MRI: IMPACT ON RECTAL CANCER CARE AND STANDARDISATION

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WHICH PATIENTS ARE AT RISK OF LOCAL RECURRENCE?

The following risk factors have been identified as predictors for pelvic recurrence if TME plane surgery is performed:

- Tumour extending to 1 mm or less of mesorectal fascia
- Tumours bordering 1 mm or less to the intersphincteric plane
- Anterior tumours <4 cm from anal verge as measured by MRI
- Anterior quadrant invasion below 6 cm to the anal verge
- Extramural venous invasion

WHICH PATIENTS ARE AT RISK OF LOCAL RECURRENCE AFTER CHEMORADIOThERAPY?

The following risk factors have been identified as predictors for pelvic recurrence if TME plane surgery is performed:

- Persistent tumour extending to 1 mm or less of mesorectal fascia
- Persistent tumours bordering 1 mm or less to the intersphincteric plane
- Persistent extramural venous invasion

POST TREATMENT ASSESSMENT OF THE CRM BY MRI

A. High resolution scan at baseline
   - The baseline scans show an annular ulcerating tumour which extends to the mesorectal fascia anteriorly to the right of the midline (white arrow). There is also vascular invasion (open arrow) and a discontinuous deposit is seen in a branch of the superior rectal vein (black arrow): MRI stage is mrT3c, N1c, mrEMVI positive, mrCRM involved

B. Post chemoradiotherapy scan
   - The tumour is seen as dense low signal intensity signifying fibrosis rather than residual tumour at the mesorectal margin: ymrT0, N0, EMVI negative, mrCRM clear

C. The pathology confirms a complete response
   - A potentially involved CRM has been prevented by preoperative downstaging chemoradiotherapy

Courtesy of The Royal Marsden Hospital
MR CRM PREDICTION FOR LOW RECTAL CANCERS: TME PLANE SAFETY

This is a classification that does not relate to TNM but rather predicts the safety of TME plane surgery

1. **MRI Low Rectal Stage 1:** tumour on MRI images appears confined to bowel wall (intact muscularis propria of the internal sphincter) **TME plane safe**

2. **MRI Low Rectal Stage 2:** tumour on MRI replaces the muscle coat but does not extend into the intersphincteric plane (>1 mm muscularis is preserved). Above sphincter tumour is confined to within the mesorectum **TME plane safe**

3. **MRI Low Rectal Stage 3:** invading into the intersphincteric plane or lying within 1 mm of levator muscle above the level of the sphincter complex (verified by imaging in more than one plane) **ELAPE plane is necessary**

4. **MRI Low Rectal Stage 4:** invading the external anal sphincter and infiltrating/ extending beyond the levators +/- invading adjacent organ **ELAPE or exenteration needed**
Almost half (44.4%, 124/279) of study participants had a ‘safe’ mrLRP and no adverse MRI features. The recommended management was to proceed straight to surgery with an intersphincteric resection, adhering to this guidance (50%) led to a clear 16 pCRM in 98% of cases.

When MRI low-risk patients were offered CRT or an ELAPE - this resulted in a higher pCRM involvement. Additional treatment and more radical surgery did not result in a benefit to the patient and may represent overtreatment.
In patients with low rectal cancer – the assessment of the safety of the intersphincteric plane and mesorectal margin are more relevant than T stage in predicting the risk of pathologic CRM involvement and consequent local recurrence risk.

ASSESSING OTHER RISK FACTORS FOR RECURRENCE
HOW DOES TUMOUR SPREAD?

Directly into neighbouring structures – risk can be reduced by extending the TME plane to beyond TME surgery to achieve clear radial margins (1)

Via the lymph nodes: removal of the total draining nodal disease by TME surgery results in low risk of distant failure if a clear CRM is achieved (2)

Via the blood vessels – EMVI – persistence of extramural vascular invasion after preoperative therapy as detected by MRI is a risk factor for both CRM positivity and distant metastatic disease (3)

PROGNOSTIC SIGNIFICANCE OF MAGNETIC RESONANCE IMAGING-DETECTED EXTRAMURAL VASCULAR INVASION IN RECTAL CANCER

Vascular invasion is manifest on MRI as either direct spread from the primary tumour into an adjacent extramural vessel or as discontinuous seeding along the draining veins within the mesorectum as in the cases illustrated above. There is a stronger link with tumour vascular deposits and subsequent metastatic disease than that observed related to nodal spread.

