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Author/s:

Lee, DJ;Waters, PS;Larach, JT;McCormick, JJ;Heriot, AG;Warrier, SK

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Date:

2020-06-01

Citation:

Lee, D. J., Waters, P. S., Larach, J. T., McCormick, J. J., Heriot, A. G. & Warrier, S. K. (2020). Pelvic sidewall excision with en bloc complete sciatic nerve resection in locally re-recurrent rectal cancer. ANZ Journal of Surgery, 90 (6), pp.1202-1204. <https://doi.org/10.1111/ans.15512>.

Persistent Link:

<https://hdl.handle.net/11343/286520>

Pelvic sidewall excision with *enbloc* complete sciatic nerve resection in locally recurrent rectal cancer

Dewei J Lee MBBS

Peadar S Waters MB BCh BAO MD MCH MedED FRCS

José Tomás Larach K. MD

Jacob J McCormick FRACS

Alexander G Heriot MA, MB, Bchir, MD, FRCS (Gen.), FRCSEd, FRACS,

Satish K. Warriar MBBS MS FRACS

Division of Cancer Surgery, Peter MacCallum Cancer Centre, Victorian Comprehensive Cancer Centre, Melbourne, Australia.

Corresponding Author & Reprints: Mr Peadar Waters, Division of Cancer Surgery, Peter MacCallum Cancer Centre, 305 Grattan Street, Melbourne, Victoria 3000, Australia
Telephone Number: 0385595000, Fax Number: 0385597379
Email: satish96101@yahoo.com

Word Count: 747 (excluding references, title page and figure legends)

No sources of support

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: [10.1111/ans.15512](https://doi.org/10.1111/ans.15512)

The most important prognostic factor in locally recurrent rectal cancer is completeness of surgical resection with clear margins (R0 resection)(1). Ascertaining a complete resection of pelvic sidewall recurrences are more difficult to achieve when compared to other compartments due to the involvement of local structures such as the internal iliac vessels and nerve roots/sciatic nerve(2,3). This study was reviewed, deemed low risk and approved by the local institutional ethics committee.

A case of a re-recurrent rectal cancer in a 73-year-old female is presented with a previous stage III primary rectal cancer resected in 2014 followed by adjuvant therapy and a left pelvic sidewall recurrence diagnosed with elevated CEA levels on surveillance in 2018. In the referring institution the patient underwent an attempted resection of the recurrent mass with positive margins on histology followed by post-operative radiotherapy to bilateral pelvic lymph nodes (50Gy in 25 fractions). Her CEA levels continued to increase and a PET scan confirmed residual disease activity medial to surgical clips involving the pelvic surface of obturator internus with a 16mm intense focus in the anterior abdominal wall, representing a tumour implant.

After multidisciplinary team discussion the patient underwent long course chemoradiotherapy (LCCRT,39.6Gy22Fractions) with subsequent re-imaging highlighting a partial metabolic response to the abdominal wound tumour implant and pelvic side wall recurrence on PET (Figure 1) and MRI (Figure 2).

Ten weeks later the patient underwent bilateral ureteric stent insertion, laparotomy, full thickness resection of the infra-umbilical abdominal wall mass followed by left internal iliac vessel resection, complete obturator internus excision and intraoperative radiotherapy (IORT). Medial mobilisation of the descending colon, left ureter, bladder and low colorectal anastomosis was performed to generate space and gain access into the left pelvic sidewall. The left internal iliac artery and vein were ligated and dissection continued caudally to include the mass (Figure 3A). In order to ensure an R0 resection, lateral dissection was continued to resect the left obturator muscle by detaching it from posterior aspect of the acetabulum and ischium together with the piriformis muscle (Figure 3B). An intra-operative decision was made to resect the lumbosacral bundle and S1/2 nerve roots to provide a clear radial margin (Figure 3C, patient had complained of sciatic nerve pain preoperatively). IORT (10Gy) was then delivered to the lateral bony margin.

Apart from a prolonged postoperative ileus, recovery was unremarkable. The patient developed a left foot drop and reduced hip adductor and abductor power. This was managed with orthotics

using ankle foot orthosis and physiotherapy input. Two weeks post-operatively, the patient was independently mobilising with a gutter frame up to a distance of 80m, and is able to perform transfers with one assist. Currently the patient is mobilising freely with the use of a crutch and is expected to be able to mobilise without any assistance over the next coming months.

