Ulcerative Colitis (UC)

Ulcerative colitis (UC) is a chronic inflammatory bowel disease (IBD) that primarily affects the colon and rectum. It causes inflammation and ulceration of the mucosal lining of the colon, leading to a variety of gastrointestinal and systemic symptoms. The disease has a relapsing and remitting course, and its severity can range from mild to severe. UC is an autoimmune disorder, though its exact cause remains unclear. Environmental factors, genetics, and immune system dysregulation are believed to contribute.

Symptoms of Ulcerative Colitis:

The symptoms of UC can vary based on the extent and severity of the disease. Common symptoms include:

- Diarrhea: Bloody and Mucus stool, Frequency of stool
- Abdominal Pain
- Rectal Bleeding
- Tenesmus
- Fatigue
- Weight Loss
- Fever
- Anemia
- Dehydration
- Extra-intestinal Manifestations

Diagnosis of Ulcerative Colitis:

The diagnosis of UC is based on clinical presentation, laboratory tests, imaging, and histopathological examination.

1. Clinical History

- A detailed history of abdominal pain, bloody diarrhea, and rectal bleeding is crucial.
- Family history of inflammatory bowel disease (IBD), as there is a genetic predisposition.
- Duration and pattern of symptoms (chronic vs. acute flare-ups).

2. Laboratory test

- Complete Blood Count (CBC):

- C-reactive protein (CRP): Elevated CRP levels indicate systemic inflammation.
- Erythrocyte sedimentation rate (ESR): Elevated in active inflammation but non-specific.
- Fecal Calprotectin: Liver function tests: May be elevated in cases of primary sclerosing cholangitis (an associated liver disease in UC).
- Stool tests

- Colonoscopy: The gold standard for diagnosing UC. It allows direct visualization of the colon and rectum and can identify characteristic findings such as:
    - Continuous inflammation starting at the rectum and extending proximally (i.e., rectum to cecum in pan colitis).
    - Ulcers, granularity, pseudo polyps, and erythema in the mucosal lining.
- Biopsy: Colonic biopsies taken during colonoscopy confirm the diagnosis by showing crypt abscesses, Paneth cell metaplasia, and chronic inflammation.
- Sigmoidoscopy: If pancolitis is not suspected, flexible sigmoidoscopy may be used to examine the distal colon (especially if symptoms are confined to the left side).

4. Imaging

- Abdominal X-ray
- CECT Scan
- MRI
- Barium enema
- Histopathological
- The biopsy findings from colonoscopy show characteristic changes:

Management of Ulcerative Colitis:

The management of UC involves a combination of pharmacologic therapy, nutritional support, surgical interventions, and lifestyle modifications. The goal is to induce and maintain remission, manage flare-ups, and prevent complications.

Pharmacologic Treatment: Immunosuppressant, Corticosteroids, Biologics

Nutritional Support

- Dietary modifications may be required during active flare-ups, especially to avoid foods that irritate the bowel.
- Low-residue diet: During flare-ups, this can help reduce symptoms by limiting fiber and preventing further irritation.
- Iron supplementation: To treat iron deficiency anemia from chronic blood loss.

- Vitamin B12 and folate supplementation may be necessary if there is malabsorption.

Surgery:

Advance Robotic/Laparoscopic total colectomy, proctocolectomy performed. Benefits of Robotic restorative proctocolectomy

Robotic Restorative Proctocolectomy (RPC) is a minimally invasive surgical procedure used to treat conditions affecting the colon and rectum, most commonly ulcerative colitis or familial adenomatous polyposis (FAP), which are conditions that require the removal of the colon (colectomy) and rectum (proctectomy). This procedure can also be used to treat Crohn's disease when it affects the colon or rectum significantly.

In restorative proctocolectomy, the colon and rectum are removed, and a J-pouch (or similar type of pouch) is constructed from the small intestine to restore bowel function. The pouch is then connected to the anus to allow for normal bowel movements, avoiding the need for a permanent ileostomy (an external bag for collecting waste).

