

MRI of perianal pain and fistula disease

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Chronic anal and perianal pain is a common problem in gastroenterologic practice. When no local abnormality is found at clinical evaluation, including anorectoscopy and examination under general anaesthesia, the clinician is faced with a challenge. Dedicated MRI of the anorectum may demonstrate morphologic abnormalities that can be considered as a cause for clinical occult anal pain in 39 % of patients. These include fistulas and abscesses in 27 % of patients.

Most fistulas are non-specific and result from the anal glands and crypts (cryptoglandular). The prevalence of this type of fistula is said to be approximately 10 per 100,000 of the general population. Specific or Crohn's fistulas and abscesses result from transmural spread of chronic granulomatous inflammation. The prevalence of Crohn's disease varies between 3 and 7 per 100,000 of the general population. Approximately 36 % of Crohn's patients have perirectal disease including fistulas and abscesses.

Studies have shown that preoperative MR imaging revealed important additional information compared to surgery alone and better predicts clinical outcome of patients with perianal fistulas than initial surgical exploration. Due to the multiplanar capabilities and high inherent soft tissue contrast, MR imaging has been suggested as the modality of choice for the classification of perianal fistulas and abscesses. Cryptoglandular fistulas, predominantly located at the level of the anal canal and direct surroundings, can be classified according to the classification by Parks into intersphincteric, trans-sphincteric, suprasphincteric and extrasphincteric fistulas. Dedicated MRI of the anorectum will demonstrate the anatomy of the anal sphincter muscles and permits accurate classification of fistulas. In addition, secondary fistula extensions and abscesses will be revealed.

Spatial resolution and signal-to-noise ratio on MR images can be improved by using an endocavitary (endoanal or endorectal) receiver coil. The internal opening of fistulas in the anorectal lumen may be accurately demonstrated especially with the use of endoluminal coils. This is an important finding for surgical planning.

A concise imaging protocol of T2-weighted TSE sequences with high resolution slices in three planes (axial, coronal, and sagittal) through the anus is preferred, including an axial T2-weighted TSE with fat-saturation and T1-weighted gradient echo sequence. With this concise protocol, scan times may be limited to an average of 20 minutes per patient. Lesion detection and characterization may be enhanced with DWI and ADC mapping. If malignancy is suspected or to be excluded, a dynamic contrast-enhanced series may be considered. With the phased-array multicoils, the FOV can be adjusted to the entire pelvic region. On endoluminal MRI, image volume encompasses the entire sensitive region of coil.

Objectives:

- 1) Understand the epidemiology and etiology of (peri)anal pain and fistula disease.
- 2) Discuss dedicated MRI of the anorectum using pelvic phased array multicoils and endoluminal coils for endoanal and endorectal application.
- 3) Present a concise and efficient MR imaging protocol for perianal pain and fistula disease.
- 4) Review clinical cases on MRI and illustrate key findings which are important for diagnosis and management.
- 5) Demonstrate pitfalls on imaging in relevance to anorectal fistula disease.