Vascular invasion is detected in 30-40% of preoperative MRI scans.

The Prognostic Significance of Postchemoradiotherapy High-Resolution MRI and Histopathology Detected Extramural Venous Invasion in Rectal Cancer

Manish Chand, MRCS,*†‡ Jessica Evans, MRCS,*†‡ Robert I. Swift, FRCS,† Paris P. Tekkis, FRCS,*† Nicholas P. West, FRCPath,§ Gordon Stamp, FRCPath,*† Richard J. Heald, FRCS,¶ and Gina Brown, FRCR*
UNIVARIATE AND MULTIVARIATE ANALYSIS

By clinical, preoperative MRI and postoperative histopathology characteristics (Cox Proportional Hazards for DFS)

<table>
<thead>
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Comparing ymrEMVI and ypEMVI reveals a striking difference in detection rates. Only 36.4% of ymrEMVI positive cases were detected on histopathology using standard methods, yet the prognostic outcomes for mrEMVI-positive tumours that were pathologically ypEMVI negative were poor. Therefore, rather than MRI overdiagnosing EMVI at the end of treatment, these cases are hard to detect by conventional pathology.

Comparison of survival outcome of 3-year DFS between ymrEMVI negative and ymrEMVI positive patients

Comparison of 3-year DFS between ypEMVI negative and ypEMVI positive patients

POST CRT EFFECT ON EMVI – 3-YEAR DFS

When patients stratified patients into high- and low-risk groups on the basis of known MRI prognostic features: mrEMVI positive, >5 mm extramural invasion, or involved CRM.

High risk group have a higher rate of synchronous metastatic disease than non-high risk confirmed - 20.7% in the high-risk group vs. 4.2%

WHAT SHOULD WE CONSIDER AS A GOOD RESPONSE? pCR?

Infrequent finding for “clinically staged” T3 tumours

Metaanalysis had shown that pCR was more likely achieved in clinical T1 and T2 tumours - ?

Was there a survival advantage to achieving pCR for T1 and T2 tumours?

Influence of timing of surgery on pCR

Is pCR realistic goal for treatment of advanced rectal cancer?


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Patients undergoing surgery with a delay of at least 8 weeks after completion of radiotherapy are 3 times more likely to undergo T downstaging (OR, 3.79; CI: 1.10 –12.99; P<0.03) than patients undergoing surgery at less than 8 weeks. A greater delay to surgery following the completion of pre-operative therapy is associated with an increased likelihood of achieving a pathological complete response. This is being prospectively tested in a randomised trial evaluating the timing of response assessment and surgery (the 6 vs. 12 trial).

Clinical Investigation: Gastrointestinal Cancer

MRI Predictive Factors for Tumor Response in Rectal Cancer Following Neoadjuvant Chemoradiation Therapy - Implications for Induction Chemotherapy?

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Analysis

- Good response – defined as ypT0-ypT2
- 218 patients treated between 2003-2009
- 57% of patients had been enrolled into EXPERT trial – 12 weeks of capecitabine and oxaliplatin neoadjuvant chemotherapy prior to CRT
- 118/218 showed good response – 40%

Criteria for preoperative CRT

- Tumours within 1 mm of mesorectal fascia (i.e., potential circumferential resection margin involvement)
- T3c (extramural spread 5-15 mm) and T3d (extramural spread >15 mm), regardless of N stage
- MRI T4a or T4b disease regardless of N stage
- Low rectal cancer with tumour bordering the intersphincteric/ distal TME plane on MRI
- Tumours with MRI extramural venous invasion (mrEMVI)

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### POST TREATMENT YMRTN STAGE VS. PATHOLOGY TN STAGE

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<td>61</td>
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</table>

- Overall accuracy for response assessment was 72%
- PPV for mrT0-2 for good response on pathology was 80% (95% CI 68%-88%)
- PPV for node negative status on MRI was 84% (95% CI 78%-89%)
- Overall accuracy for path nodal assessment was 75%
Despite a lack of 100% agreement between pathology and MRI, assessment of T stage by either MRI or pathology show equal performance in the prediction of survival.

