Audit comparing inclusion of key staging parameters in reporting of initial staging MRI scans for rectal cancer with ARGANZ/Australia Cancer Council recommended template

Dr Benjamin Rusius, Dr Joel Dunn, Dr Verity Wood

Radiology Department, Te Whatu Ora - Waitaha Canterbury. New Zealand

Te Whatu Ora
Health New Zealand
Waitaha Canterbury

Background

Colorectal cancer is the 2nd most prevalent cancer in both men and women in Australia and New Zealand with 1/3 of these cases being located in the rectum [1].

- Rectal MRI plays a vital role in the preoperative primary staging of rectal cancer and subsequent treatment pathway decisions made at MDMs.
- Structured template reports which contain specific key staging parameters have been shown to improve the quality, clarity and clinical use of the report [2].
- T (tumour), N (lymph nodes), CRM/MRF (circumferential resection margin/ mesorectal fascia) and EMVI (extramural vascular invasion) status provide key treatment and prognostic information to the clinician.
- In low tumours, further information is required to guide treatment such as the distance from the puborectalis sling/anorectal junction and if sphincter invasion is present.
- We audited whether these important staging parameters were being adequately reported in our rectal MRI reports.

Standard

For initial MRI staging of rectal cancer, ARGANZ (Abdominal Radiology Group of Australia and New Zealand)/Australia Cancer Council recommend a structured reporting template which should include several specified key staging parameters [3].

Indicators

From ARGANZ/Australia Cancer Council Clinical Guidelines Reporting Template all reports should:

- » include distance from anal verge to lower margin of tumour
- » comment on T-stage, N-stage, CRM and EMVI status in the conclusion
- » if low tumour, include distance from puborectalis sling/anorectal junction and if anal sphincter invasion present

Figure 1. Saggital rectal MRI views depicting location low (A), mid (B) and high (C) tumour with distance from anal verge

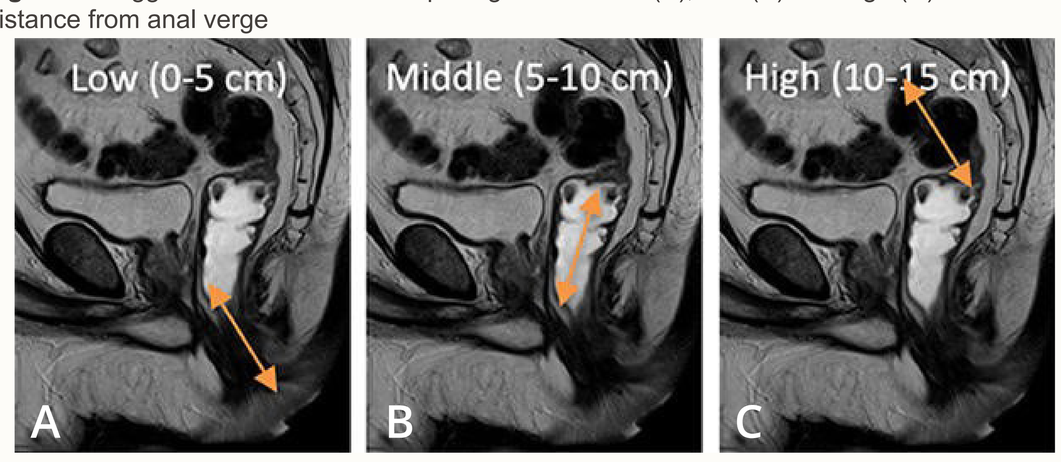


Image from: Matalon SA, Lee LK, Shinagare A, Rosenthal MH, Khorasani R. MRI Rectal Cancer Staging [Internet]. Brigham and Women's Hospital/Dana-Farber Department of Radiology; 2020 May 24 [cited 2023 Aug 22]. Available from: MRI Rectal Cancer Staging - RAD-ASSIST (harvard.edu)

