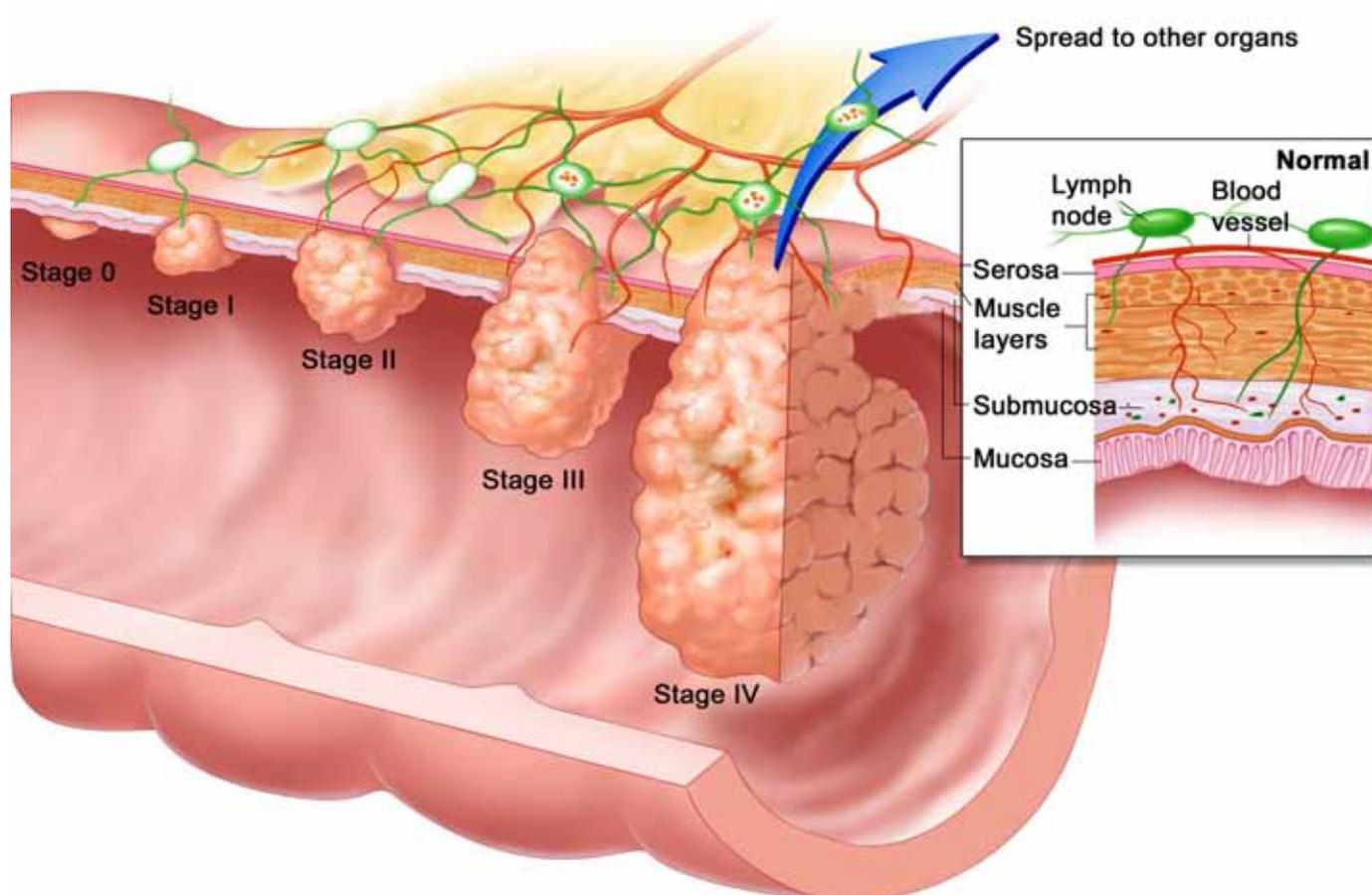


GASTRO-INTESTINAL UPDATE

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MODERN MANAGEMENT OF COLORECTAL CANCER



INTRODUCTION

Colorectal cancer (CRC) is the second commonest cancer killer in the western world after bronchus and lung. It is followed by breast, pancreas and prostate.

Colorectal surgery separated from general surgery in the 1990's. Audit studies in the early 1990's showed that results were better in the hands of specialist CRC surgeons compared to generalists.

While the breadth and sophistication of techniques for benign disease began to widen, there was also a flurry of advances in the management of CRC, both from surgical and oncological perspectives.