FACTORS ASSOCIATED WITH YPT0-T2

- Baseline age, sex, stage size of tumour were not independent predictors for tumour response
- mrEMVI positive tumours were significantly less likely to downstage than mrEMVI negative tumours with CRT (OR for EMVI 2.94, P<0.007)
- Height <5 cm from anal verge significantly more likely to respond (OR for <5 cm vs. >5 cm 1.96, P<0.02)
- mrEMVI status from positive to negative more likely in pathology responders (OR 3.09)
- Strong association between induction chemotherapy and ymrEMVI status positive to negative change after CRT (OR 9.0, P<0.003)

Assessment of tumour response using the mrTRG scale

Base line scans shows an annular tumour infiltrating the mesorectal margin between the 10 and 12 o'clock position. Post treatment, the intermediate (grey) signal of tumour has been replaced by fibrotic (black) signal with fibrosis involving the rectal wall and normal fat signal at the mesorectal margins. As no intermediate signal intensity remains within the dark fibrosis – this is classified as dense fibrosis only mrTRG2 with either no tumour cells or microscopic residual tumour cells of questionable long term viability.

TRG AND SURVIVAL

In independently validated series, mrTRG identifies prognostically distinct groups. mrTRG can distinguish between ‘good’ and ‘poor’ responders to CRT. This shows good interobserver agreement amongst radiologists who can undertake this scoring on high resolution T2 weighted scans.

Patients with mrTRG 4 & 5 have relatively little response to preoperative therapy. As expected this group has a significantly higher risk of CRM involvement, distant failure and poor OS compared with patients that have mrTRG 1-3. On the other hand, mrTRG1&2 is strongly associated with complete response.

MRTRG IS A PROGNOSTIC (AND PREDICTIVE) BIOMARKER

Shows good interobserver radiology agreement and reproducibility

- MERCURY trial (JCO 2011 – multiple radiologists) (1)
- EXPERT-C trial (2)
- GEMCAD study (17 radiologists) (3)
- CORE study (interobserver agreement) (4)

Identified 40% of patients with mrTRG1/2 – 89.8% overall survival Compared with only 8.8% patients with pathologic CR

Therefore mrTRG could be justified as a more clinically relevant endpoint
SELECTING PATIENTS FOR DEFERRAL OF SURGERY
## RESPONSE METHODS COMPARED

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<th>Method</th>
<th>Prospectively validated against DFS outcomes</th>
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<td>MRI DWI</td>
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<tr>
<td>DCE-MRI</td>
<td>No – many retrospective values proposed – none validated</td>
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<tr>
<td>PET-CT</td>
<td>No – but retrospective SUV cut-offs proposed – unverified prospectively</td>
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<tr>
<td>mrVolume assessment</td>
<td>Yes: &gt;80% volume reduction</td>
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<tr>
<td>mrTRG</td>
<td>Yes: TRG1-5 validated prospectively and against outcomes</td>
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<tr>
<td>mrT and mrN stage</td>
<td>Validated prospectively and against outcomes</td>
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HOW ARE THE PATIENTS IDENTIFIED?

- mrTRG
- PET

Clinically - DRE
 +/- biopsy
ENROLMENT

mrTRG1-2 @ 4-6 weeks post CRT → no viable disease
  - (low signal intensity fibrotic scar tissue only)
    confirmed by MRI @ 8-12 weeks

mrTRG3 @ 4-6 weeks post CRT → a good partial response
  - Continued incremental response on MRI @ 8-12 weeks

NOT INITIALLY EXCLUDED EVEN IF:
DRE – Thickening of rectal wall or clinically palpable tumour
Endoscopically – Mucosal abnormality
Pathology – Biopsy positive
Good response: dense fibrosis; no obvious residual tumour, signifying microscopic residual disease only, and on continued surveillance may become TRG1 no viable tumour.
ROYAL MARSDEN CRITERIA

MRI defined complete response: mrTRG1-2: low signal intensity fibrotic scar tissue only seen at MRI performed 4 weeks after long-course CRT, confirmed at 8-12 week MRI

- Biopsy positive disease not an initial exclusion criterion
- Thickening of rectal wall – not an exclusion
- Abnormality on endoscopy – not an exclusion
- Clinically palpable tumour – not an exclusion
- PET-CT positivity not an initial exclusion
- Persistent DWI signal – not an initial exclusion

Clinical trial: Avoiding Surgery in Rectal Cancer After Pre-Operative Therapy, ClinicalTrials.gov Identifier: NCT01047969
**PATIENTS DEFERRING SURGERY**

