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Multivisceral, vascular and nodal resection for recurrent rectal cancer involving the left renal tract, left pelvic side wall and abdominal aorta.

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CASE REPORT

A 47-year old male initially presented with rectal bleeding and was subsequently diagnosed with a poorly differentiated rectal adenocarcinoma at 5cm from the anal verge in July 2016. The patient completed neo-adjuvant long-course chemoradiotherapy (50.4Gy/28f, 5FU), followed by a laparoscopic ultralow anterior resection and defunctioning loop ileostomy in January 2017. Final

histopathological staging was pT3N2 (9/18 lymph nodes positive) mismatch-repair proficient mucinous signet ring adenocarcinoma, with clear resection margins and he completed adjuvant chemotherapy (FOLFOX) in June 2017.

Routine surveillance computed tomography (CT) scan in February 2018, revealed left sided hydronephrosis and an atrophic left kidney, with subsequent magnetic resonance imaging (MRI) demonstrating a 33x23x17 mm infiltrative mass at the bifurcation of the common iliac vessels. A F-18 fluorodeoxyglucose (FDG) positron emission tomography (PET) scan confirmed an FDG avid left pelvic recurrence with an additional FDG avid para-aortic lymph node at the 3rd lumbar vertebral level. Following discussion at the colorectal multidisciplinary team (MDT) meeting, he received four cycles of systemic therapy (FOLFIRI & Bevacizumab) and a repeat PET scan revealed a response to therapy at both sites with no further progressive disease. Additional chemoradiotherapy (39.6Gy/22f, 5FU) was administered to the left pelvic sidewall recurrence. Restaging imaging did not reveal progression of disease (Figure 1), therefore a curative resection with extensive vascular resection was planned. Four weeks prior to definitive surgical intervention, the patient underwent a right to left femoral-femoral artery crossover graft and a left to right femoral-femoral vein crossover graft, without complication in November 2018.

Subsequently the patient underwent an extensive field lymphadenectomy, pelvic exenteration with en-bloc left iliac vessels, abdominoperineal and pre-sacral fascia resection, left nephrouretectomy and excision of the infrarenal aorta with reconstruction with a Dacron tube graft in December 2018 (Figure 2 and Figure 3). Histopathology demonstrated clear resection margins, but recurrent poorly differentiated signet ring adenocarcinoma with direct extension into the left ureter and left iliac vessels, with 1 out of 36 lymph nodes involved (pT4N1). The resected portion of the aorta also had

signet ring adenocarcinoma present, but clear superior and inferior resection margins were achieved, with no luminal surface involvement either. The patient received extended antibiotic prophylaxis due to a graft reconstruction with concomitant bowel resection. The patient was discharged home 9 days after surgery, with no immediate complications.

DISCUSSION

Local recurrence rates after curative surgical resection for colorectal cancer vary between 3 and 38% of patients(1-3). Recurrent disease involving vascular structures, such as the aorta, have previously been deemed as contraindications for resection. Without treatment, these patients have a median survival of 8 months and may experience a poor quality of life, whilst systemic therapy achieves only temporary symptomatic palliation in the majority of patients(4). However, complete surgical resection offers the potential for cure, providing a negative resection margin is achieved. Reluctance to pursue surgical resection for these cases has been based on the assumed significant morbidity, limitations in achieving clear margins and the impact on prognosis(5, 6). Nevertheless, recent small series for vascular resections have presented good outcomes(4, 7, 8).

Pelvic exenteration is an established procedure for recurrent pelvic cancer, when clear resection margins are deemed achievable. Traditionally, pelvic sidewall involvement has been considered a contraindication for surgery, with the lateral compartment typically posing the most challenge(7). However, with improved surgical technique, surgical units with exenterative experience have expanded the boundaries of resectability and redefined what constitutes resectable disease(7). This case demonstrates that clear resection margins can be achieved in selected patients with en-bloc major vascular resections within a specialised centre for exenterative surgery and vascular reconstruction can be performed safely.

Furthermore, given the patient's increasing size of the paraortic node on PET scan, and following a robust discussion in our specialist MDT setting, a decision was made to prioritise systemic relapse. The rationale behind this approach was to assess the disease biology and response and to ensure there was no further progression prior to embarking upon large scale surgery. Systemic control was achieved as shown by lack of progression on subsequent imaging.