As a result of Ronald Reagan contracting colon cancer in 1985, colonoscopic screening took off in the USA. The rest of the western world gradually followed, and screening with colonoscopy and stool testing has become widely accepted as being cost efficient and sensitive.

Major advances in CRC management in the last 15 years:

- :: Total mesorectal resection (TME),
- :: MRI, CT and endorectal ultrasound (ERUS) in CRC staging
- :: Pre-operative (neo-adjuvant) radiochemotherapy
- :: Stenting of obstructed colons (still with some controversy)
- :: Laparoscopic resection
- :: Local excision with transanal microscopic techniques (TEM/TEO)
- :: Multidisciplinary team (MDT) assessment
- :: Decline of indications for mechanical bowel prep

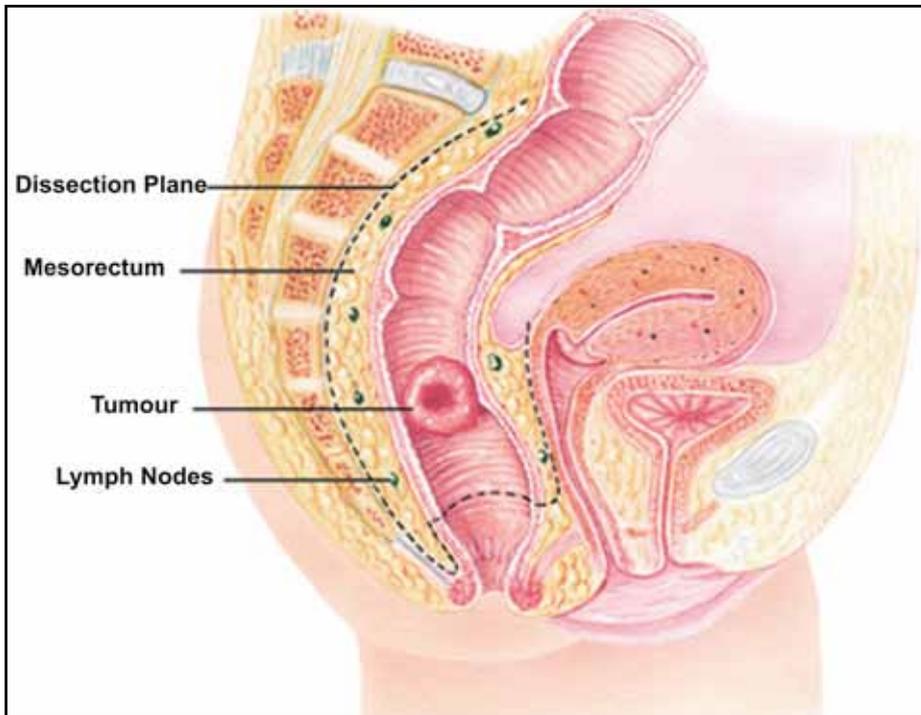


Fig 2: Mesorectal dissection plane

1.Total mesorectal excision (TME)

Bill Heald, an English surgeon, showed that metastatic lymph nodes might lie in the mesorectum below the level of the cancer. He demonstrated that the use of TME, where the rectum is excised with its mesorectal envelope, containing all its regional lymphatics (Fig 2), **reduced local recurrence from 15-30% to less than 5 percent.**

This requires a perfect anatomical resection that potentially compromises the blood supply to the residual rectal stump and increases the risk of anastomotic leak.

Another challenge was to reduce the rate of permanent stoma formation, by developing sphincter saving techniques

requiring ultra-low resections and colo-anal anastomoses. These anastomoses are created on the pelvic floor, often out of view of the surgical team, and utilise a variety of stapling devices (Fig 3) which are challenging to use and require familiarity and practice.

In addition, TME needs to preserve flimsy, vulnerable structures such as the pelvic nerves that control genito-urinary organs and pelvic floor function. The use of sharp dissection under vision, rather than blunt finger dissection has led to the more frequent achievement of the 3 ideals of rectal cancer surgery: complete cancer resection, preservation of the nerves and a low anastomotic leak rate. The abdomino-

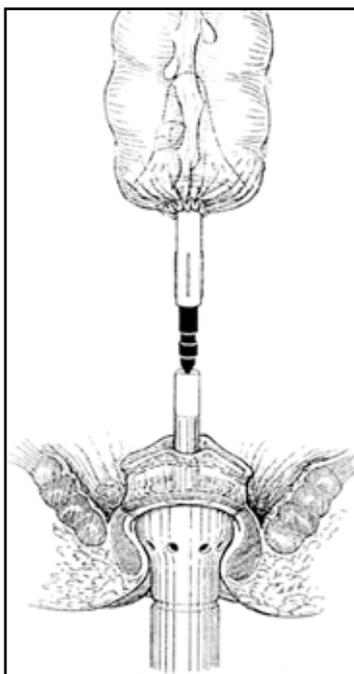


Fig 3: Low stapled anastomosis



perineal resection rate (where the anus is sacrificed and the patient has a permanent stoma) has also declined.

