Recent Modalities in Management of Locally Recurrent Rectal Carcinoma

An Essay

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List of Abbreviations

Abb.	Full term
5FU	*5 Fluorouracil*
AFAP	*Attenuated form of FAP*
APC	*Adenomatous polyposis coli*
APR	*Abdominoperineal resection*
AS	*Anastomotic site*
ATLA	*Arcus tendentious levator ani*
CAA	*Coloanal anastomosis*
CEA	*Carcino-Embryonic Antigen*
CRC	*Colorectal Carcinoma*
CRM	*Circumferential Resection Margin*
CRT	*Chemoradiotherapy*
DCC	*Deleted Colorectal Carcinoma*
DMM	*Distal Mesorectal Margin*
DRE	*Digital Rectal Examination*
DRM	*Distal Resection Margin*
EGFR	*Epidermal Growth Factor Receptor*
ERUS	*Endorectal Ultrasound*
FAP	*Familial Adenomatous Polyposis*
FDG	*Fluorodeoxy-D-glucose*
HAL	*Hand-Assisted Laparoscopy*
HDR	*High dose rate*
HNPCC	*Hereditary Non-Polyposis Colorectal Cancer*
IHP	*External Beam Radiotherapy*
IHP	*Inferior hypogastric plexus*
IOERT	*Intraoperative Electron beam Radiotherapy*
IORT	*Intraoperative Radiation Therapy*
ISR	*Intersphincteric Resection*
ISR	*Intersphincteric Resection*
JPS	*Juvenile polyposis syndrome*
LAR	*Low anterior resection*
LN	*Lymph nodes*
LOH	*Loss of heterozygosity*
LPLD	*Lateral pelvic lymph node dissection*

List of Abbreviations

Abb.	Full term
LPLN	*Lateral pelvic lymph node*
LR	*Local Recurrence*
LRRC	*Locally Recurrent Rectal Cancer*
LVI	*Lymphovascular invasion*
mAb	*monoclonal Antibody*
MDACC	*MD Anderson cancer center*
MDT	*Multidisciplinary Team*
MMF	*Mesorectal microfoci*
MSI	*Microsatellite instability*
nCRT	*neoadjuvant Chemoradiotherapy*
NF1	*Neurofibromatosis type 1*
PET	*Positron emission tomography*
PHTS	*PTEN hamartoma tumor syndrome*
PTFE graft	*Polytetrafluoroethylene graft*
RT	*Radiotherapy*
SEMSs	*Self-Expanding Metal Stents*
TEM	*Transanal Endoscopic Microsurgery*
TME	*Total mesorectal excision*
UC	*Ulcerative colitis*
VRAM	*Vertical rectus abdominis muscle*

ABSTRACT

Surgery for LRRC is complex and often extensive, which may result in a significant degree of postoperative mortality and complications. However, 30-day mortality is reported to be low and is mainly caused by bleeding, sepsis and thromboembolic complications. Pelvic collections, perineal wound breakdown and wound infections accounted for more than half of all complications**.**

Patients with unresectable lesions or unfit for operations are treated with chemotherapy with or without radiation according to their ability to tolerate therapy. Debulking that results in gross residual cancer is not recommended.

Median survival for metastatic colorectal cancer without systemic chemotherapy ranges from 6 to 9 months. The addition of 5-FU-based regimens improves survival to 10 to 12 months. The addition of irinotecan or oxaliplatin to 5-FU further improves survival to 14 to 17 months. The addition of the monoclonal antibodies have improved median survival to greater than 20 months.

Keywords: *Lymphovascular invasion- Multidisciplinary Team- Mesorectal microfoci- Microsatellite instability*

INTRODUCTION

Colorectal carcinoma is the most common malignancy of the gastrointestinal tract and the third most lethal cancer; the incidence is similar in men and women, with incidence rising steadily after age 50 years. Approximately 80% of colorectal cancers occur sporadically, while 20% arise in patients with a known family history of colorectal cancer. It is now well accepted that the majority of colorectal carcinomas evolve from adenomatous polyps ***(Kelli et al., 2015).***

More than 40% of patients who undergo curative surgery for colorectal cancer have tumor recurrence. 85% of them occur during the first 2.5 years after surgery. The remaining 15% occur during the subsequent 2.5 years. Most of these patients will present with distant metastases, Liver involvement occurs in approximately 50% of patients, whereas lung, brain and bone involvement occurs in 10%, 5% and less than 5%. Isolated local recurrence to the anastomosis (intramural) is rare and indicate inadequate surgical resection. Recurrence of rectal cancer can be considerably more difficult to manage because of the proximity of other pelvic structures. Ideally, the aim of operation should be to resect all of the tumor with negative margins. However, if the ability to achieve a negative margin is in question, the addition of intraoperative radiation therapy (usually brachytherapy) can help improve local control ***(Eric et al., 2013).***

Inadequate surgical resection is the most important factor for local recurrence as optimal treatment of all malignancies requires an adequate margin of resection. Adequate lymphadenectomy should be performed for accurate staging and local control. Spread from primary tumor occurs along the mesorectum, the mesorectal margin should be at least 4 - 5 cm distal to the inferior aspect of the tumor or to the end of the mesorectum at the pelvic floor, so the technique of total mesorectal excision (TME) provides adequate lymphadenectomy for most rectal cancers and reduce positive radial margin rate. Full rectal mobilization allows for a negative distal margin and adequate mesorectal excision ***(NCCN guidelines, 2016).***

Neoadjuvant / adjuvant therapy for stage II (T3-4, node-negative disease with tumor penetration through the muscle wall) or stage III (node-positive disease without distant metastasis) rectal cancer often includes locoregional treatment due to high risk of locoregional recurrence. This risk is associated with the close proximity of the rectum to pelvic structures and organs, the absence of serosa surrounding the rectum, and technical difficulties associated with obtaining wide surgical margin at resection. In contrast, adjuvant treatment of colon cancer is more focused on preventing distant metastases. Although radiotherapy has been associated with decreased rates of local recurrence of rectal cancer, it is associated with increased toxicity (radiation induced injury, hematologic toxicities) relative to surgery alone, so patient with

disease at low risk of local recurrence (e.g. proximal rectal cancer T3, N0, M0, with clear margins and favorable prognostic features) may be adequate treated with surgery and adjuvant chemotherapy ***(NCCN guidelines, 2016)***.

Local recurrence following rectal cancer have been categorized according to their anatomical location to; central (confined to pelvic organs without bony involvement), sidewall (involving pelvic sidewall structures), sacral (abutting onto or involving the sacrum), or composite (involving sacral and sidewall structures) ***(Messiou et al., 2014).***

Local recurrence can be discovered and staged by magnetic resonance imaging (MRI) of the pelvis which is useful for identifying tumor, serial surveillance of biochemical markers (e.g. CEA), positron emission tomography (PET), PET/CT scans or CT colonography which is a modern application of the conventional CT scan that can provide information on the entire colon ***(Ken Campbell, 2015).***

Management of locally recurrent cancer rectum depends on the pattern of local disease recurrence, the presence of metastatic disease, previous oncological treatment including radiotherapy and overall fitness of the patient. Surgery intends to achieve R0 resection margin, unless the recurrent tumor is irresectable, sacropelvic resection at or below the level of S3 is accepted, pelvic reconstruction is required when the S1 sacral segment is involved and amputated. Pelvic sidewall

involvement is a poor prognostic marker due to the technical difficulties to obtain negative resection margin. If extend through the greater sciatic notch, it is difficult to manage and establish functional reconstruction. Vascular encasement of aortoiliac axis is contraindication to surgical resection ***(Dozois el al., 2014).***