Colorectal Cancer Surgical Pathway

Surgical Oncology Clinical Protocol

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1. Scope & Purpose

This protocol outlines the standardized surgical pathway for the management of colorectal cancer (CRC), including preoperative evaluation, intraoperative technique, and postoperative care. It is intended for use by surgical oncology teams managing patients with confirmed or suspected colorectal malignancies.

2. Preoperative Evaluation

2.1 Diagnostic Workup

- Complete colonoscopy with biopsy and histopathological confirmation
- CT chest / abdomen / pelvis with IV contrast for staging
- MRI pelvis (mandatory for rectal tumors — assess mesorectal fascia involvement)
- CEA level (baseline), CBC, CMP, coagulation panel
- PET-CT when metastatic disease is suspected or indeterminate on CT
- Endorectal ultrasound (EUS) for early-stage rectal lesions

2.2 Multidisciplinary Tumor Board Review

All patients should be presented at a multidisciplinary tumor board prior to surgical intervention. The tumor board should include surgical oncology, medical oncology, radiation oncology, radiology, and pathology. Key decisions include resectability, neoadjuvant therapy candidacy, and operative approach.

2.3 Neoadjuvant Therapy Indications

- Locally advanced rectal cancer (cT3–T4 or cN+): total neoadjuvant therapy (TNT) preferred
- Consider short-course radiation (5 × 5 Gy) followed by chemotherapy, or long-course chemoradiation
- Re-stage with MRI pelvis at 8–12 weeks post-completion to assess response
- Colon cancer: neoadjuvant chemotherapy may be considered for borderline-resectable or bulky tumors (institutional protocol)

2.4 Patient Optimization

- Nutritional assessment and prehabilitation program (albumin ≥ 3.0 g/dL target)
- Cardiac risk stratification per ACC/AHA guidelines
- Mechanical bowel preparation + oral antibiotic prophylaxis (per ERAS protocol)
- VTE risk assessment; initiate pharmacologic prophylaxis
- Stoma site marking by enterostomal therapist when diversion anticipated

3. Surgical Approach

3.1 Procedure Selection by Tumor Location

Tumor Location	Recommended Procedure	Key Considerations
Cecum / Ascending colon	Right hemicolectomy	Ileocolic, right colic, right branch of middle colic vessel ligation; CME dissection
Hepatic flexure	Extended right hemicolectomy	Include middle colic artery takedown
Transverse colon	Transverse colectomy or extended right/left	Based on vascular anatomy and tumor position relative to middle colic
Splenic flexure	Extended left hemicolectomy	Mobilize splenic flexure completely; ligate left branch of middle colic
Descending / Sigmoid colon	Left hemicolectomy or sigmoid colectomy	Ligate IMA at origin for adequate lymphadenectomy; preserve autonomic nerves
Rectosigmoid junction	Anterior resection	Ensure adequate distal margin (≥ 5 cm for upper, ≥ 2 cm for mid/low rectal)
Mid / Low rectum	Low anterior resection (LAR) or abdominoperineal resection (APR)	TME mandatory; consider intersphincteric resection for ultra-low tumors; diverting ileostomy for low anastomosis

3.2 Operative Principles

- **Complete Mesocolic Excision (CME):** Sharp dissection in the embryologic plane; central vascular ligation at the origin
- **Total Mesorectal Excision (TME):** Mandatory for all rectal cancers; intact mesorectal envelope with negative circumferential resection margin (CRM)
- **Lymph Node Harvest:** Minimum 12 lymph nodes for adequate staging; document total yield
- **Proximal and Distal Margins:** Minimum 5 cm proximal margin; distal margin ≥ 2 cm (rectal) or ≥ 5 cm (colon)
- **Minimally Invasive Approach:** Laparoscopic or robotic-assisted preferred when oncologically appropriate; conversion to open as needed
- **En Bloc Resection:** For tumors adherent to adjacent structures — do not separate; perform multivisceral resection

3.3 Intraoperative Checklist

- Confirm tumor location (tattoo, intraoperative colonoscopy if needed)
- Systematic abdominal exploration: inspect liver, peritoneum, pelvis
- Specimen orientation and marking for pathology
- Leak test for all anastomoses (air insufflation or ICG assessment)
- Hemostasis confirmation and drain placement per surgeon judgment

4. Postoperative Management

4.1 ERAS Recovery Protocol

- Early mobilization: out of bed POD 0, ambulate POD 1
- Early oral intake: clear liquids POD 0, advance diet as tolerated
- Multimodal analgesia: minimize opioid use; utilize TAP blocks, acetaminophen, NSAIDs, gabapentin
- Foley catheter removal POD 1–2 (POD 3–5 for low pelvic dissections)
- DVT prophylaxis: LMWH for 28 days post-discharge (rectal and stage III+)
- Monitor for anastomotic leak: vital signs, WBC trend, clinical exam, CT with rectal contrast if concern

4.2 Pathology Reporting Requirements

- Tumor type, grade, depth of invasion (pT), nodal status (pN), margin status
- Lymphovascular invasion (LVI), perineural invasion (PNI)
- Microsatellite instability (MSI) / mismatch repair (MMR) status — mandatory for all CRC
- KRAS, NRAS, BRAF mutation testing for stage IV disease
- CRM status for rectal specimens (positive if ≤ 1 mm)
- Total lymph node yield (document adequacy)

5. Adjuvant Therapy Considerations

Stage	Recommendation	Regimen / Notes
Stage I (pT1–2 N0)	Observation	Surveillance only; no adjuvant therapy
Stage II (pT3–4 N0)	Consider adjuvant chemotherapy	High-risk features: T4, LVI, PNI, < 12 nodes, poorly differentiated, perforation → CAPOX or FOLFOX
Stage II MSI-H	Observation (favorable prognosis)	MSI-H tumors have better prognosis; adjuvant chemo may not benefit
Stage III (any T, N+)	Adjuvant chemotherapy	CAPOX × 3–6 months or FOLFOX × 6 months; risk-stratify duration
Stage IV (resectable metastatic)	Perioperative chemotherapy	FOLFOX/FOLFIRI ± biologic; coordinate timing with surgical plan

6. Surveillance Schedule

- Clinical exam and CEA: every 3–6 months for 2 years, then every 6 months to year 5
- CT chest/abdomen/pelvis: annually for 5 years (every 6 months for stage III/IV in years 1–3)
- Colonoscopy: at 1 year post-resection, then at 3 years, then every 5 years if normal
- Proctoscopy (rectal cancer): every 6 months for 2–3 years if rectum preserved

7. Special Considerations

- **Obstructing tumors:** Self-expanding metallic stent (SEMS) as bridge to surgery or emergency resection with primary anastomosis vs. Hartmann procedure
- **Perforated tumors:** Emergent resection; stage as pT4a minimum; counsel on higher recurrence risk
- **Synchronous metastases:** MDT discussion — simultaneous vs. staged resection; liver-first vs. colon-first approach
- **Lynch syndrome / FAP:** Consider subtotal/total colectomy; genetic counseling referral mandatory
- **Watch-and-wait (rectal):** May be considered for clinical complete response after TNT — strict surveillance protocol required (institutional approval)

This protocol is intended as a clinical reference and should be adapted based on institutional guidelines, individual patient factors, and evolving evidence. All treatment decisions should be made in the context of multidisciplinary review.

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