2.MRI, CT and Endorectal Ultrasound in CRC staging

MRI provides its best images where organs are unaffected by movement or respiration. The rectum is one of these and it contrasts well with the fatty tissue of the mesorectum allowing good radiological assessment of tumour penetration and involved nodes.

(Fig 4, Fig 5)

Patients should also receive an **abdominal and thoracic CT scan** to assess distant spread. MRI allows the clinician to decide when pre-operative downstaging radiotherapy is appropriate, and has been shown to be more accurate than digital examination, even by experienced colorectal surgeons. **PET scanning** has not proved itself of much value in pre-operative staging for this disease, and is rarely used.

Endorectal ultrasound (ERUS) is difficult to learn and harder to master. But in competent hands, it provides the best images of the layers of the rectal wall, thus allowing accurate staging of T0-T2 lesions. Some early lesions may be suitable for local excision and ERUS has its major application in this important patient subgroup whose cancers pose difficult therapeutic decisions(Fig 7).



Fig 4. (above left) MRI of rectal cancer in sagittal section indicating no mesorectal involvement.

Fig 5. (above right) The transverse section of the same cancer showing mesorectal involvement.

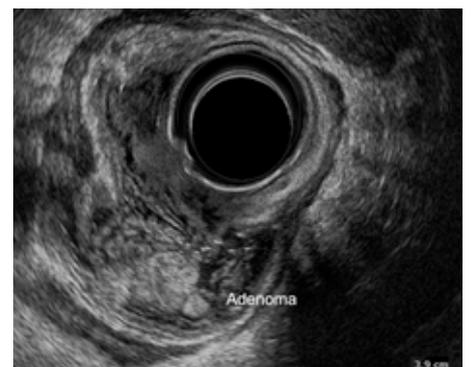


Fig 7: Image generated by ERUS, demonstrating a large non-invasive adenoma



Fig 8. Transanal endoscopic microsurgery

been overcome by the introduction of transanal endoscopic microsurgery (TEM or TEO) (Fig 8 and 9). This uses a 4cm diameter, sealed operating proctoscope through which a laparoscopic telescope and instruments can be passed, allowing controlled and accurate excision under excellent vision with almost no bleeding. Tumours as high as 15cm and occupying three quarters of the rectal circumference can be resected with little risk of morbidity. It has recently been introduced into SA, and our own series of 40 excisions has demonstrated these benefits.

4. Pre-operative radiotherapy (RT)

There are two roles for pre-operative RT: First it can be used to shrink a large cancer (T4) that is unlikely to be resectable with clear margins, or it can be used to downstage a T3 (the commonest stage) lesion, where the nodal status may be uncertain. This has been shown to reduce local recurrence, which is the most feared complication of rectal cancer because of our inability to excise it, resulting in debilitating symptoms, which are very difficult to palliate. T1 and T2 lesions usually do not require preoperative RT.

Patients receive between 40-50Gy in 2Gy doses, 5 days a week for 4-5 weeks, including radio-sensitising chemotherapy during the first week. Surgery is planned at least 8 weeks after completion of RT, and it is becoming increasingly clear that there is advantage to delaying even longer, probably up to 12 weeks. Thus the patient only receives surgery 4-5 months after starting therapy, a strategy requiring a significant shift away from traditional rectal cancer surgical management by non-specialists.

In selected patients with T3 rectal cancer, RT can be given in 5Gy fractions over 5 days (the so-called 5X5 protocol) but surgery must take place within 5 days of completion, before the acute phase response has begun.

A simple way to conceptualise the role of pre-operative RT is that it oncologically sterilises the tissue at the resection margins, while downstaging the cancer itself. In about 15 percent of patients there is a complete oncological response to pre-operative RT, resulting in a resection specimen with no residual tumour. Whether it is safe to simply observe patients, whose tumours appear to be complete responders as assessed by scans and biopsy, is the subject of current research.

In summary, irradiation is more dose-effective when given pre-operatively rather than post-operatively.

5. Stenting of obstructed colons

Colonic obstruction is a potentially fatal condition with mortality rates for emergency surgery of 15-22%. Patients

are often in poor condition, elderly and dehydrated, and a colostomy is the usual outcome, often permanent.