The histopathology of the left pelvic sidewall mass reported recurrent adenocarcinoma infiltrating fibrofatty tissue and extensive intraneural invasion of a 5mm calibre nerve with clear resection margins throughout. One lymph node revealed a metastatic deposit. The abdominal lesion was excised showing adenocarcinoma with clear of margins.

A pre-operative MRI defined the extent of invasion and allows surgical consideration of regional structures that may require resection such as bone, large vessels and nerves. This case demonstrates a high index of clinical suspicion of left sacral nerve involvement due to the presence of pre-operative pain along its distribution. The patient was carefully counselled regarding the need for nerve resection to ensure an R0 resection. Sacrificing part of the S1 and S2 nerve root did require the patient to undergo extensive rehabilitation and mobilise with the aid of an orthotic to retain a good quality of life. A recent study showed that 22 of 23 patients (96%) with complete sciatic nerve resection were able to mobilise independently with physical quality of life returning to baseline within 12 months(4).

As an adjunct, utilisation of IORT after being previously irradiated with LCCRT should be considered even if an R0 resection is achievable. Whilst there are no randomised comparisons, 60-80% of patients achieve local control with a 40-50% 5-year survival in patients with IORT and R0 resections(5). Although there are concerns about IORT toxicity especially in previously irradiated pelvises, apart from an increased risk of wound complications, a systemic review of 29 published studies did not show any significant risk in total, urologic and anastomotic complications(6).

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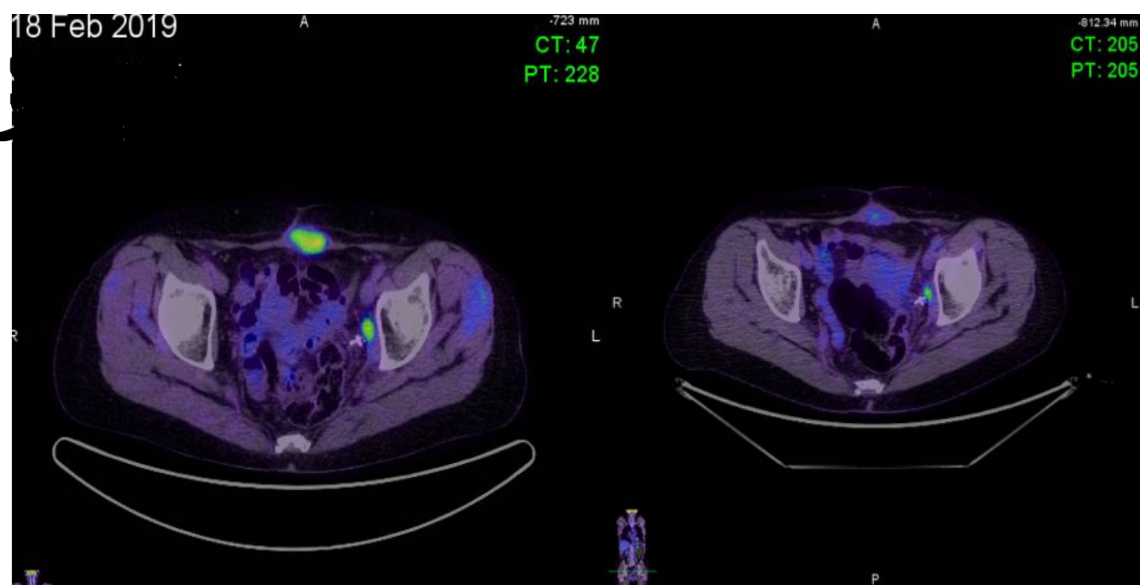
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Figure Legends

Figure 1. PET showing anterior FDG avid anterior abdominal nodule and left pelvic sidewall nodule on (a) 18 February 2019 and on (b) 24 April 2019 post LCCRT.

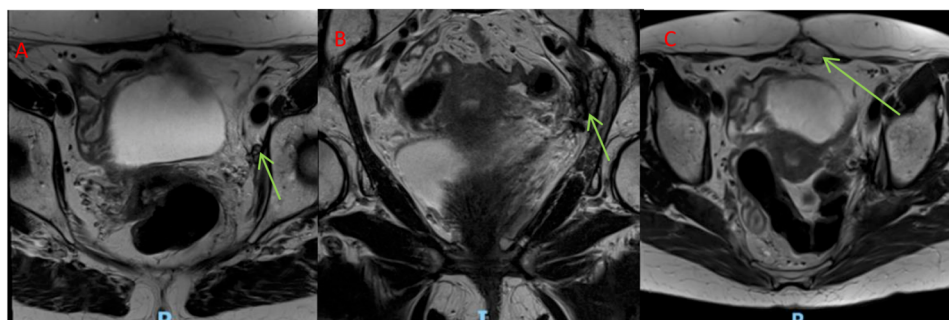
Figure 2. MRI showing extent of (a) (b) left pelvic sidewall involvement, and (c) anterior abdominal wall nodule

