Locally Advanced Rectal Cancer: A Cooperative Surgical Approach to a Complex Surgical Procedure

Abstract:

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Abstract

Single stage en bloc abdominoperineal resection and sacrectomy, with a myocutaneous flap closure is a relatively uncommon procedure. Our case study of a 77 year old man with a locally invasive rectal adenocarcinoma highlights the complex intraoperative management of such a patient.

Case Report

A 77 year old man presented with intermittent constipation for 3 weeks with ongoing perianal discomfort following long periods of sitting. Colonoscopy and subsequent staging investigations diagnosed a T4 N2 M0 primary rectal adenocarcinoma, 5 cm above the pectinate line, with peri rectal lymphadenopathy and invasion of the adjacent sacrum. Neo-adjuvant chemoradiotherapy preceded surgical intervention. Please refer to Figure 1 for MRI imaging of the lesion. Definitive surgical management comprised of an en bloc abdominoperineal resection with sacrectomy and a myocutaneous flap for closure of the resulting defect. On the morning of surgery, an epidural catheter was initially placed at the T9 level for post-operative analgesia. Bilateral prophylactic ureteric stents were sited under direct vision by the urologist. A draining nasogastric tube and urinary catheter were also sited. The procedure began with the patient in supine position, with a lower midline laparotomy incision by colorectal surgeons. Following dissection through the anterior abdominal wall and dissection of the left paracolic gutter, the colon was transected at mid-sigmoid level and an end stoma formed. Dissection in the total mesorectal excision planes was undertaken to the distal rectum.

Orthopaedic input then commenced with an anterior approach to the sacrum where the tumour was adherent to the caudal aspect of S3. An osteotomy was performed at mid S3 level. Metal markers were positioned on the anterior sacrum to guide the osteotomy for the perineal approach, thus ensuring en bloc resection. The abdomen was subsequently closed in layers and a peritoneal drain placed.

The patient was moved to a prone position, supported on a Toronto frame for commencement of the perineal approach. Perineal dissection in the antero-lateral planes extended to the sphincters and posterior extents of the bladder and prostate. Pre-operatively, based on radiological imaging, en bloc resection was planned to include S4 and S5 nerve roots bilaterally. Free dissection of the left S3 nerve root was carried out, however, the right S3 nerve root was seen to enter the tumour and unfortunately also had to be removed en bloc. The osteotomy was completed at mid sacral level and the sacrum was mobilised en bloc with the rectum and colon. Please refer to Figure 2 for a perineal view, post en bloc resection. The resulting large perineal defect was closed by plastic surgeons using a gluteal transposition flap. The gluteus maximus was split parallel with the direction of muscle fibres, the flap inserted into the space created by the resection of the sacrum and the rectum. This was found to be of sufficient length to effect closure of the resulting defect. The flap was sutured into the defect, fixed and draped with a 2-0 absorbable suture. A perineal drain was sited prior to closure.

The patient was transferred to the intensive care unit in satisfactory condition and remained in hospital for 28 days. In the immediate post-operative period, no neurovascular deficit was clinically detectable in the lower limbs and the patient remained haemodynamically stable. The abdominal and perineal drains were removed on post-operative days 8 and 16 respectively. Independent mobilisation, without aids, was achieved prior to discharge. Post-operative complications included an episode of fast atrial fibrillation and two failed trials of urinary voiding on post-operative days 11 and 21. The patient experienced urinary incontinence without any sensations of urgency. Intermittent self catheterisation training was undertaken prior to discharge.

Discussion

Primary rectal cancers initially present as locally advanced tumours in up to 10 percent of cases, however, they rarely involve the sacrum. The only potentially curative option in these cases is abdominosacral resection. Although a higher survival rate is estimated to be less than 30 percent. Higher survival rates are associated with primary, rather than recurrent rectal cancers. It is a technically challenging procedure with a documented high risk of complications, requiring intraoperative specialist input from colorectal, orthopaedic, urological and plastic surgeons. Higher levels of sacrectomy necessitate resection of higher spinal nerves and therefore correlate with an increased incidence of post-operative rectal, bladder and sexual dysfunction.

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References


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1