



REPORTE DE CASO

Management of early rectal cancer with massive submucosal invasion using endoscopic intermuscular dissection: a case report

Manejo de cáncer rectal temprano con invasión submucosa masiva mediante disección intermuscular endoscópica: reporte de caso

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ABSTRACT

The management of early rectal cancer is shifting toward organ-preserving strategies. Endoscopic submucosal dissection (ESD) achieves en bloc resections for low-risk T1 lesions, while surgery remains the gold standard for deep submucosal invasion due to the risk of nodal metastasis. Endoscopic intermuscular dissection (EID) has emerged as an alternative in selected high-risk patients. We report the case of a 71-year-old man with chronic kidney disease and ischemic heart disease, in whom a 15 mm sessile rectal lesion with features of deep invasion was detected. EID achieved complete resection without complications, and MRI confirmed cT1–2N0 disease. Histopathology revealed moderately differentiated adenocarcinoma with deep invasion, lymphovascular invasion, and grade 2 tumor budding. Given surgical contraindications, active surveillance was chosen after multidisciplinary discussion. At six months, the patient remains recurrence-free. Unlike conventional ESD, EID allows dissection between the inner circular and outer longitudinal muscle layers, improving deep margins in sm2–sm3 lesions. Evidence suggests that lymphovascular invasion, tumor budding, and poor differentiation are the strongest predictors of nodal metastasis. In selected patients, EID may provide curative resection while avoiding major surgery. Careful risk stratification and multidisciplinary evaluation are essential to balance oncologic safety and organ preservation.

Keywords: Rectal Neoplasms; Endoscopy, Gastrointestinal; Dissection (source: MeSH NLM).

RESUMEN

El manejo del cáncer rectal temprano está evolucionando hacia estrategias de preservación de órgano. La disección endoscópica submucosa (ESD) permite resecciones en bloque en lesiones T1 de bajo riesgo; sin embargo, la cirugía sigue siendo el estándar en casos con invasión submucosa profunda por el riesgo de metástasis ganglionar. La disección endoscópica intermuscular (EID) ha surgido como alternativa en pacientes seleccionados. Presentamos el caso de un varón de 71 años con enfermedad renal crónica y cardiopatía isquémica, en quien se detectó una lesión rectal sésil de 15 mm con signos endoscópicos de invasión profunda. Se realizó EID logrando resección completa sin complicaciones. La resonancia magnética confirmó enfermedad cT1–2N0. La histopatología reveló adenocarcinoma moderadamente diferenciado con invasión profunda, invasión linfovascular y tumor budding grado 2. Dadas las contraindicaciones quirúrgicas, se optó por vigilancia activa tras discusión multidisciplinaria. A los seis meses, el paciente permanece libre de recurrencia. A diferencia de la ESD convencional, la EID permite la disección entre las capas muscular circular interna y longitudinal externa, mejorando los márgenes profundos en lesiones sm2–sm3. En pacientes cuidadosamente seleccionados, la EID puede ofrecer una opción terapéutica con intención curativa evitando cirugía mayor, siempre con adecuada estratificación de riesgo y evaluación multidisciplinaria.

Palabras clave: Neoplasias del Recto; Endoscopia Gastrointestinal; Disección (fuente: DeCS Bireme).

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INTRODUCTION

The management of early-stage rectal cancer has evolved toward minimally invasive approaches aimed at organ preservation⁽¹⁾. Endoscopic submucosal dissection (ESD) enables en bloc resections with negative margins (R0) and is indicated for the management of T1 carcinomas with superficial submucosal invasion and no high-risk histological features⁽²⁻⁴⁾. In lesions with deep submucosal invasion, surgical resection with lymphadenectomy remains the standard treatment due to the increased risk of nodal involvement, especially when factors such as lymphovascular invasion, poor differentiation, or tumor budding are present⁽⁵⁻⁸⁾. However, recent evidence suggests that depth of invasion alone does not necessarily imply high risk unless associated with additional adverse features. This has led to the development of techniques such as endoscopic intermuscular dissection (EID), aimed at achieving local tumor control while preserving the organ^(9,10). We present a case of rectal cancer with deep submucosal invasion successfully treated with EID, highlighting the need for individualized therapeutic approaches based on emerging evidence.

CASE REPORT

We present the case of a 71-year-old man with a history of chronic kidney disease on hemodialysis and chronic ischemic heart disease, in whom a 15 mm sessile rectal lesion was detected during screening colonoscopy. White-light endoscopy revealed a central depression with friability (Figure 1A). Virtual chromoendoscopy and conventional chromoendoscopy with indigo carmine demonstrated an irregular vascular pattern and a Kudo Vn pit pattern, consistent with deeply invasive carcinoma (Figure 1B). Following endoscopic intermuscular dissection (EID), the resection bed showed no evidence of residual tumor or active bleeding (Figure 1C). Pelvic MRI suggested invasive carcinoma without suspicious lymphadenopathy (cT1–2N0).

