

Side effects of brachytherapy

Dr Arian Barnardo BM BMedSci MD FRCP AGAF
Consultant Gastroenterologists & BCSP Endoscopist

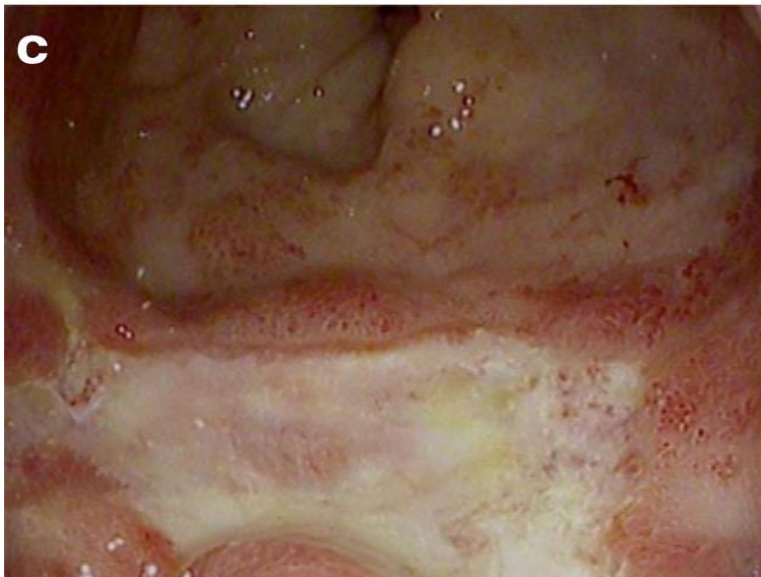
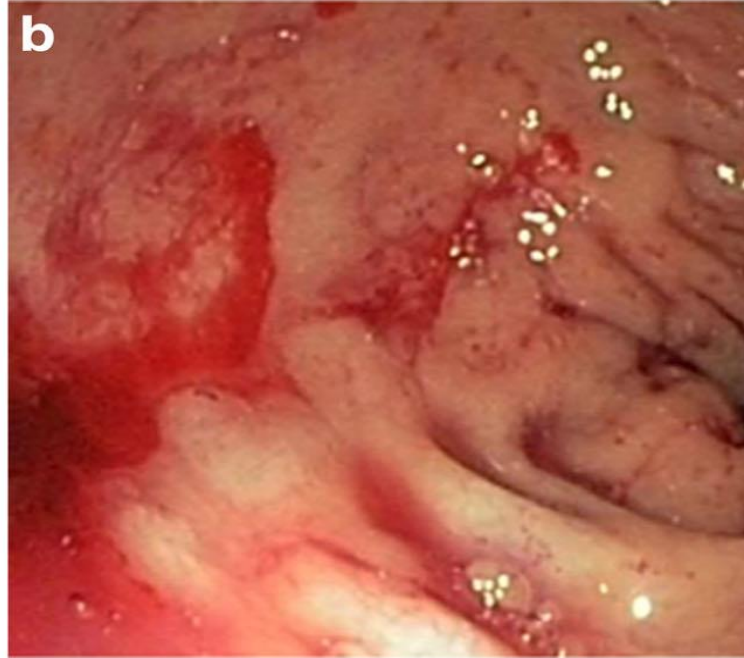
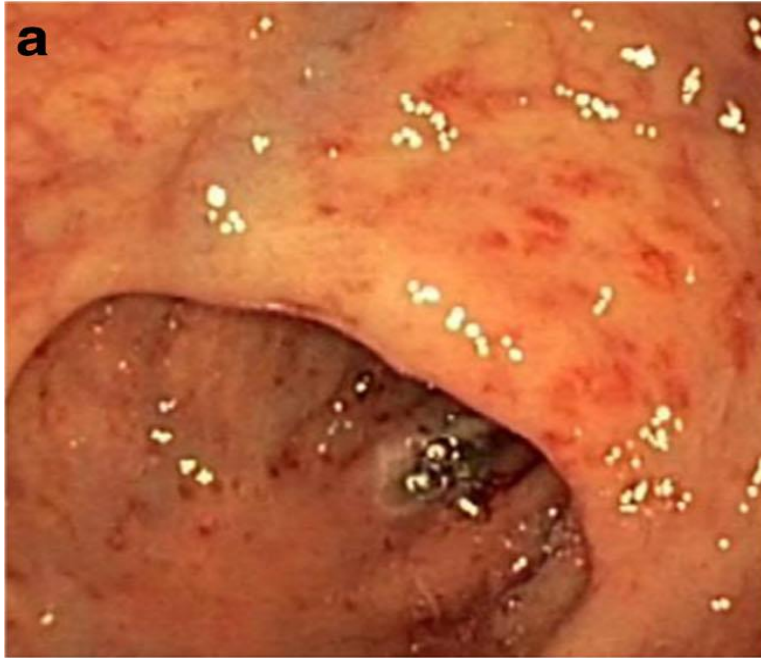
Anal pain & Rectal bleeding