The use of robotic technology in this procedure enhances the precision and outcomes of the surgery. *Below are the key benefits of robotic restorative proctocolectomy:*

1. Minimally Invasive Surgery

- Small Incisions: Robotic restorative proctocolectomy is performed through several small incisions (about 5-6), rather than the large abdominal incision required for traditional open surgery. This means less disruption to the body.
- Less Trauma: The smaller incisions result in less trauma to the surrounding tissues, leading to fewer complications, reduced pain, and a quicker recovery.

2. Enhanced Precision and Accuracy

- 3D Visualization and Magnification: Robotic systems provide high-definition, 3D views of the surgical site, which enhances the surgeon's ability to see intricate details. This is especially important when working in the confined spaces of the abdomen and pelvis.
- Fine Motor Control: Robotic instruments offer better dexterity and a more controlled range of motion than traditional laparoscopic tools, which is critical when performing delicate procedures such as anastomosis (joining bowel segments) and pouch construction.

3. Improved Surgical Outcome

- Precise Dissection: The robotic system's precision allows the surgeon to carefully separate the colon and rectum from surrounding structures with minimal injury to nerves, blood vessels, and other organs.
- Reduced Risk of Leaks: The accuracy of robotic suturing and stapling techniques reduces the likelihood of leaks or complications at the points where the intestines are rejoined (e.g., the anastomosis or the J-pouch attachment to the anus).

4. Faster Recovery Time

- Reduced Pain: Because the procedure is minimally invasive, patients typically experience less postoperative pain than with traditional open surgery. This leads to a shorter hospital stay, often only 3-5 days compared to 7-10 days for open surgery.
- Quicker Return to Normal Activities: Most patients recover much more quickly, with many resuming normal activities within 3-4 weeks, as opposed to months of recovery required after traditional open surgery.
- Faster Bowel Function Recovery: Robotic surgery is associated with faster recovery of gastrointestinal function, meaning patients can start eating solid foods and resume normal bowel movements sooner.

5. Less Blood Loss

- Robotic surgery tends to involve less blood loss than open surgery due to its precision. The robotic instruments can work with smaller, more controlled incisions, minimizing the disruption of blood vessels.
- Reduced blood loss also reduces the need for blood transfusions, which can be a concern in major surgeries like proctocolectomy.

6. Lower Risk of Post-Operative Complications

- Infection Risk Reduction: The small incisions, combined with the precision of the robotic system, lead to a lower risk of infection and other complications such as incisional hernias.
- Minimized Risk of Nerve Damage: Robotic surgery's precision helps minimize the risk of damaging nearby nerves, particularly those involved in bowel and sexual function, which can be a risk with traditional open surgery.
- Fewer Adhesions: The robotic approach may result in fewer postoperative adhesions (scar tissue that can form and cause blockages or discomfort), which can be a problem after traditional surgery.

7. Better Cosmetic Outcomes

- The small incisions used in robotic surgery result in smaller scars and better cosmetic outcomes compared to traditional open surgery. This is a consideration for many patients, especially those who are concerned about visible scars after surgery.

8. Improved Surgeon Ergonomics and Control

- Surgeons operate from a seated console, which allows for better ergonomics and reduces physical strain, especially during long, complex surgeries like restorative proctocolectomy.
- Robotic instruments allow the surgeon to perform more intricate movements with greater precision and control, which is particularly useful in the pelvis and rectal area, where space is limited.

9. Preserved Quality of Life

- Restorative proctocolectomy with robotic assistance allows patients to retain normal bowel function through the creation of the J-pouch, avoiding the need for a permanent ostomy bag (ileostomy).
- The procedure can help patients return to a normal lifestyle after recovering from their disease (such as ulcerative colitis or FAP), with fewer long-term complications.

10. Quicker Return to Normal Diet

- Due to the minimally invasive nature of robotic surgery, patients tend to return to normal eating habits more quickly than after traditional surgery.
- Post-operative recovery of bowel function is typically faster, and patients may be able to eat soft foods and eventually solid foods within days to weeks of surgery.

Lifestyle Modifications:

- Stress management: While stress does not cause UC, it can trigger flare-ups. Stress-reducing techniques like yoga, meditation, and exercise can be helpful.
- Smoking cessation: Smoking has been shown to worsen UC and may increase the risk of complications.
- Regular follow-ups: Patients with UC should be closely monitored for complications.