Endoscopic self-expanding metal colonic stent placement to relieve left-sided obstructing colon cancers is used to avoid emergency surgery (Fig 10), and may be done as definitive palliation, or as a 'bridge to surgery' (Fig 11). In the latter setting, the stent decompresses the obstructed colon, allowing patient resuscitation, and optimisation for surgery at a later stage. 80 percent of colonic obstruction etiology is malignancy, so that many patients who have been decompressed are then found to have metastases or co-morbidity which contra-indicates surgery. In this setting, the stent assumes a palliative role, as they require no further surgical intervention and avoid colostomy.



Fig 9: Operative pictures of Resection

3. Local excision

The excision of early stage rectal cancers via the anus is attractive, especially in patients with significant co-morbidity. This has traditionally been a very challenging procedure due to the limited access through the anal canal and difficulty with bleeding and diathermy smoke. These difficulties have



Fig 10: Abdominal X-ray of a decompressed bowel after stent placement



Fig 11: Resected specimen containing a stent, used as a "bridge to surgery".



Fig 12: Specimen delivery through a suprapubic incision after laparoscopic total colectomy for megacolon

Fig 13: The post-operative abdomen



6. Laparoscopic colorectal cancer surgery (LCRCS)

This has potential advantages of less pain, shorter hospital stay, a quicker return of GI function, better cosmesis, less adhesions and fewer wound problems such as incisional hernia. But these must be weighed against greatly increased theatre time and equipment costs, a very long learning curve, even for surgeons experienced in other laparoscopic operations. (See Fig 12, Fig 13.)

An advantage of all laparoscopic surgery is that abdominal operations in high BMI subjects are easier laparoscopically than via laparotomy, for example, cholecystectomy, fundoplication, appendicectomy and adrenalectomy. But this does not apply in colorectal surgery where laparoscopic is significantly more difficult than open surgery in overweight patients, and also has the difficulties of fragile mesenteric fat and vasculature, the challenge of retracting the omentum and small bowel out of the operation field, and a high variability in organ length and flexure anatomy. Construction of

intra-abdominal anastomoses requires expensive stapling devices.

Data from large centres show only modest short-term benefits, and all stress the importance of expert LCRCS surgeons to achieve these results. LCRCS must demonstrate real clinical benefits such as improved negative radial margin rates, adequate lymph node yields and the sparing of pelvic nerves with improved sexual and pelvic floor function. It should not be implemented solely for the marginal benefits of a smaller incision, fewer hernias, magnified views of the pelvis, or minimal tumour handling.

7. Multidisciplinary Team (MDT) assessment

This review has illustrated the need for numerous disciplines in CRC management. The MDT approach recognises this and usually takes the form of a regular meeting at which patients are assessed by a colorectal surgeon, radiation oncologist, radiologist, pathologist, stomatherapist or colorectal nurse specialist. Groote Schuur Hospital has one of the oldest weekly CRC

meetings in the world, dating back to the 1970's. In private practice this is harder to achieve, but the surgeon needs to ensure that he builds his own team of CRC-orientated specialists in the various practises around him to provide consistent opinion, reliable communication and a team approach.

8. Bowel Preparation

The need for bowel preparation in colorectal surgery has long been questioned. It dehydrates and starves the patient in advance of major surgical trauma. Electrolyte and fluid shifts have been proven. The colon is seldom completely clean and the liquid residual stool is left to challenge the new anastomosis. A large body of evidence has shown that the avoidance of mechanical bowel preparation leads to no increase in complications such as anastomotic leak, and reduced bowel prep associated morbidity. Patients prefer it. The data is unequivocal for colon surgery, with some reservations still remaining for low rectal anastomoses. ■

CONCLUSION

Colorectal cancer is the commonest cancer killer after lung cancer, and its management has been significantly improved by recent advances. Many of these are still not incorporated in SA surgical practice where there are less than ten registered colorectal surgeons in the country. Currently, a CRC patient deserves consideration for MRI scanning, pre-operative RT, TME, stenting when acutely obstructed, laparoscopy, or local excision with TEO in selected situations, no bowel prep and evaluation via an MDT approach. This period has seen huge improvements in stomal therapy and fistulous wound management as a result of the introduction of colorectal nurse specialists. These colleagues also provide an essential pre-operative counselling service. Two other areas of real advance have been the growing acceptance of routine colonoscopic screening and the development of routine metastectomy surgery, particularly in the liver and also in the lung. While only a small number of patients are suitable for this surgery, it has resulted in more structured follow-up programmes seeking to identify resectable secondaries.