Following further discussion, this case was deemed surgically resectable with curative intent, allowing local therapy to be performed and meticulous planning of the surgical intervention with a specialist vascular surgeon. The authors believe this case with aortoiliac and pelvic sidewall nodal recurrence again highlights the importance of multidisciplinary management in complex recurrent rectal cancer patients

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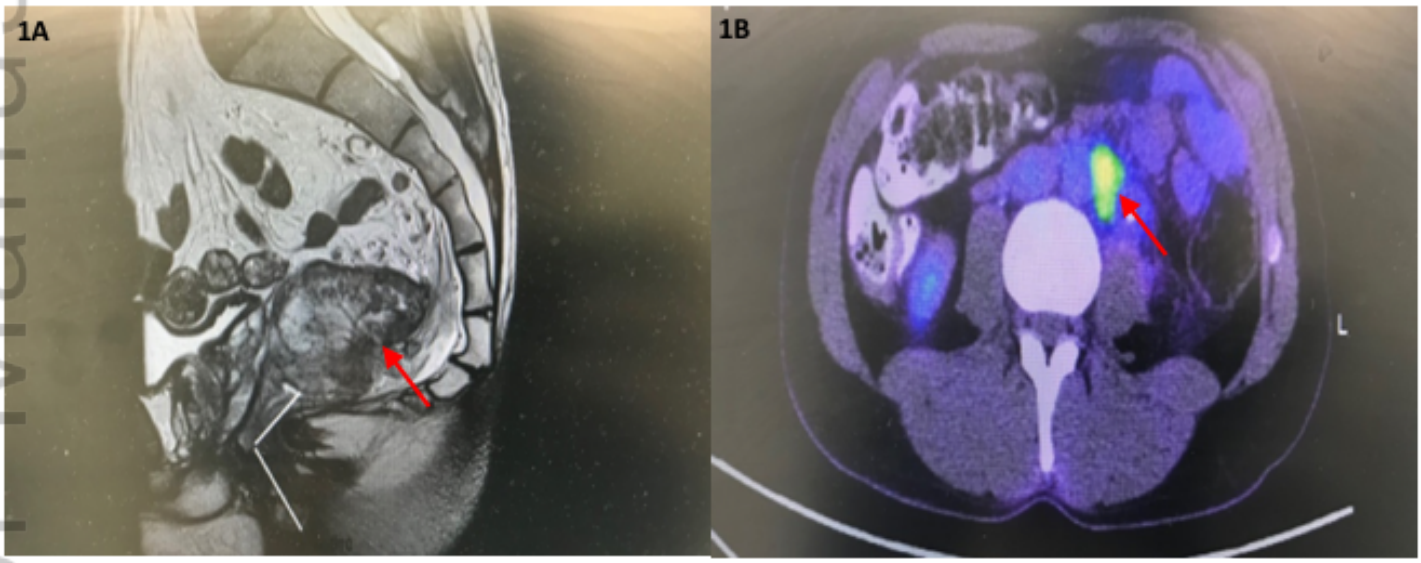

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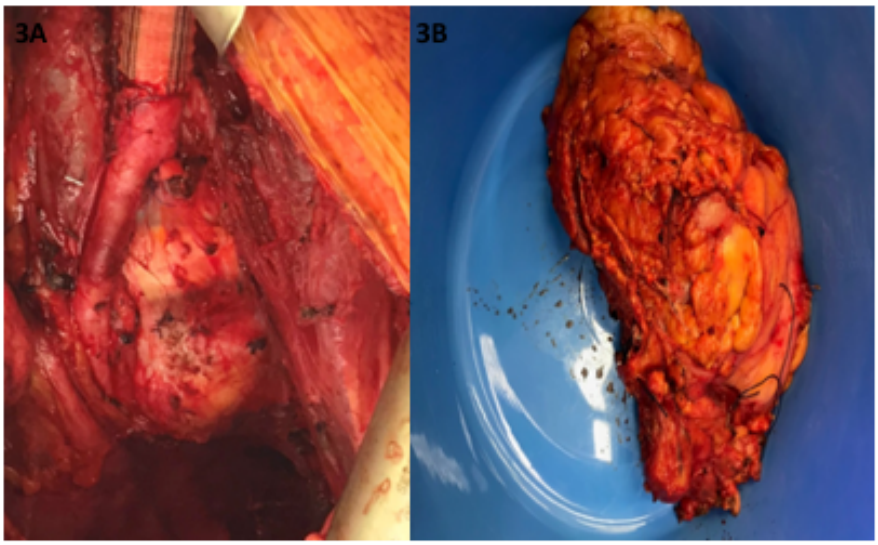

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Figure legend

Figure 1A: Sagittal Magnetic resonance imaging demonstrating recurrent rectal tumour invading into left pelvic sidewall (red arrow) with nodal mass left external iliac artery 29mm x 29mm. **Figure**

Figure 1B: FDG avid paraaortic node (red arrow) measuring 31 mm in size proximal to the level of the left common iliac artery to level of left renal hilum.

Figure 2A: Intraoperative imaging demonstrating tumour infiltrating plague (blue arrow) on left aortic side wall.

Figure 2B: Enbloc resection of paraaortic lymph node invading into aorta with resection of 3cm aorta and Dacron tube graft reconstruction.

Figure 3a: Intraoperative imaging demonstrating resection of presacral fascia from sacral promontory with resection of nodal mass recurrence enbloc with left common iliac artery, left ureter, and gonadals.

Figure 3B: left nephrouretectomy with enbloc retroperitoneal lymphadenectomy

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