye PM, D'onofrio GJ (2018) Intraoperative X-rays during coccygectomy. Pediatric Durg Int 34:905

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The extent of the coccygectomy could then be decided on. Moreover, a knowledge of the more proximal extent of the coccyx may give the abdominal operator more confidence to stop their abdominopelvic dissection higher up, prevent coning and achieve the desired cylindrical specimen with a potentially superior oncologic outcome.

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