Treatment overview of colon cancers.

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Max hospital Bathinda
## Indian scenario of colon cancer

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Description</th>
<th>Incidence Rate</th>
<th>Most Common Cancer</th>
</tr>
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<tbody>
<tr>
<td>8%</td>
<td>Of all cancer related death</td>
<td></td>
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<tr>
<td>3.9 per M</td>
<td>Annual incidence rate in females</td>
<td></td>
<td></td>
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<tr>
<td>4.4 per M</td>
<td>Annual incidence rate in males</td>
<td></td>
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<tr>
<td>8&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Most common cancer in males</td>
<td></td>
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<tr>
<td>9&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Most common cancer in females</td>
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</table>
Annual incidence in males

Mumbai, 37%
Banglore, 39%
Thruvandrum, 41%
Annual incidence in females

- Mizoram, 45
- Nagaland, 52
4 main risk factors for colon cancer are.

- **Metabolic syn.**
  - Diabetes mellitus, but Tx with metformin decrease risk.

- **Hereditary**
  - 20% have familial clustering – Lynch syn/FAP

- **Life style factors**
  - Obesity, smoking & alcohol, red & processed meat.

- **IBD**
  - Ulcerative colitis, Crohn's disease
pT staging of colon cancer - 8th AJCC classification

Anatomy

- SEROSA
- Longitudinal muscle
- Circular muscle
- SUBMUCOSA
- Muscularis mucosa
- Lamina propria
- Epithelium
- Lumen

T staging

- T1a
- T1b
- T2
- T3
- T4a
- Epithelium
- Lamina Propria
- Muscularis Mucosa
- Submucosa
- Muscularis Propria
- Pericolic Tissue
- T4b (infiltration into surrounding structure)
pN staging of colon cancer - 8th AJCC classification

- **Nx**: LN cannot be assessed
- **N0**: No regional node
- **N1a**: One regional LN positive
- **N1b**: 2 or 3 regional LN positive
- **N2a**: 4 to 6 regional LN positive
- **N1c**: Deposit on subserosa, mesentry, or pericolic tissue
M staging of colon cancer - 8th AJCC classification

M1 definition

M1a
1 site or organ with no peritoneal metastasis

M1b
2 or more organs with no peritoneal metastasis

M1c
Peritoneal surface metastasis +/- organ
8 parameters which should be seen in formalin fixed pathological specimen.

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<tbody>
<tr>
<td><strong>1</strong></td>
<td>Grade of tumor</td>
<td><strong>2</strong></td>
<td>Depth of penetration (T)</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>N status .Minimum of 12 LN need to be examined</td>
<td><strong>4</strong></td>
<td>Margin status, mainly circumferential</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>Lympho vascular space invasion</td>
<td><strong>6</strong></td>
<td>Perineural invasion</td>
</tr>
<tr>
<td><strong>7</strong></td>
<td>Peritumoral deposits /satellite nodules</td>
<td><strong>8</strong></td>
<td>MSI or MMR testing :if family history see.</td>
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Pathological high risk features of recurrence - Poor prognostic features

- MMR status for stage II (MSI-L)
- Poor differentiation
- Close, indeterminate or positive margin
- Localized perforation
- LVI +
- PNI+
- <12 LN examined
- Bowel obstruction
Work up of non metastatic colon mass appropriate for resection.

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<tr>
<td>• Rectosigmoid MC site</td>
<td>High risk factors- poorly diff./LVI/PNI/local perforation/margin/LN examined</td>
<td>• MRI pelvis- low lying sigmoid • CT thorax/abd • PET: not indicated.</td>
<td>• CBC, blood chemistry • CEA</td>
<td>Not recommended except MSI or MMR testing :if family history see</td>
</tr>
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</table>
Management of Colonoscopic detected invasive polyp.

**Pedunculated**
Complete endoscopy excision with negative margin & keep on follow up

**Sessile**
Colectomy with en bloc LND

**Fragmented specimen**
Colectomy with LND as margin cannot be assessed
Options of Primary treatment for non-metastatic colon cancer appropriate for resection as per work up:

<table>
<thead>
<tr>
<th>Surgery</th>
<th>Diversion /stent (distal lesions) followed by Sx</th>
<th>NACT followed by Sx.</th>
<th>Preoperative CRT followed by Sx.</th>
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<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
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Adjuvant treatment after primary treatment as per pathologic staging of non metastatic colon cancer.

