Colon and Rectal Cancer

Most cancers of the colon and rectum begin as single cells that lose their ability to control their growth and to respect their neighbors. They start in the inner lining or mucosal layer of the bowel wall. They will usually develop into a polyp (an overgrowth of glandular mucosal tissue) before becoming true cancers. These polyps may be pedunculated (mushroom shaped and on a stalk) or sessile (flatter with a broad base). Removing these polyps markedly reduces the risk of developing colorectal cancer.

Spread of Colon and Rectal Cancer

Cancer has two ways of spreading:

1) **Direct extension** - As these tumors grow they may spread directly into the lumen of the bowel, around the circumference of the bowel wall, or, most importantly, through the wall layers and eventually into adjacent tissue such as other loops of intestine, the abdominal wall, the bladder, the uterus, or any other abdominal structure.

2) **Metastases** - Clumps of cells may break off from the primary tumor and float away in either the lymph fluid that baths the cells or in the blood stream. These cells may then implant at a distant site and start to grow. The most common locations for metastases are the lymph nodes in the region around the bowel or distant sites such as the liver or the lungs. Lymph nodes strain the lymph fluid that is collected in the lymphatic channels after it has bathed the cells. There are lymph nodes all over your body. They are concentrated in certain areas such as the axilla (armpits) and groin. There are groups of lymph nodes around the bowel in the mesentery. The mesentery is a fatty tissue through which the blood and lymphatic channels to and from the bowel travel. When a colorectal cancer is removed surgically, the lymph nodes in the mesentery around the tumor are removed with it. The pathologist then looks at these nodes under the microscope to see if there are any tumor cells.

Staging of Colorectal Cancer

Staging refers to a method of estimating the likelihood of cure after removing the tumor. If a colorectal tumor recurs most will do so within 2 years of surgery and the vast majority do so within 5 years. Thus, outcome is discussed in terms of 5 year survival free of disease.

Several factors have proven to be very important in predicting outcome statistics. The most important ones are the depth of penetration of the tumor through the bowel wall and whether there is any spread to the regional lymph nodes or to distant sites. The appearance of the tumors cells under the microscope also has some significance. This is termed differentiation, and tumors are generally classified as well, moderately or poorly differentiated. Well-differentiated tumor cells look more like normal cells and behave less aggressively than poorly differentiated tumors. However, the majority of colorectal cancers are labeled “moderately differentiated.”

The major classification for staging colorectal carcinoma is the TNM system. The major factors noted above are incorporated into this classification system and it has proven to be helpful in determining long-term outcome.
T-N-M Classification

Primary Tumor (T)
- **TX**: Primary tumor cannot be assessed
- **TO**: No evidence of primary tumor
- **Tis**: Tumor in situ or intramucosal carcinoma
- **T1**: Tumor invades the submucosa
- **T2**: Tumor invades into but not through the muscularis propria
- **T3**: Tumor invades through the muscularis propria into the fat or serosa
- **T4**: Tumor directly invades other organs or structures

Regional Lymph Nodes (N)
- **NX**: Regional nodes cannot be assessed
- **N0**: No regional lymph node metastasis
- **N1**: Metastasis in 1-3 lymph nodes
- **N2**: Metastasis in 4 or more lymph nodes
- **N3**: Metastasis in any high lymph node

Distant Metastasis (M)
- **MX**: Presence of metastasis is not known
- **M0**: No distant metastasis
- **M1**: Distant metastasis, e.g., liver, lung

Stages
- **0**: T0, Tis, N0, M0  
  A benign polyp or carcinoma in situ
- **I**: T1-2, N0, M0  
  Tumor limited to the submucosa or into the muscularis but not through, no spread
- **II**: T3-4, N0, M0  
  Tumor through the muscularis or into an adjacent structure
- **III**: Any T, N1-3, M0  
  Spread to the lymph nodes
- **IV**: Any T or N, M1  
  Distant spread (liver, lung, bone, other)

Other factors: Differentiation (well, moderate, poor), invasion of submucosal vessels, lymphatic channels or nerve.

Procedure
- **RHC**: Right hemicolecotmy
- **TC**: Transverse colectomy
- **LHC**: Left hemicolecotmy
- **Sigmoid resection**
- **LAR**: Low anterior resection of the sigmoid and rectum
- **APR**: Abdomino-perineal resection of the rectum and anus with colostomy
- **Total colectomy & ileorectal anastomosis**
- **Anastomosis**: connecting the bowel
- **Colostomy**: temporary / permanent
- **Ileostomy**: temporary / permanent
Risks of the Procedure

General - Infection (abdomen, wound, bladder, lungs, etc), bleeding, splenic injury, transfusion (hepatitis, HIV), ureter injury, anastomotic leak, stenosis, ischemia/poor blood supply, fecal incontinence and/or poor bowel function, possibility of a permanent ostomy, bladder problems (incontinence, retention), deep vein thrombosis-DVT (leg clots), pulmonary embolism-PE (lung clots), hernia, adhesions/small bowel obstruction, heart problems/heart attack, lung problems /pneumonia/aspiration/atelectasis, stroke, and death.

Risks in men - Impotence (erectile dysfunction/retrograde ejaculation, loss of sensation).
Risks in women - vaginal problems (injury, bleeding, narrowing, partial removal as needed).

Risks of an ileostomy - Hernia, prolapse, retraction, skin problems, pouch problems, high output, dehydration and electrolyte abnormalities, obstruction, ischemia, and complications related to ostomy closure including the above and leak, infection, peritonitis, need for further surgery and/or another ostomy.

Patient information materials developed in the Section of Colon and Rectal Surgery at Rush University Medical Center. The information contained in this brochure is believed to be accurate; however, questions about your individual health should be referred to your physician.

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