


Pelvic exenteration with en bloc resection of the pelvic sidewall and intraoperative electron beam radiotherapy with Mobetron[®] for locally advanced rectal cancer

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Locally advanced rectal cancer (LARC) is defined as a tumour which is predicted by magnetic resonance imaging to require an extended surgical resection beyond the total mesorectal excision plane [1]. Preoperative neoadjuvant treatments are commonly utilised to downstage and downsize the tumour, facilitating resection. In patients with persistent predicted involved margins or poor response to neoadjuvant treatment, several studies and a meta-analysis have shown that intraoperative electron beam radiotherapy (IOERT) is a further useful adjunct to extended margin surgery, leading to low recurrence within the IOERT field even in patients with a positive margin [2]. Here we describe a case of LARC with anterior and pelvic sidewall

involvement and predicted stage of T4N0M0 with involved circumferential resection margins. A poor radiological response to neoadjuvant therapy was noted, and the patient was subsequently treated with a posterior pelvic exenteration with en bloc pelvic sidewall resection and IOERT using the IntraOp[®] Mobetron[®] device (IntraOp, Sunnyvale, CA, USA). Final histology was ypT4N0 EMVI-negative R1 (pelvic sidewall margin, 0.3 mm) TRG4 (minimal response to neoadjuvant therapy). Post-operative recovery was complicated by a temporary ileus requiring parenteral nutrition. At 6-week and 3-month reviews, the patient had returned to preoperative functional status (Figs. 1, 2, 3, 4, 5, 6, 7, 8, 9).

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Fig. 1 Patient positioning. The modified Lloyds–Davies position is used. Which arm is positioned on the arm board is dependent on the side by which the IntraOp® Mobetron® approaches the patient

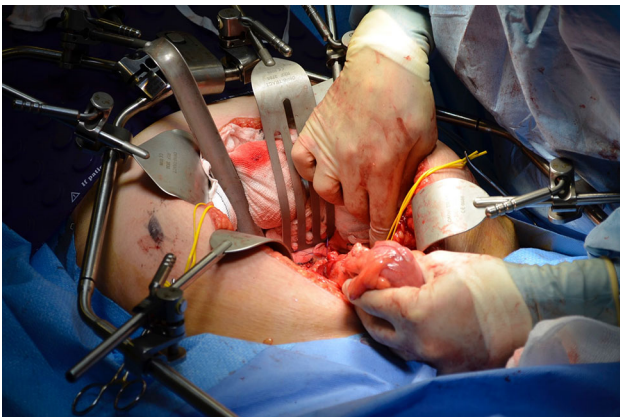


Fig. 2 Packing away of small bowel

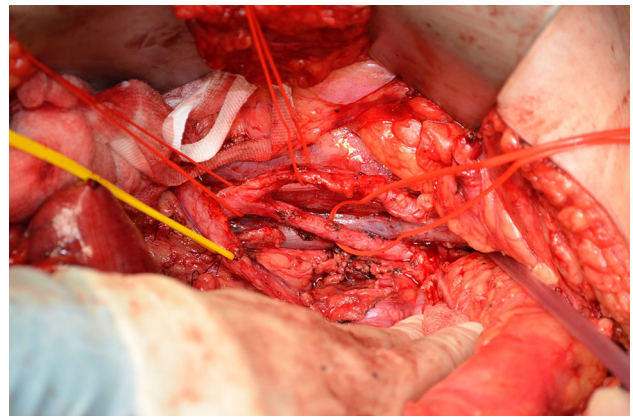


Fig. 4 Commencement of pelvic sidewall dissection and identification of the iliac arteries

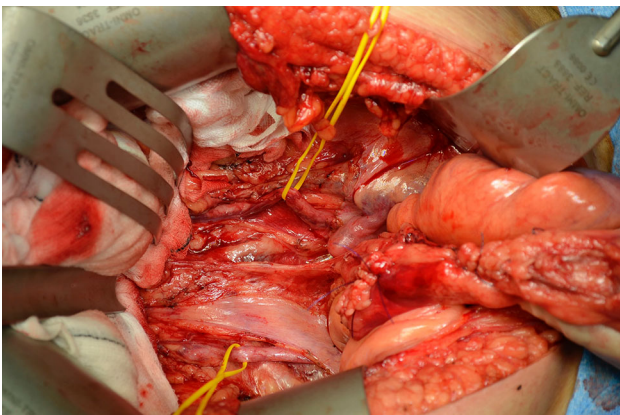


Fig. 3 Division of convenience of the colon and identification of the ureters bilaterally