- **T1s/T1/T2/T3/NO (MSI-H T3/4)**
  - Observation alone

- **T3,N0 with high risk features**
  - T4,N0 with MSS (high risk stage II)
  - Adjuvant chemotherapy +/- radiotherapy

- **T1-3,N1**
  - (low risk stage III)
  - Adjuvant chemotherapy

- **T4,N1-2;T any N2**
  - (high risk stage III)
  - Adjuvant chemotherapy +/- radiotherapy
4 major types of colectomy as per tumor location

 Colon resection
Include 5 cm of segment on either side.
Always consider regional LN dissection.

A colectomy may be done anywhere within the shaded areas of the diagrams.
Minimally invasive colectomy (Laparoscopic/robotic) approaches.

**Positives**
- Less blood loss, short stay
- Shorter time of bowel recovery, less infection rate
- Best for left side cancer

**Negatives**
- Not recommended for acutely obstructed or perforated or locally invasive to surrounding structure tumors
- High risk of abdominal adhesions.
Adjuvant chemotherapy recommended only for high risk stage II & stage III cases.

- **High risk stage II**: Capecitabine /5-FU/LV
- **Low risk stage III**: 3 mo CAPEOX or 6 mo FOLFOX
- **High risk stage III**: 6 mo CAPEOX or 6 mo FOLFOX (oxali. is neurotoxic)
Adjuvant radiotherapy recommendations.

Initially unresectable to make it resectable.

Post op. T4b
( perforation, residual disease post resection)
Target volume definition.

CTV boost
Boost volume
10-20 Gy additional boost (by EBRT/IORT)

CTV
Tumor bed defined by preop.imaging & surgical clips
Dose 45-50Gy/25-28#

PTV
Institution policy
50-60% develop metastasis with liver as most common site.

**Metachronous**
MC type of metastasis in colon cancer
Develops after initial treatment

**Synchronous**
Occur in 20-34% cases
Metastasis at time of initial diagnosis
Bad prognosis
**Additional test recommended for metastatic colon disease.**

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<th>Imaging</th>
<th>Gene status test.</th>
<th>Gene testing.</th>
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<td>• PETCT in presence of potentially resectable lesions.</td>
<td>• KRAS/NRAS. • BRAF mutation</td>
<td>• MMR(IHC) &amp; • MSI(PCR) mutation analysis if not done initially.</td>
</tr>
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Goal of primary treatment is to achieve complete resection/ablation in metastatic resectable lesions. Discuss in MDT. To achieve goal use 6 months perioperative FOLFOX/CAPEOX.

- Resection/or Cryoablation (best for subcapsular)
- Ablation (RFA: size <3cm/microwave)/or SBRT
- SBRT (Only 700cc of viable liver<15Gy with dose 12-20Gy/3 #)
- Preoperative portal vein embolization to expand liver remnant
In unresectable metastatic lesions use chemotherapy with biological agents & reassess every 2 mo for resection.

1. FOLFOXIRI+ Bev.-right side
2. FOLFIRI+ cetx./pani.; left side wild type KRAS/NRAS
3. Nivo/pembro. dMMR/ MSI-H
4. Add vemurafenib If BRAF mutations positive
5. If disease progressed with all available regimes-Regorafenib/Yt 90 chemoembolisation
Points to be kept in mind while planning systemic therapy for metastatic disease

1. Rechallenge with same drug on progression if Tx stopped for other reason than progression.
2. Not to give concurrent anti-EGFR & anti-VEGF agent.
5. Cetx & panituzumab are recommended in combination with irinotecan.
6. Biological agent only indicated for unresectable metastatic disease.
7. Nivolumab is preferred ICI if indicated.
8. Best supportive care.
Peritoneal carcinomatosis

• Seen in 17% MCRC cases.
• TOC is peritoneal stripping surgery (if R0 resection is possible) followed by HIPEC
• If extensive disease then palliative chemotherapy with caution on use of bevacizumab due to high risk of perforation.
Surveillance post treatment

**Colonoscopy**
Yearly once for 5 years
Or clinically indicated

**Life style modification advice**
30min exercise daily
325 mg aspirin.
Limit alc. Intake & smoking cessation.

**P/E & CEA levels**
3 mo x 2yrs followed by 6mo x total 5 yrs.

**Imaging**
Chest /abdomen/pelvic CT 6mo x total 5ys
PET/CT not indicated
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