Rectal bleeding – not everything is oncological

Side effect	Not related to oncological treatment
Acute radiation proctitis	Haemorrhoids
Chronic radiation proctitis	Inflammatory bowel disease
	Diverticular bleeding
	Viral infection / Bacterial
	Second neoplasia

Comparison of Acute v Chronic radiation proctitis

	Acute Radiation Proctitis (ARP)	Chronic Radiation Proctitis (CRP)
Timing of symptoms	< 3 months of starting radiation	➤ 3 months to years later
Incidence	Common (50-100%)	Less common (2-20%)
Common Symptoms	Diarrhoea, urgency, pain, tenesmus, mucous	Rectal bleeding
Rare symptoms	Significant rectal bleeding	Stricture, obstruction, fistula
Histopathology	Epithelial cell depletion, Acute inflammatory infiltrate	Small vessel changes, fibrosis No inflammatory infiltrate
Endoscopy	Friable, telangiectasia, skip lesions	Pale, telangiectasia, non compliant
Treatment	Conservative (softeners omit anticoagulants), medical	Conservative, medical, endoscopic, surgical



RTOG toxicity scale

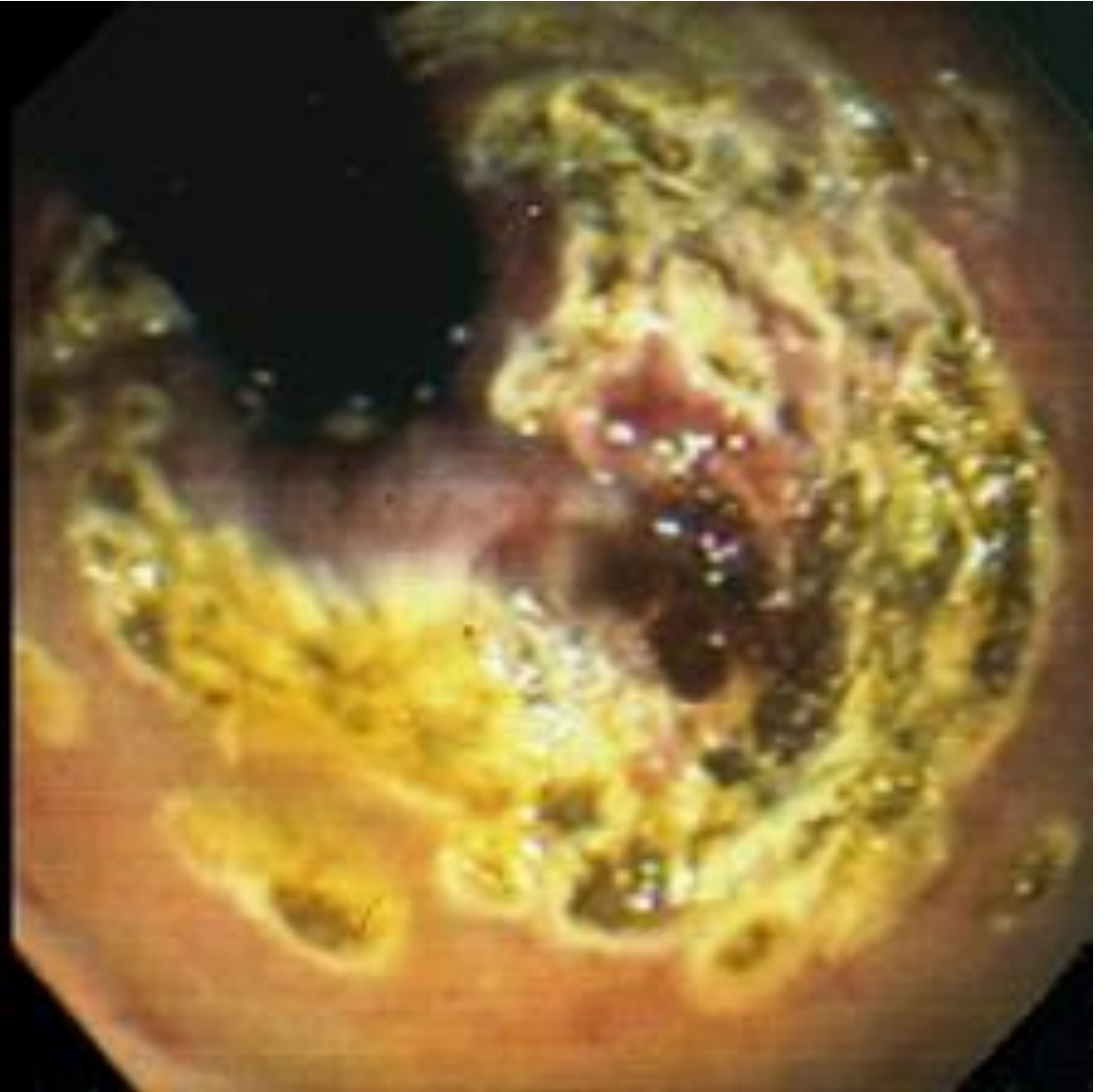
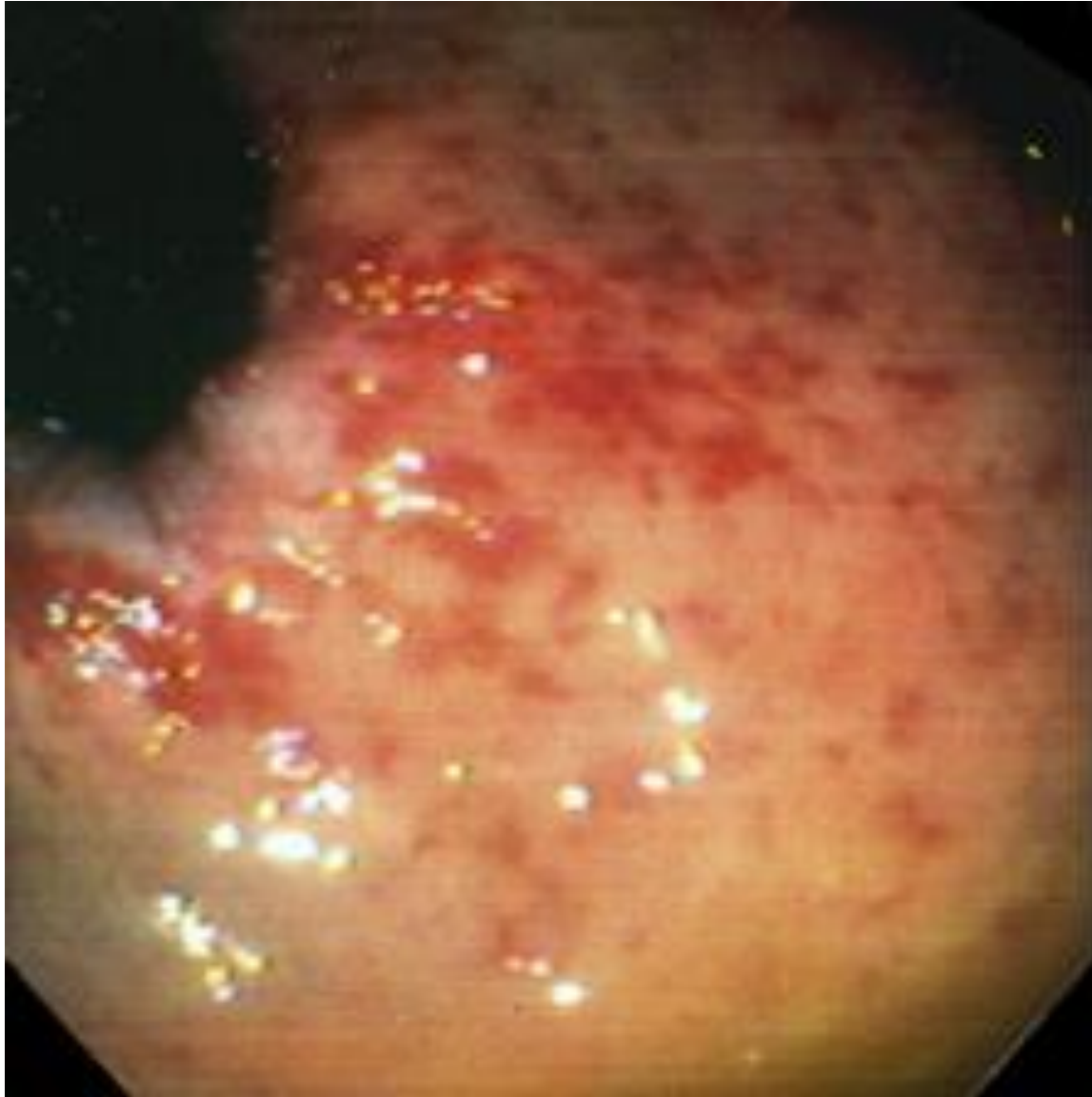
	Clinical summary	Symptom & intervention
Grade 0	No impact	No discernible symptoms
Grade 1	Mild & Self limiting	Minimal infrequent bleeding or clear mucous discharge, Rectal discomfort without need for analgesic, Loose stool
Grade 2	Managed conservatively, Lifestyle not affected	Diarrhoea requiring medications Intermittent bleeding not needing pads, Rectal erythema on proctoscopy,
Grade 3	Severe, Lifestyle affected	Rectal bleeding requiring pads Rectal pain requiring narcotics Rectal ulceration
Grade 4	Life threatening and disabling	Bowel obstruction Fistula formation Hospitalisation; surgical intervention
Grade 5	Death	

