Pelvic floor imaging: comparison between magnetic resonance imaging and conventional defecography in studying outlet obstruction syndrome

Imaging del pavimento pelvico: confronto fra risonanza magnetica e defecografia tradizionale nello studio della sindrome da defecazione ostruita

P.V. Foti¹ • R. Farina¹ • G. Riva¹ • M. Coronella¹ • E. Fisichella¹ • S. Palmucci¹ • A. Racalbuto² • G. Politi¹ • G.C. Ettorre¹

¹Istituto di Radiologia, Azienda Ospedaliero-Universitaria “Policlinico-Vittorio Emanuele”, P.O. “Gaspare Rodolico” di Catania, Via Santa Sofia 78, 95123 Catania, Italy
²Dipartimento di Scienze Chirurgiche, Azienda Ospedaliero-Universitaria “Policlinico-Vittorio Emanuele”, P.O. “Gaspare Rodolico” di Catania, Catania, Italy

Correspondence to: P.V. Foti, Tel.: +39-095-3782360, e-mail: pietrofoti@hotmail.com

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Abstract

Purpose. This study prospectively compared the diagnostic capabilities of magnetic resonance (MR) imaging with conventional defecography (CD) in outlet obstruction syndrome.

Materials and methods. Nineteen consecutive patients with clinical symptoms of outlet obstruction underwent pelvic MR examination. The MR imaging protocol included static T2-weighted fast spin-echo (FSE) images in the sagittal, axial and coronal planes; dynamic midsagittal T2-weighted single-shot (SS)-FSE and fast imaging employing steady-state acquisition (FIESTA) cine images during contraction, rest, straining and defecation. MR images (including and then excluding the evacuation phase) were compared with CD, which is considered the reference standard.

Results. Comparison between CD and MR with evacuation phase (MRWEP) showed no significant differences in sphincter hypotonia, dyssynergia, rectocele or rectal prolapse and significant differences in descending perineum. Comparison between CD and MR without evacuation phase (MRWOEP) showed no significant differences in sphincter hypotonia, dyssynergia or enterocele but significant differences in rectocele, rectal prolapse and descending perineum. Comparison between MRWEP and MRWOEP showed no significant differences in sphincter hypotonia, dyssynergia, enterocele or descending perineum but significant differences in rectocele, rectal prolapse, peritoneocele, cervical

Riassunto

Obiettivo. Scopo del presente lavoro è stato confrontare prospettivamente le capacità diagnostiche della risonanza magnetica (RM) con quelle della defecografia tradizionale (DT) nello studio della sindrome da defecazione ostruita.

Materiali e metodi. Diciannove pazienti consecutivi con defecazione ostruita sono stati sottoposti ad RM della pelvi. Sono state acquisite sequenze statiche fast spin echo (FSE)-T2-pesate sui piani sagittale, assiale e coronale e sequenze dinamiche single shot fast spin echo (SSFSE) e fast imaging employing steady-state acquisition (FIESTA) sul piano sagittale mediano durante contrazione dello sfintere anale, riposo, ponzamento, defecazione. Le immagini RM (prima includendo, poi escludendo la fase di evacuazione) sono state confrontate con la DT considerata come standard di riferimento.

Risultati. Il confronto DT vs RM con fase di evacuazione (RMCE) ha evidenziato differenze statisticamente non significative nell’ipotonia sfinteriale, disinnervazione, rettocele, prolaso rettale, enterocele e differenze significative nel perineo discendente. Il confronto DT vs RM senza fase di evacuazione (RMSE) ha evidenziato differenze non significative nell’ipotonia sfinteriale, disinnervazione, enterocele e differenze significative nel rettocele, prolaso rettale, perineo discendente. Il confronto RMCE vs RMSE ha evidenziato differenze non significative nell’ipotonia sfinteriale, disinnervazione, enterocele, perineo discendente e differenze significative nel rettocele, prolaso rettale, peritoneocele, cervicocistoptosi, isteroptosi.
cystoptosis and hysteroptosis.

**Conclusioni.** La RM consente di effettuare uno studio morfologico e funzionale del pavimento pelvico; può rappresentare un esame complementare alla DT nella valutazione multicompartmentale della pelvi. La fase di evacuazione è fondamentale.

**Parole chiave** Risonanza magnetica · Pavimento pelvico · Dynamic MR · Prolapse · Defecography

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**Introduction**

Outlet obstruction refers to all pelvic floor disorders causing incomplete evacuation of faecal content from the rectum. Outlet obstruction syndrome is a common clinical problem that heavily affects patients’ quality of life (QoL). Clinical symptoms are nonspecific and include pain and constipation. The causes are both morphological (rectocele, enterocele, rectal prolapse, descending perineum) and functional (pelvic floor dyssynergia) [1]. As a result, there is a need for a modality capable of providing both a morphological and functional assessment of pelvic structures. Magnetic resonance (MR) imaging meets both of these requirements. Its excellent contrast resolution for soft tissue means it is capable of depicting anatomical abnormalities affecting pelvic structures, whereas the high temporal resolution recently achieved with fast imaging techniques allows dynamic assessment of function. However, there is no uniformity of MR imaging protocols in international studies published to date.

Diagnostic assessment of the pelvic floor is currently based on the examination and imaging modalities using ionising radiation, such as conventional defecography (CD). These diagnostic tools provide a partial assessment of the pelvic floor but are limited to studying a single compartment. However, pelvic floor disorders often involve several compartments [2]. MR imaging is increasingly used to study these disorders and seems to meet the requirements of a modality able to provide a multicompartment evaluation.

The purposes of our study were to develop an MR protocol allowing morphological and functional study of the pelvic floor during the same imaging session; to prospectively compare the capabilities of MR with those of CD, which is considered the reference standard, when studying outlet obstruction syndromes; and to assess the impact of the evacuation phase of MR imaging on the final diagnosis.

**Materials and methods**

**Study population**

Our study was approved by the local ethics committee, and...