IntAct: Intraoperative Fluorescence Angiography to Prevent Anastomotic Leak in Rectal Cancer Surgery

Trial set-up (12 months)

Setting: 25 centres (UK & European). **Population:** Patients with a diagnosis of rectal cancer suitable for elective laparoscopic or robotic anterior resection with anastomosis
Inclusion criteria: Adult patients aged 18 years or older, diagnosis of rectal cancer (adenocarcinoma with a lower margin ≤15cm from the anal verge on endoscopic examination), suitable for rectal resection with curative intent, suitable for elective laparoscopic or robotic anterior resection with anastomosis with or without formation of neo-rectal reservoir.
Exclusion criteria: Patients not undergoing colo-rectal/anal anastomosis, Hartmann's procedure, patients undergoing synchronous colonic resections with multiple anastomoses, locally advanced rectal cancer requiring extended or multi-visceral excision, coexistent colorectal pathology e.g. synchronous cancers, inflammatory bowel disease, recurrent rectal cancer, previous pelvic radiotherapy e.e txt for prostate cancer . Hepatic dysfunction, renal dysfunction, known allergy to ICG, iodine, or iodine dyes.

Recruitment of 880 patients (36 months)

CONSENT

Baseline data collection: Demographics, standard investigations (radiological, T-, N-, V-stage, CRM involvement), tumour characteristics, pre-op treatment. **QoL completion** (QLQ-C30, QLQ-CR38, EQ-5D &LARS score), health resource use

RANDOMISATION (1:1)
Minimisation incorporating a random element, stratified by sex, ASA, T-stage, type/timing of neoadjuvant chemo/radiotherapy (long course/short course with or without delay), planned intervention (high/low anterior resection), surgeon

Standard Care N= 440	Intraoperative Fluorescence Angiography (IFA) N= 440
Anterior Resection Operation: Operative data: details of resection, anastomotic technique and defunctioning stoma.	**Anterior Resection Operation** Operative data: details of resection, anastomotic technique and defunctioning stoma, colonic and rectal stump fluorescence, rectal stump revision, changes to planned transection, endoluminal assessment of anastomosis.

CTA/CTp sub study N=75 (UK pts only)

Pre-op:
CT perfusion scan
CT angiography

Rectal microbiome sub study N=200 (UK pts only)

Baseline: Mucosal & faecal sample

Operation: Mucosal & faecal sample

5 days post-op: Mucosal & faecal sample

Follow-up (3 months)

4 weeks post-operation FU: Clinical assessment, QoL completion (QLQ-C30, QLQ-CR38, EQ-5D & LARS score), health resource use

4-6 weeks post-operation: contrast enema

90 days post-operation FU: Clinical assessment, QoL completion (QLQ-C30, QLQ-CR38, EQ-5D & LARS score), health resource use

Analysis & write-up (6 months)

Primary outcome: Clinical anastomotic leak rate up to 90-days post-surgery in the IFA group as compared to standard care.

Secondary outcomes:

- Radiological anastomotic leak rate
- Change in planned anastomosis
- Rate of defunctioning stoma
- Postoperative complications (Clavien-Dindo classification)
- Length of hospital stay
- Low anterior resection score (LARS) – patients without defunctioning ileostomy
- Rate of anastomotic complications other than leak i.e. anastomotic stricture
- Rate of re-interventions
- Quality of life (QLQ-C30, QLQ-CR38, EQ-5D)
- Health resource utilisation
- Death within 90 days of operation

Perfusion sub study objectives
To investigate the influence of vascular anatomy and bowel perfusion on anastomotic blood supply and surgical decision-making

Microbiome sub study objectives
To analyse the rectal microbiome to determine the changes that occur with surgery and the potential role in anastomotic leak