MRI of Rectal Cancer Staging
Evidence and Perspectives
Regina G.H. Beets-Tan, MD, PhD
Professor in Radiology,
Division Leader Diagnostic Oncology and GI

Memorial Sloan Kettering Cancer Center
New York, USA
&
Maastricht University Medical Center
MUMC oncology center
The Netherlands

There is a challenging task for radiologists in helping to improve the therapeutic management of rectal cancer patients. With the recent introduction of tailor made treatment strategies there is a growing need for an accurate imaging tool to identify patients who are at risk for a local recurrence. High risk patients can then be stratified into a preoperative long course of chemoradiation.

The assessment of the local spread of the tumor includes the determination of the depth of tumor growth in the rectal wall, the circumferential resection margin at TME, the depth of tumor invasion in surrounding pelvic structures, and the nodal status.

For superficial rectal cancer, that can be treated with surgery only (transanal resection or TME), endoluminal ultrasound is the most accurate staging method to assess tumor ingrowth in the muscular rectal wall. For the remaining mobile and fixed rectal cancer a high resolution MRI with a dedicated phased array coil is at present the most reliable technique to evaluate the mesorectal fascia and the circumferential resection margins. Despite the identification of lymph nodes even as small as 2-3 mm on high resolution imaging, reliable detection of nodal metastases is presently not possible, because planar imaging only rely on morphological criteria. However promising results have been reported with the use of LN MR contrast in MRI and new functional MRI techniques. State of the art imaging and the role of MRI as well as the relevant role of the radiologists in the multidisciplinary decision making team will be discussed.

After preoperative chemoradiation most advanced tumors shows phenomenal response so new treatment dilemmas and new questions arises for MR of rectal cancer. The lecture will not only provides evidence in state of the art rectal ca imaging en MR protocol, but also focus on new areas of research and questions where modern MR techniques could play a promising role.

Learning objectives of the lecture:

1. To understand what clinicians need to know from radiologists in rectal cancer MR staging
2. To provide state of the art (MR) imaging evidence in staging of rectal cancer .
3. To understand the MR protocol in rectal cancer staging
4. To understand future perspectives and the role of new MR techniques in rectal ca staging.