Follow-up schedule

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- **Clinical follow-up**: 1M, 2M, 3Mly – 1-2 yrs, 6Mly – 3-4 yrs, then annually
- **MRI**: 1M, 2M, 3Mly – 1st yr, 6Mly – 2nd yr, annually
- **PET**: 2M, 4M, 1 yr
- **Sigmoidoscopy**: 3Mly – Yr 1, 6Mly – Yr 2, annually
- **CT & colonoscopy**: As per current NICE guidelines

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PROFORMA REPORTING

Post Treatment Assessment MRI Rectal Cancer

Comparison is made with the previous examination of:

- The treated tumour: shows no fibrosis, TRG5
- Less than <25% fibrosis, predominant tumour signal, TRG4
- 50% tumour/fibrosis, TRG 3
- >75% fibrosis, minimal tumour signal intensity, TRG2
- low signal fibrosis only no intermediate tumour signal TRG1

The distal edge of the tumour arises at a height of [ ] mm from the anal verge:
The distal edge of the tumour lies [ ] mm [Above, at, below] the top of the puborectalis sling compared
with [ ] mm previously.
The tumour extends cranio-caudally over a distance of [ ] mm compared with [ ] mm previously.
The proximal edge of tumour lies [above at below] the peritoneal reflection.
The invading edge of treated tumour extends from [ ] to [ ] O’clock.
The tumour signal is [Confined to / Extends through the muscularis propria.]
The fibrotic signal is [Confined to / Extends through the muscularis propria.]
The extramural spread is [ ] mm for tumour signal [ ] for fibrotic stroma.

yMR T stage: • T1 • T2 • T3a • T3b • T3c • T3d • T4 visceral • T4 peritoneal

Treated tumour [is not] present at or below the puborectalis sling:
- tumour signal/fibrosis extends into the submucosal layer/part thickness of muscularis propria:
  intersphincteric plane/mesorectal plane is safe intersphincteric APE or ultra low TME possible, CRM is
  safe
- tumour signal/fibrosis extends through the full thickness of muscularis propria:
  intersphincteric plane/mesorectal plane is unsafe, for extralevator APE.
- tumour signal/fibrosis extends into external sphincter:
  intersphincteric plane/mesorectal plane is unsafe for extralevator APE.
- tumour signal/fibrosis extends into beyond external sphincter into [prostate/vagina]:
  intersphincteric plane/mesorectal plane is unsafe, for extralevator APE.

Additional comments:

Lymph nodes:
- None / Only benign reactive [N0]
- Present number [N1/N2]

Extramural venous invasion:
- No evidence [Evidence]
- Small / Medium / Large

CRM
- Closest circumferential resection margin: [ ] O’clock
- Closest CRM is from [Direct spread of tumour / Extramural venous invasion / Tumour deposit]
- Minimum tumour distance to mesorectal fascia: [ ] mm
- CRM clear / CRM involved

Peritoneal deposits:
- None / Evidence

Pelvic side wall lymph nodes:
- None / Benign / Malignant
- Location: Obturator fossa [R / L], External iliac Nodes [R / L], Inf Hypogastric [R / L]

Summary:
- yMRI Overall stage ymrTNm , TRG
  - Good prognosis, CRM clear, TRG 1-3, EMVI negative
  - Poor prognosis, CRM pos or TRG4/5 or EMVI positive
- TRG1-2 low tumour – eligible for consideration for deferral of surgery

THE ENDPOINT

Local Failure
- Powered for unacceptable failure rate – 80% power <15% local recurrence at 2 years
- STOPPING RULE – ≥5 regrowth resulting in positive pathologic CRM – trial ends

Safe deferral
- 90% power – ≥10% defer – expected to be at least 25%
- Success ≥11 of 59 patients safely defer surgery at 2 years

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TECHNIQUE IS IMPORTANT

High Resolution

Low Resolution

Courtesy of The Royal Marsden Hospital
mrTRG 1-2 has similar DFS and OS as pCR but seen more frequently than pCR

- Tumours continue to show regression with 75% of patients reaching maximum response at 6 months
- mrTRG status at the time of surgery predicts outcome which is independent of baseline tumour stage
- mrTRG 1-2 at end of treatment for advanced T3/T4 is associated with >80% DFS
THE TRIGGER TRIAL: MAGNETIC RESONANCE TUMOUR REGRESSION GRADE AS BIOMARKER FOR STRATIFIED MANAGEMENT OF RECTAL CANCER PATIENTS

RANDOMISATION
Consent (PIS STEP 2) during last cycle of CRT
1:2 randomisation ratio

