Case Report

Laparoscopic Extra Levator Abdominoperineal resection (ELAPR) with bilateral gluteal V-Y fascio-cutaneous advancement flap reconstruction for advanced lower rectal cancer, causing perianal fistula.

ABSTRACT

Lower rectal cancer could present with a perianal fistula. When the patient presents with recurrent fistula, especially in the elderly, a malignancy must be suspected. Even though the introduction of TME improved the resection margin and local recurrence, the same extent of improvement was not seen in APR due to natural specimen narrowing at the levator level. ELAPR addresses this problem by resecting the levator ani muscle as a cylindrical specimen. But it leaves a large perineal soft tissue defect, particularly with the perianal fistula requiring wider skin excision. The defect must be covered with native tissue, biological mesh, or both. We managed a patient presenting with lower rectal cancer causing a perianal fistula. He underwent a successful laparoscopic ELAPR with bilateral gluteal V-Y fasciocutaneous advancement flap repair.

Introduction

Rectal cancer is notorious for local recurrence, and it had been challenging to achieve optimal local control until the introduction of total mesorectal excision. But despite TME, local recurrence and survival after abdominoperineal resection for very low rectal and anal cancer has not improved to the extent seen in the anterior resection.[1] Extra levator abdominoperineal resection (ELAPR) is introduced to achieve a wider margin and improve the local control. But ELAPR leaves a wide perineal soft tissue defect, especially when the perineal skin or ischiorectal fossa is involved. Many soft tissue covers are available with varying degrees of complexity. Herein, we report a male patient with low rectal cancer and perianal fistula, treated with Laparoscopic ELAPR and bilateral gluteal V-Y advancement fasciocutaneous flap repair.

Case presentation

We present a case of a 72-year-old male patient presenting with a perianal fistula. His examination under anaesthesia revealed a lower rectal growth extending to the upper half of the anal canal with an associated fistula tract opening at 5 O'clock. Biopsies from both the growth and the fistula tract showed a moderately differentiated mucinous adenocarcinoma. Colonoscopy confirmed the same growth without any synchronous lesions up to the caecum.

Tumour staging with High-resolution MRI Pelvis showed a fistulous tract from the left inter-sphincteric region associated with a multiple septated irregular lesion measuring 4.0 x 4.7 × 5.5 cm. It involves the left puborectalis, levator ani muscles and the ischiorectal fossa.
The Contrast Enhanced CT and Inguinal Ultrasonography revealed no regional or distant metastasis.
After the MDT discussion, he was given 'Long-course Chemo-Radiotherapy'. The re-staging MRI revealed a poor tumour response to neoadjuvant therapy. He underwent a Laparoscopic ELAPR with bilateral V-Y gluteal fasciocutaneous advancement flap repair of the pelvic floor. The post-operative period was uneventful, with complete flap acceptance. He was discharged from the ward on post-op day 7. Specimen histology revealed that the

circumferential and proximal resection margins were tumour-free. He was referred to the oncology team for adjuvant chemotherapy.

Discussion

Rectal cancer, as a rule, was considered an unsurvivable disease for decades due to the lack of attention to the embryological planes, lymphatic drainage, and non-standardised techniques. The introduction of the Total Mesorectal Excision (TME) by Professor Bill Heald for Anterior Resection (AR) in the 1980s significantly reduced local recurrence. TME aims to en-bloc excision of the rectum with its mesorectal lymphatics and mesorectal fascial envelope as a "Tumour package" [1]. The objective is to resect the specimen as a cylinder avoiding coning or "waisting", to reduce the involvement of Circumferential Resection Margin (CRM) and intraoperative tumour perforation. But when it comes to the Abdomino-perineal Resection (APR) for cancers involving or abutting the anal canal, a natural waist at the levator ani level threatens the resection margin. Because of that, conventional APR is associated with greater CRM positivity (41% v 12%), greater local recurrence (23.8% v 13.5%) and poorer 5-year cancer-specific survival (52.3% v 65.8%) compared to AR.[2],[3]

Extra Levator abdominoperineal Resection (ELAP) is a technique that emphasises the complete resection of the levator ani muscle that surrounds the mesorectum as a cylindrical specimen and aims to reduce the incidence of positive CRM, intraoperative tumour perforation, and the rate of postoperative local tumour recurrence.[4]

Laparoscopy is a viable alternative to open surgery in APR, with significantly reduced hospitalisation, early bowel function return and less analgesic requirement without compromising specimen quality, lymph node harvesting and mortality. [5],[6]

The abdomen is accessed, and dissection is performed through the four-port technique. Medial to lateral mobilisation of the descending and sigmoid colon is done with ligation of the inferior mesenteric pedicle while preserving the left ureter and gonadal vessels. Then dissection is continued in the TME plane up to the pelvic floor, followed by perineal dissection. After delivering the specimen through the perineal wound, the colon is transected using a linear stapler-cutter device. End sigmoid colostomy is created in the left iliac fossa.

The value of ELAPR is inevitable when it comes to locally advanced diseases like the involvement of perineal skin and levator muscle. In such situations, the conventional APR will invariably result in positive margins.
Even though primary closure is possible, the large soft tissue defect following such extensive excision will result in the perineal herniation of the small bowel and dead space, known as "Empty Pelvis Syndrome".[7] The aims of perineal defect repair are closure with vascularised tissue to improve healing and reduce the pelvic dead space. Many surgical options are available to reconstruct the pelvic floor. The common preferences are the vertical rectus abdominis myocutaneous flap, gracilis myocutaneous flap, and the least complex gluteal V-Y fasciocutaneous advancement flap. [8] Biological meshes are also frequently used alone or combined with native tissues. Compared to biological meshes, native tissue reconstruction demands prolonged surgical time and expert skills. But when there is difficulty in accessing expensive meshes, especially in the resource-limited public health sector, it may be the only reliable choice.

A bilateral V-Y Gluteal fasciocutaneous advancement flap is a robust option for perineal wound closure with minimal donor site morbidity and surgical complexity that might delay the patient's recovery. It is based on the perforators arising from the gluteal arteries. It is performed in a prone jack-knife position.
The inferior gluteal artery is located at the intersection of the lower and mid-third portions of the line drawn from the posterior superior iliac spine to the ischial tuberosity. A handheld Doppler can confirm the location. Incision and dissection started superiorly and laterally down to the gluteal fascia. Subfascial dissection was carried out medially. The inferior gluteal artery perforators were skeletonised, ensuring adequate flap mobility into the wound. The redundant medial skin was marked out and de-epithelialized. The flap is then inset with a suction drain in layers using absorbable sutures. The skin is closed with Nylon, making the 'V-shaped donor into a 'Y'. [9]

Conclusion
Laparoscopic ELAPR with bilateral V-Y gluteal fasciocutaneous advancement flap pelvic floor reconstruction is a suitable technique with adequate tumour clearance and perineal wound outcome. Further studies are required to compare it with other techniques and evaluate its long-term results.

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