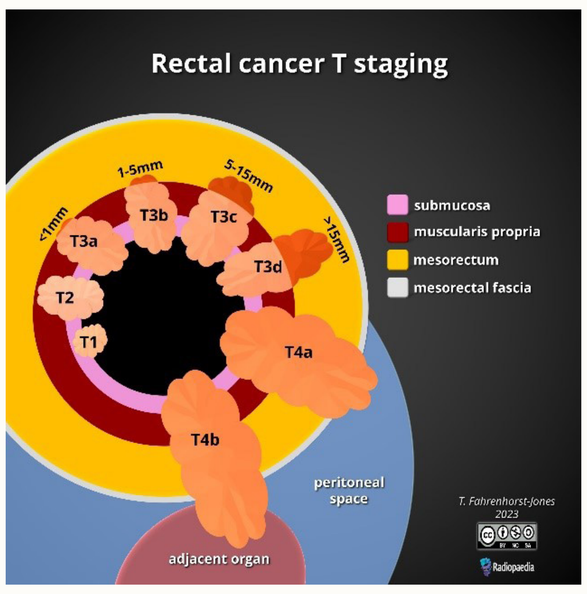


Figure 2. Schematic diagram of T staging in rectal cancer

Case courtesy of Travis Fahrenhorst-Jones, Radiopaedia.org, rID: 168383

Target

100% inclusion of key staging parameters.

Methodology

MRI Rectums performed at Te Whatu Ora Waitaha Canterbury (Christchurch and Burwood Hospitals only) over 1 year period sourced from PACS.

Inclusion criteria applied:

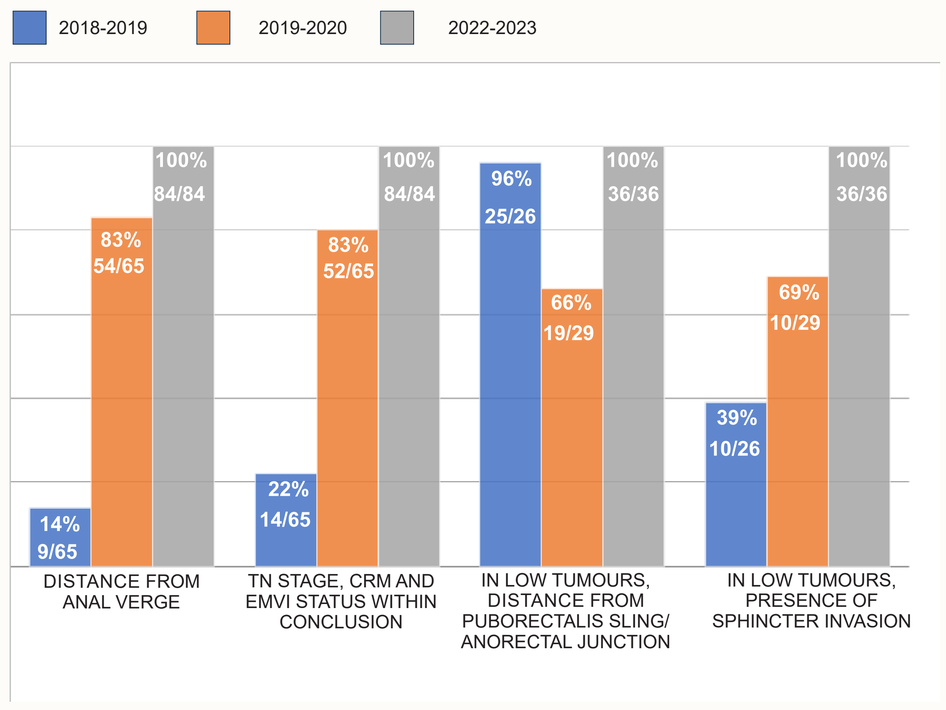
- » Pre-treatment rectal adenocarcinomas

Exclusion criteria applied:

- » Normal studies
- » Other pathology including SCC tumours, Malignant melanoma, adenomas, fistulae
- » Post-treatment/follow up studies

Results

Figure 3. Inclusion of key staging parameters within initial staging rectal cancer MRI scan reports from recommended template



First audit results (April 2018-March 2019)

Inclusion of the key staging parameters within reports was well below 100% except for distance from puborectalis sling/anorectal junction in low tumours which was near 100% (Figure 3).