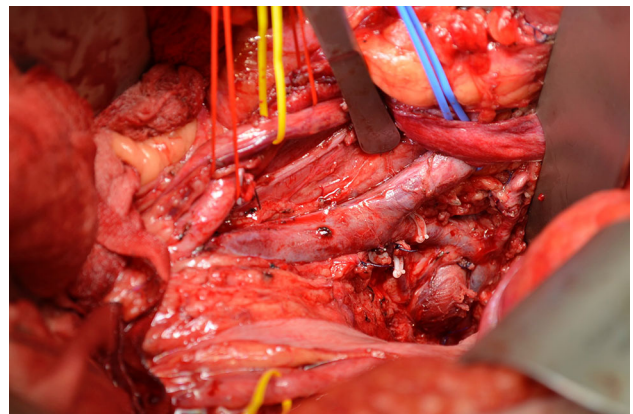


Fig. 5 View of pelvis after excision of internal iliac artery and internal iliac vein tributaries with exposure and resection of the fascia over piriformis. This is the radiologically predicted margin of concern

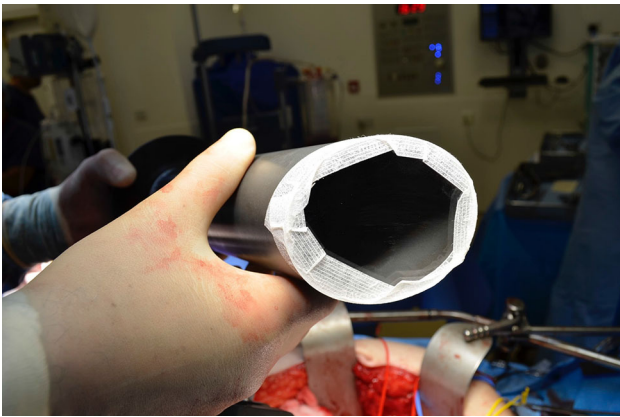


Fig. 6 Attachment and securing of the bolus to the intraoperative electron beam radiotherapy applicator (used to modulate dosing in targeted radiation therapy)

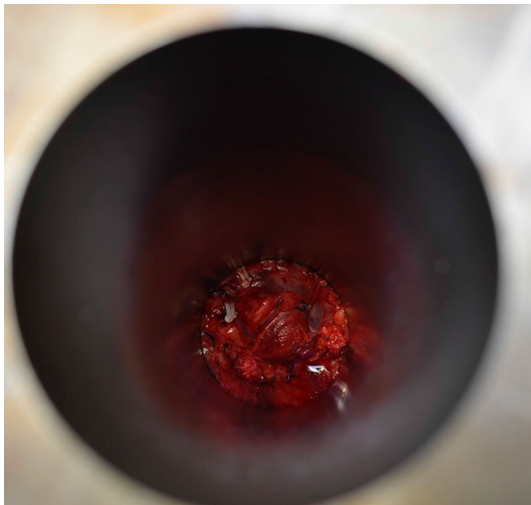


Fig. 7 View down the applicator into the pelvis demonstrating the margin of concern within the beam path

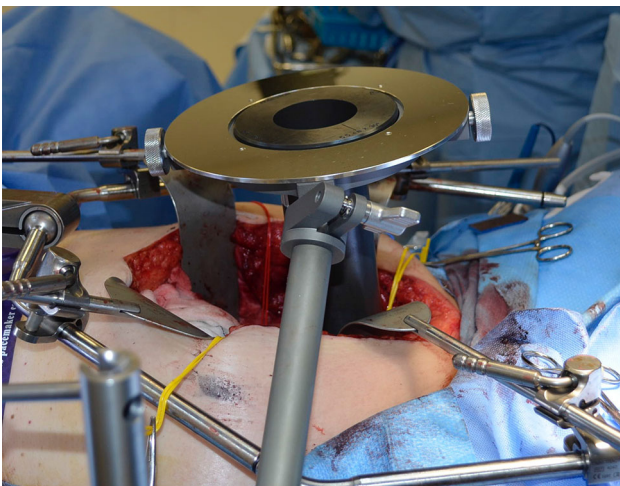


Fig. 8 Attachment and positioning of the applicator

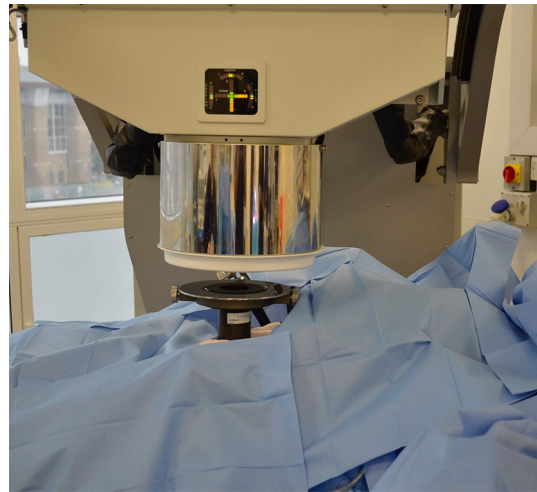


Fig. 9 Patient positioning under the IntraOp[®] Mobetron[®] mobile linear accelerator device with confirmation of soft docking by laser alignments. 15 Gy intraoperative electron beam radiotherapy was delivered using a 6-cm 30° bevelled applicator

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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 or animals performed by any of the authors.

Informed consent Informed consent was obtained from all individual participants included in the report.

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