Control Arm
- MRI scan
  - Within 4-6 weeks of CRT completion
  - CONTROL ARM POST-CRT MRI CRF
  - mrTRG NOT reported
- Surgery
- Adjuvant Chemotherapy
  - 24 weeks

Intervention arm
- MRI scan
  - Within 4-6 weeks of CRT completion
  - INTERVENTION ARM POST-CRT MRI CRF
  - mrTRG reported
- mrTRG I & II
  - Good response
  - Deferral of surgery
- mrTRG III-V
  - Poor response
  - Chemotherapy
    - 12 weeks
  - Repeat MRI scan
  - Surgery
- Consolidation Chemotherapy
  - 24 weeks

SURVEILLANCE PROTOCOL
- Follow-up every 3 months for two years and every 6 months for further 3 years
- Protocol Section 11.2.1
- Suspicion of clinical or radiological local regrowth or pelvic relapse
- Follow Regrowth pathway
- Protocol Section 8.3.2
- Annual clinical follow-up visits for 3 years
- Disease status at 5 years

Clinical trial: ClinicalTrials.gov Identifier: NCT02704520
MRI REASSESSMENT AFTER CRT

- Philosophy of avoiding APE surgery if patient has had a good response to treatment
- mrTRG 1-3 - used to identify patients suitable for deferral (many are positive on biopsy, DWI or PET-CT)
- Serial imaging – decision for deferral is not based on a single scan
- Employing serial MRI monitoring = greater rate of recruitment of initially advanced cancers
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Deferral of Surgery Trial:
- RJ Heald, P Tekkis, D Cunningham, D Tait, A Wotherspoon, G Stamp, I Chau

MERCURY trial investigators, Pelican Cancer Foundation

EXPERT-C trial:
- A Dewdney, D. Cunningham, J Tabernero, J Capdevila, B Glimelius,
  A Cervantes, D Tait, A Wotherspoon, Y Chua, R Wong and I Chau

CORE Trial investigators:
- H Rutten, E Rullier, P Quirke, N West, D Sebag-Montefiore, M Peeters, E Van Cutsem,
  S Ricci, C Van de Velde, R Glynne-Jones
WHAT DO YOU NEED?

- Dedicated colorectal MDT
- Policy of preoperative MDT review of all rectal cancers using high resolution MRI with specialist colorectal radiologist – committed to MDT
- Patient education: importance of preoperative assessment – repeat scans when necessary
- Team member training and support: multidisciplinary workshops effective – most effective when surgeons and radiologists are together
- Learning curve but teachable e.g. participation and support in clinical trials
REPORTING MINIMUM STANDARDS

Baseline assessment of Rectal cancer MRI report

Primary tumour
The primary tumour is demonstrated as an [ Annular | Semi-annular | Ulcerating | Polypoidal | Mucinous] mass with a [nodular / smooth] infiltrating border.

The distal edge of the luminal tumour arises at a height of [ ] mm from anal verge:
The distal edge of the tumour lies [ ] mm [Above, at, below] the top of the puborectalis sling
The tumour extends craniocaudally over a distance of [ ] mm
The proximal edge of tumour lies [above at below] the peritoneal reflection
Invading edge of tumour extends from [ ] to [ ] O’clock
Tumour is [confined to] [extends through] the muscularis propria:
Extramural spread is [ ] mm

mrT stage: [T1 ] [ T2 ] [ T3a ] [ T3b ] [ T3c ] [ T3d ] [ T4visceral ] [ T4 peritoneal]

Tumour is [present] [not present] the level of the puborectalis sling at this level:
[Tumour is confined to the submucosal layer/part thickness of muscularis propria indicating that the
intersphincteric plane/mesorectal plane is safe and intersphincteric APE or ultra low TME is possible]
[Tumour extends through the full thickness of the muscularis propria : intersphincteric plane/mesorectal plane is unsafe, Extralevator APE. is indicated for radial clearance]
[Tumour extends into the intersphincteric plane : intersphincteric plane/mesorectal plane is unsafe, therefore an extralevator APE. is indicated for radial clearance]
[Tumour extends into the external sphincter : intersphincteric plane/mesorectal plane is unsafe.]
[ Tumour extends into adjacent [prostate/vagina/bladder/sacrum] : exenterative procedure will be required]

Lymph node assessment
Only benign reactive and no suspicious nodes shown [N0]
[ ] mixed signal/irregular border nodes [N1/N2]