Non – endoscopic therapies

Treatment	Proposed mechanism	Evidence
Sucalfate enema 2g bd <i>Chrouser 2005</i>	Protects from injury	RCT evidence in CRP (+ prednisolone 20mg) <ul style="list-style-type: none"> Reduces rectal bleeding
Metronidazole 400mg tds + steroid enema <i>Cavic 2000</i>	Antibiotic / immunomodulator	RCT evidence in CRP <ul style="list-style-type: none"> Reduce rectal bleeding & diarrhoea
Hyperbaric oxygen <i>Clarke 2008, Glover 2016</i>	Promotes angiogenesis and healing	RCT evidence in CRP
5-ASA <i>Seo</i>	Anti-inflammatory	Mixed results; combination with other Rx <ul style="list-style-type: none"> Oral and topical Rx trend to benefit
Probiotics / Anti-oxidants prophylactically	Immunomodulatory effect / free radical scavenger	No RCT Mixed results, minimal side effects
Topical formalin <i>De Parades 2005 Pikarsky 2000</i>	Coagulative necrosis	Effective for CRP <ul style="list-style-type: none"> Significant co-morbidity
Butyrate enemas <i>Talley 1997</i>	Colonocyte nutrient	Mixed results ARP & CRP

Endoscopic therapies

Therapy	Mechanism	Indication
Argon plasma coagulation <i>Karamanolis 2009 Taieb 2001</i>	Non contact electrocoagulation	RCT evidence in CRP <ul style="list-style-type: none">• Less bleeding and transfusion
Dilatation	Mechanical	Single institution No RCTs
Bipolar cautery <i>Jensen 1997</i>	Thermoelectric cauterisation	RCT evidence in CRP <ul style="list-style-type: none">• Less sever bleeding
Nd YAG <i>Viggiano 1993</i>	Electromagnetic radiation	Single institution no RCT <ul style="list-style-type: none">• Less bleeding
Radiofrequency ablation <i>Eddi 2013</i>	Rapid alternating radiofrequency waves	Single institutions no RCT



Prevention of radiation proctitis

Different RT techniques	Brachytherapy v External beam	
	3D conformal CT	
Medication <i>Koukourakis 2013</i>	Amifistone	Free radical scavenger Reduces ARP & CRP
Rectum spacer <i>Prada 20067 Wilder 2009</i>	Balloon Implantable tissue filler	

Anal Pain

	Investigation	Diagnosis	Treatment plan
Anal pain	Symptoms	Proctalgia fugax	1) Pelvic floor exercises 2) Low dose antidepressants 3) B2 agonists, Biofeedback , Acupuncture
Pain on defecation	Visual assessment Sigmoidoscopy	Haemorrhoids	1) Bulking / softener/ topical 2) Surgical review if grade III / IV
	Sigmoidoscopy	Anal fissure	1) Topical GTN / Diltiazem / Bulking / softener 2) Surgical review
	Sigmoidoscopy	Anorectal fistula	1) MRI 2) Surgical review
	MRI	Anorectal abscess	Urgent surgical review
	Sigmoidoscopy	Anorectal ulcer	Nicorandil
	Sigmoidoscopy / Defecography	Mucosal prolapse / Solitary rectal ulcer	1) Bulking / softener / Biofeedback 2) Gastroenterologist / Surgical
	Sigmoidoscopy	Neoplastic ulcer	Refer to oncology
Pain		Non Gastrointestinal	