First action plan

- Audit results discussed at local rectal cancer staging CME September 2019.
- Existing template amended to include:
  - » distance from anal verge to lower margin of tumour
  - » TN stage, CRM and EMVI status in impression/conclusion
  - » if sphincter involvement present (distance from puborectalis sling/anorectal junction already included in template)
- Re-audit straight after implementation of amended reporting template.

Second audit results (October 2019-September 2020)

Marked improvement demonstrated in including all key staging parameters except for distance from puborectalis sling/anorectal junction in low tumours which dropped in percentage of inclusion from 95% to 66% (Figure 3).

Second action plan

Re-audit to ensure sustained/further improvement in the inclusion of most key staging parameters.

Also, to assess whether the inclusion of distance from puborectalis sling/ anorectal junction in low tumours has continued to drop and if so, highlight this should be included in all reports for low tumours at a CME session and via email.

Third audit results (March 2022-March 2023)

- 100% of key staging parameters included in reports.
- From the first audit, there has been a marked improvement in including key staging parameters within the reports:
  - » distance from anal verge to lower margin of tumour, 14% to 100%
  - » TN stage, CRM and EMVI status within the conclusion, 22% to 100%
  - » in low tumours if sphincter invasion present, 39% to 100%

Distance from puborectalis sling/anorectal junction in low tumours was high initially (96%) before dropping to 66% at the second audit but subsequently improved to 100%.

- » This was postulated to be due to distraction of focus on improving other parameters at the time of the second audit

Conclusion

Following radiologist education regarding the benefits of structured template reports and amendments to our rectal MRI reporting templates, there has been a dramatic improvement in reporting several key staging parameters recommended by ARGANZ/Australia Cancer Council. This improves the quality, clarity and clinical use of our reports.

Future work

- Extend the audit to other hospitals and regions whose patients are referred to the Waitaha Canterbury Colorectal MDM.
- Audit other staging parameters that ARGANZ/Australia Cancer Council recommend be included in the reporting templates.
- Audit the inclusion of ARGANZ/Australia Cancer Council recommended parameters within reporting templates for restaging MRI reports following neoadjuvant therapy.

References

1. Dinger TL, Kroon HM, Traeger L, Bedrikovetski S, Hunter A, Sammour T. Regional variance in treatment and outcomes of locally invasive (T4) rectal cancer in Australia and New Zealand: analysis of the Bi-National Colorectal Cancer Audit. ANZ Journal of Surgery [Internet]. 2022 May 3 [cited 2023 Apr 12];92(7-8):1772-80. Available from: Regional variance in treatment and outcomes of locally invasive (T4) rectal cancer in Australia and New Zealand: analysis of the Bi-National Colorectal Cancer Audit - Dinger - 2022 - ANZ Journal of Surgery - Wiley Online Library
2. Tersteeg J, Gobardhan P, Crolla R, Kint P, Niers-Stobbe I, Boonman–de Winter L, Schreinemakers J. Improving the quality of MRI reports of preoperative patients with rectal cancer: Effect of national guidelines and structured reporting. American Journal of Roentgenology [Internet]. 2018 Jun [cited 2023 Apr 12];210(6);1240-44. Available from: https://www.ajronline.org/doi/abs/10.2214/AJR.17.19054
3. Gormly K. Murphy E, Brown W, Price T, Segelov E, Stella D, Cancer Council Australia Colorectal Guidelines Working Party. Addenda: rectal cancer MRI report [Internet]. Sydney: Cancer Council Australia; 2017 Nov 7 [cited 2023 Apr 12]. Available from: Addenda: rectal cancer MRI report - Cancer Guidelines Wiki
4. Sahni VA, Silveira PC, Sainani NI, Khorasani R. Impact of a structured report template on the quality of MRI reports for rectal cancer staging. American Journal of Roentgenology [Internet]. 2015 Sep [cited 2023 Apr 12];205(3):584-8. Available from: https://www.ajronline.org/doi/10.2214/AJR.14.14053