Histopathological analysis confirmed a moderately differentiated adenocarcinoma with deep submucosal invasion (1700 μ m), free horizontal and vertical resection

margins, and preservation of the muscularis propria (Figure 2A). On higher magnification, lymphatic invasion and intermediate-grade tumor budding (score 2) were identified (Figure 2B).

Given the presence of high-risk features, complementary treatment options were discussed in a multidisciplinary meeting; however, active surveillance was chosen due to surgical contraindications. At six-month follow-up, the patient remains asymptomatic with no evidence of recurrence on endoscopic or imaging studies.

DISCUSSION

Unlike conventional ESD, EID allows dissection in the plane between the inner circular and outer longitudinal muscular layers, achieving a wider deep margin and reducing the risk of incomplete resection in lesions suspected of sm2–sm3 invasion⁽⁹⁻¹⁰⁾. In the largest published prospective series, van der Schee *et al.* reported an en bloc resection rate of 94% and R0 margins in 83% of cases, supporting the feasibility and safety of this technique when performed in expert centers⁽⁹⁾.

The main challenge in this setting is accurately estimating the risk of lymph node metastasis. While T1 carcinomas with superficial submucosal invasion (sm1) carry a low probability of nodal involvement (~1%), the risk increases significantly in lesions with invasion >1000 μ m, particularly when high-risk histologic features are present^(5,11). Among these, lymphovascular invasion, high-grade tumor budding, and poor differentiation are the strongest predictors. A recent meta-analysis including over ten thousand patients confirmed these three as the strongest predictors of nodal metastasis, with odds ratios exceeding 3 in all cases; in addition, polypoid growth pattern and rectal tumor location were also significantly associated with nodal involvement⁽¹²⁾.

In our patient, EID allowed for a complete and safe resection, avoiding major surgery in the context of high surgical risk. However, histology revealed two high-risk features (lymphovascular invasion and grade 2 tumor budding), which, according to a previously published



Figure 1. (A) Sessile lesion in the distal rectum showing central depression and friability under white-light endoscopy. (B) Conventional chromoendoscopy with indigo carmine revealed an irregular vascular pattern and Kudo Vn pit pattern (C) Resection site after endoscopic intermuscular dissection.

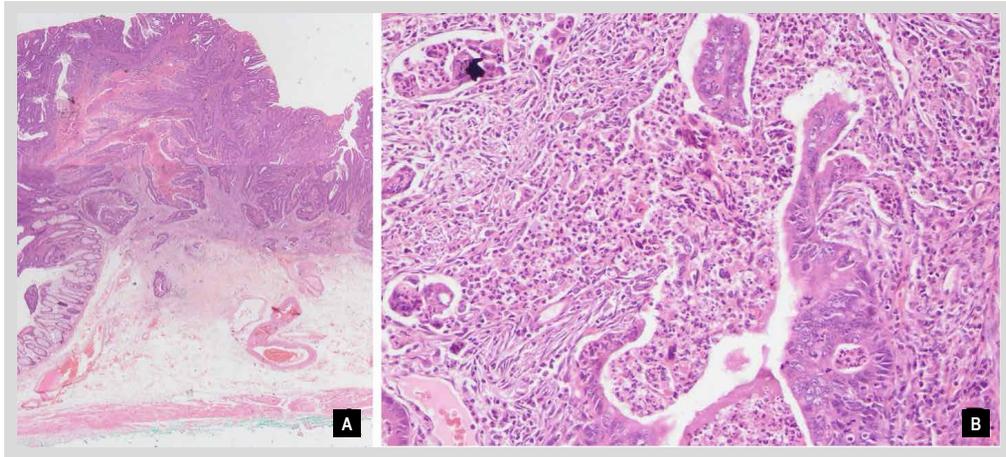


Figure 2. (A) Panoramic view (H&E, 20x) of a sessile adenomatous lesion with submucosal invasive adenocarcinoma (depth of invasion: 1700 μ m); muscularis propria and deep resection margin free of tumor. (B) Higher magnification (H&E, 200x) showing moderately differentiated NOS adenocarcinoma with lymphatic invasion and intermediate tumor budding (score 2).

nomogram, confer an estimated 20% probability of nodal metastasis⁽⁵⁾. A classification based on the cumulative number of these factors has been proposed: low risk (0 factors), intermediate risk (1 factor), and high risk (≥ 2 factors), with 3-year local recurrence rates of 7%, 13%, and 33%, respectively⁽⁹⁾.

In this context, when no complementary treatment is provided, active surveillance must be a well- reasoned decision, based on multidisciplinary discussion and informed consent, weighing oncologic risk, comorbidities and life expectancy.

In conclusion, the management of T1 rectal cancer with deep submucosal invasion should be based on a comprehensive assessment of histopathological risk factors. EID is a valuable tool in selected patients, providing both diagnostic and therapeutic benefits with curative intent, particularly when radical surgery is not feasible. Furthermore, the use of classifications and predictive models based on histological risk factors allows for improved risk stratification and more personalized decision-making, aiming to preserve the organ without compromising oncologic safety.

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