

REVIEW

Fecal microbiota transplantation as an effective therapeutic alternative

El trasplante de microbiota fecal como alternativa terapéutica eficaz

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ABSTRACT

Antibiotic-associated diarrhoea was a common complication of antimicrobial treatment, mainly caused by an imbalance in the gut microbiota. *Clostridioides difficile* was identified as the most frequent causative agent, capable of triggering pseudomembranous colitis, especially in vulnerable patients. Given the high recurrence rates of conventional treatments, faecal microbiota transplantation was evaluated as an effective therapeutic alternative. This procedure involved transferring faecal material from a healthy donor to an affected recipient, achieving remarkable restoration of intestinal balance, reduced mortality, and significant clinical improvement. In addition to its efficacy, a favourable safety profile and reduced healthcare costs were documented, consolidating it as a key tool in the treatment of recurrent *C. difficile* infections.

Keywords: *Clostridioides Difficile*; Dysbiosis; Pseudomembranous Colitis; Microbiota Transplantation; Therapeutic Efficacy.

RESUMEN

La diarrea asociada a antibióticos se presentó como una complicación común del tratamiento antimicrobiano, causada principalmente por un desequilibrio en la microbiota intestinal. *Clostridioides difficile* se identificó como el agente responsable más frecuente, capaz de desencadenar colitis pseudomembranosa, especialmente en pacientes vulnerables. Frente a las altas tasas de recurrencia de los tratamientos convencionales, se evaluó el trasplante de microbiota fecal como una alternativa terapéutica eficaz. Este procedimiento consistió en transferir material fecal de un donante sano a un receptor afectado, logrando una notable restauración del equilibrio intestinal, reducción de la mortalidad y mejoría clínica significativa. Además de su eficacia, se documentó un perfil de seguridad favorable y una reducción en los costos sanitarios, consolidándolo como una herramienta clave en el tratamiento de infecciones recurrentes por *C. difficile*.

Palabras clave: *Clostridioides Difficile*; Disbiosis; Colitis Pseudomembranosa; Trasplante de Microbiota; Eficacia Terapéutica.

INTRODUCTION

Antibiotic-associated diarrhea (AAD) is a common complication in patients receiving antimicrobial treatment, mainly due to an imbalance in the gut microbiota. Among the most relevant causative agents, *Clostridioides difficile* stands out for its ability to cause pseudomembranous colitis, a potentially serious condition. Given the limitations of conventional antimicrobial treatments, such as high recurrence rates, there has been growing interest in more effective and sustainable therapeutic alternatives. In this context, fecal microbiota transplantation (FMT) is emerging as a promising option for its clinical efficacy, safety, and cost-effectiveness.

profile.

DEVELOPMENT

Antibiotic-associated diarrhea (AAD) is a common complication of antimicrobial treatment, mainly due to intestinal dysbiosis that allows the proliferation of pathogens such as *Clostridioides difficile* (CD).⁽¹⁾ This bacterium is recognized as the leading cause of pseudomembranous colitis, a severe inflammatory bowel condition, especially in hospitalized or immunocompromised patients.⁽²⁾

Conventional treatments for *Clostridioides difficile* infection include antimicrobials such as metronidazole, vancomycin, and fidaxomicin. However, multiple studies have reported high recurrence rates, which has led to growing interest in alternative therapeutic strategies.⁽³⁾ One of the most promising emerging approaches is fecal microbiota transplantation (FMT), which involves transferring fecal material from a healthy donor to a recipient with dysbiosis to restore intestinal microbial balance. The efficacy of FMT has been widely documented. Tixier and Verheyen⁽⁴⁾ demonstrated that this therapy can significantly reduce mortality in patients with severe *C. difficile* colitis, while systematic studies such as those by Minkoff and Aslam⁽⁵⁾ report a relative risk of disease resolution close to 1.92, higher than that of traditional treatments. Similarly, Song and Kim⁽²⁾ observed cure rates close to 90 % in patients with recurrent infections, thus highlighting the clinical superiority of FMT in refractory settings.

In addition to its clinical efficacy, FMT has shown a favorable safety profile. Although adverse events such as abdominal discomfort or mild diarrhea may occur, serious complications are lower than those of conventional treatments.^(6,7) Martínez et al.⁽⁸⁾ also provide clinical evidence through documented cases where patients with refractory colitis showed significant improvement after receiving FMT, as evidenced by clinical scales such as the Bristol scale.

From an economic standpoint, the analysis by Health Quality Ontario⁽⁶⁾ highlights that FMT represents a cost-effective option by reducing disease recurrence, hospital stays, and the need for additional treatments. Other studies, such as those by Cheng and Fischer⁽⁹⁾, have reaffirmed this, highlighting the role of FMT even in the surgical management of refractory infections.

Finally, it should be noted that the current understanding of the role of the microbiota in intestinal and systemic health has been key to advancing therapies such as FMT. Research such as that by Xu et al.⁽¹⁰⁾ in experimental models has shown that FMT eliminates *C. difficile* and promotes functional restoration of the intestinal microbiota, consolidating its long-term therapeutic value.

FMT represents a paradigm shift in treating *Clostridioides difficile* colitis, going beyond the symptomatic approach and targeting the underlying cause: microbial imbalance. Its scientific backing, proven efficacy, and benefits in terms of safety and cost-effectiveness position it as an essential tool in the current clinical management of this disease.

CONCLUSIONS

Fecal microbiota transplantation is establishing itself as an innovative and effective therapeutic intervention for recurrent *Clostridioides difficile* infections, often surpassing the results obtained with traditional antimicrobial treatments. Its ability to restore intestinal microbial balance, low profile of adverse effects, and positive impact on healthcare costs position it as a key tool in the modern management of *C. difficile* colitis. As knowledge about the role of the microbiota in human health deepens, FMT is likely to take on an even more important role in clinical practice.

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CONFLICT OF INTEREST

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