Figure 3: Access into left pelvic sidewall via dissection of iliac artery (red), iliac vein (blue) and medialisation of the left ureter (yellow) with sciatic nerve root transected at level of obturator fossa (green). B Obturator fossa with ligation of internal iliac vein (blue) and transected nerve root (green). C complete resection of obturator internus and piriformis muscle with sciatic nerve roots evident (green).

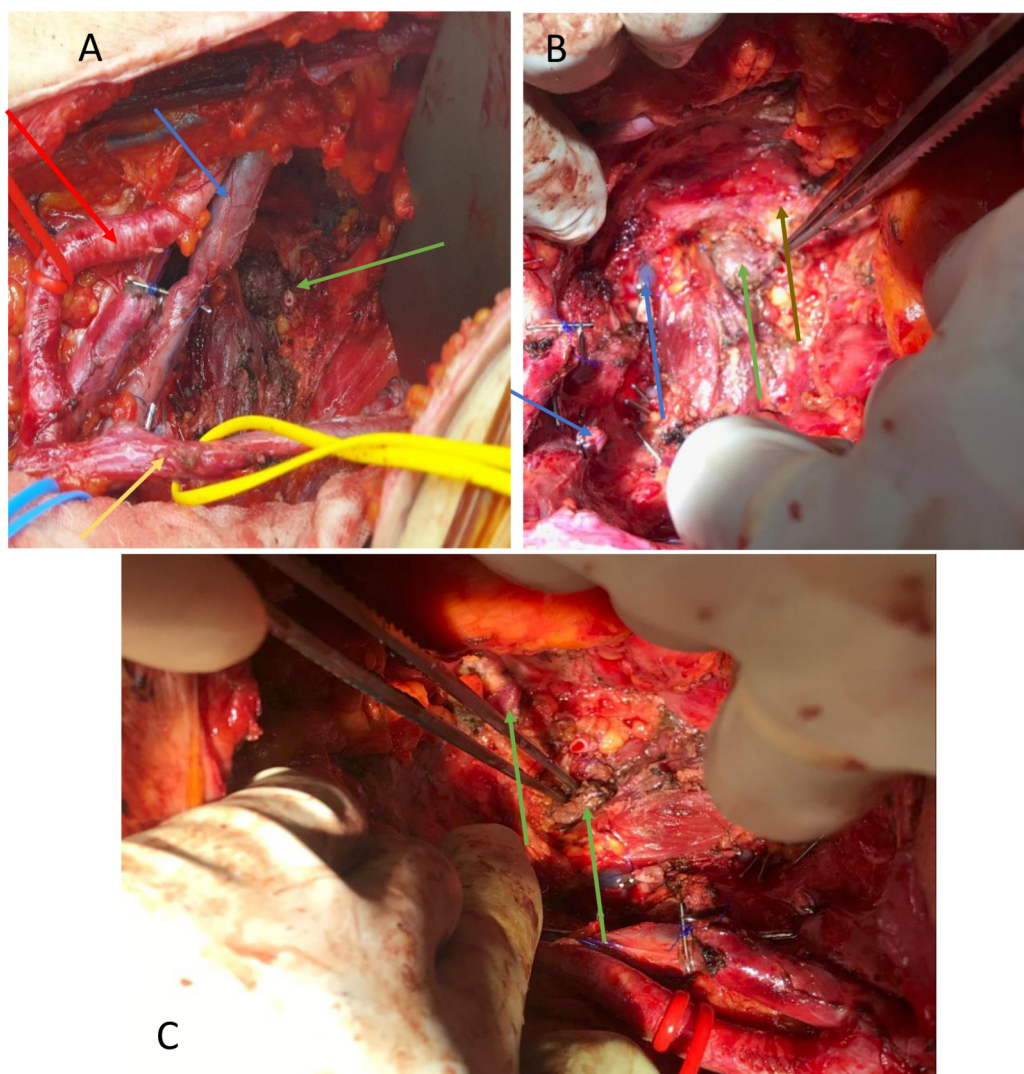


A

B



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