Extramural venous invasion: [ No evidence ] [ Evidence]
[ ] Small [ ] Medium [ ] Large vein invasion is present

CRM
The closest circumferential resection margin is at [ ] o’clock
The closest CRM is from [Direct spread of tumour] [Extramural venous invasion] [Tumour deposit]
Minimum tumour distance to mesorectal fascia: [ ] mm [CRM clear] [CRM involved]
Peritoneal deposits: [ No evidence ] [ Evidence]
Pelvic side wall lymph nodes:
[ None] [ Benign] [ Malignant mixed signal/irreg border]
Location: [ Obturator fossa • R •L] • [External Iliac Nodes • R •L] • [ Internal iliac • R •L]

Summary: MRI Overall stage: [ T ] [ N ] [ M ] [CRM clear] , [ CRM involved ], [ EMVI positive ] [ EMVI negative ], [ PSW positive ] [ PSW negative ]
No adverse features eligible for primary surgery
High risk safe margins for preoperative therapy: eligible for Serenade, Marvel
Poor prognosis unsafe margins eligible for preoperative chemoradiotherapy: eligible for 6 vs 12 trial
Low Rectal <6cm – eligible for the Low Rectal Study.

Post Treatment Assessment MRI Rectal Cancer
Comparison is made with the previous examination of:

- The treated tumour: shows no fibrosis, TRG5
- Less than <25% fibrosis, predominant tumour signal, TRG4
- 50% tumour/fibrosis, TRG 3
- >75% fibrosis, minimal tumour signal intensity, TRG2
- Low signal fibrosis only no intermediate tumour signal, TRG1

The distal edge of the tumour arises at a height of [ ] mm from anal verge.
The distal edge of the tumour lies [ ] mm (above, at, below) the top of the puborectalis sling compared with [ ] mm previously.
The tumour extends craniocaudally over a distance of [ ] mm compared with [ ] mm previously.
The proximal edge of tumour lies [above at below] the peritoneal reflection.
The invading edge of treated tumour extends from [ ] to [ ] O’clock.
The tumour signal is [Confined to / Extends through the muscularis propria.]
The fibrotic signal is [Confined to / Extends through muscularis propria.]
Extramural spread: [ ] mm for tumour signal [ ] for fibrotic stroma.

yMR T stage: • T1 • T2 • T3a • T3b • T3c • T3d • T4 visceral • T4 peritoneal

Treated tumour [is/is not] present at or below the puborectalis sling:
- Tumour signal/fibrosis extends into the submucosal layer/part thickness of muscularis propria: intersphincteric plane/mesorectal plane is safe intersphincteric APE or ultra low TME possible, CRM is safe.
- Tumour signal/fibrosis extends through the full thickness of muscularis propria: intersphincteric plane/mesorectal plane is unsafe, for extralevator APE.
- Tumour signal/fibrosis extends into external sphincter: intersphincteric plane/mesorectal plane is unsafe: for extralevator APE.
- Tumour signal/fibrosis extends into beyond external sphincter into [prostate/vagina]: intersphincteric plane/mesorectal plane is unsafe, for extralevator APE.

Lymph nodes:
- None / Only benign reactive [N0]
- Present number mixed signal/irregular border [N1/N2]

Extramural venous invasion: [• No evidence • Evidence]
[• Small • Medium • Large]

CRM
Closest circumferential resection margin: [ ] O’clock
Closest CRM is from [Direct spread of tumour • Extramural venous invasion • Tumour deposit]
Minimum tumour distance to mesorectal fascia: [ ] mm [• CRM clear • CRM involved]

Peritoneal deposits: [• No evidence • Evidence ]

Pelvic side wall lymph nodes:
- None
- Benign
- Malignant
[Location: Obturator fossa • R • L • External Iliac Nodes • R • L • Inf Hypogastric • R • L ]

Summary: yMRI Overall stage ymrT ymrN ymrM, TRG
- Low/intermediate risk, CRM clear, TRG 1-2, EMVI negative
- High prognosis, CRM pos or TRG4/5 or EMVI positive

TRG1-2 low tumour – eligible for consideration for deferral of surgery.

KEY BIOIMAGING MARKERS FOR POOR OUTCOME AT BASELINE AND POST CRT

- CRM involvement on MRI
- Depth of extramural spread >5 mm
- Presence of MRI detected venous invasion
- MRI detected mucinous tumours
- Tumour spread into or beyond the intersphincteric plane
- MRI TRG status
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