Gastroenterol Hepatol. 2018;41(1):12–21

Gastroenterología y Hepatología

www.elsevier.es/gastroenterologia

ORIGINAL ARTICLE

Fluoroscopy-assisted vs fluoroless endoscopic ultrasound-guided transmural drainage of pancreatic fluid collections: A comparative study

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Received 8 March 2017; accepted 25 July 2017

KEYWORDS
Acute necrotizing pancreatitis;
Endoscopic ultrasonography;
Fluoroscopy;
Pancreatic pseudocyst;
Pancreatic fluid collection;
Self-expandable metallic stent

Abstract
Introduction: The need for fluoroscopy guidance in patients undergoing endoscopic ultrasound-guided transmural drainage (EUS-TMD) of peripancreatic fluid collections (PFCs) remains unclear.
Aims: The aim of this study was to compare general outcomes of EUS-TMD of PFCs under fluoroscopy (F) vs fluoroless (FL).
Methods: This is a comparative study with a retrospective analysis of a prospective and consecutive inclusion database at a tertiary centre, from 2009 to 2015. All patients were symptomatic pseudocyst (PSC) and walled-off pancreatic necrosis (WON). Two groups were assigned depending on availability of fluoroscopy. The groups were heterogeneous in terms of their demographic characteristics, PFCs and procedure. The main outcome measures included technical and clinical success, incidences, adverse events (AEs), and follow-up.
Results: Fifty EUS-TMD of PFCs from 86 EUS-guided drainages were included during the study period. Group F included 26 procedures, PSC 69.2%, WON 30.8%, metal stents 61.5% (46.1% lumen-apposing stent) and plastic stents 38.5%. Group FL included 24 procedures, PSC 37.5%, WON 62.5%, and metal stents 95.8% (lumen-apposing stents). Technical success was 100% in both groups, and clinical success was similar (F 88.5%, FL 87.5%). Technical incidences and

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intra-procedure AEs were only described in group F (7.6% and 11.5%, respectively) and none in group FL. Procedure time was less in group FL (8 min, $p = 0.0341$).
Conclusions: Fluoroless in the EUS-TMD of PFCs does not involve more technical incidences or intra-procedure AEs. Technical and clinical success was similar in the two groups.

PALABRAS CLAVE
Pancreatitis aguda necrosante;
Ecoendoscopia o ultrasonografía endoscópica;
Fluoroscopia;
Seudoquiste;
Colecciones pancreáticas;
Prótesis metálicas autoexpandibles

Fluoroscopia vs no fluoroscopia en el drenaje transmural de colecciones pancreáticas guiado por ecoendoscopia: estudio comparativo

Resumen
Introducción: La necesidad de la ayuda de fluoroscopia en pacientes que se les realiza un drenaje transmural guiada por ecoendoscopia (USE) de colecciones pancreáticas (CP) no está claro.
Objetivo: El objetivo de este estudio fue comparar los resultados generales del drenaje transmural de CP con ayuda de fluoroscopia (F) versus sin fluoroscopia (SF).
Métodos: Estudio comparativo, análisis retrospectivo, con inclusión prospectiva y consecutiva en una base de datos específica. Estudio realizado en un centro universitario terciario, en el periodo entre 2009 y 2015. Todos los pacientes fueron seudoquistes (PSQ) o colecciones pancreáticas necróticas encapsuladas (CPN) con clínica asociada. Se asignaron 2 grupos dependiendo de la disponibilidad de la fluoroscopia. Grupos heterogéneos respecto a sus características demográficas, CP y procedimientos. El estudio analizó el éxito técnico, el éxito clínico, las incidencias, los eventos adversos y el seguimiento.
Resultados: Cincuenta drenajes transmurales guiados por USE de CP, de un total de 86 drenajes por USE, fueron incluidos durante el periodo del estudio. El grupo F incluyó 26 procedimientos, PSC 69,2%, CPN 30,8%, prótesis metálicas 61,5% (46,1% prótesis de aposición luminal) y plásticas 38,5%. El grupo SF incluyó 24 procedimientos, PSQ 37,5%, CPN 62,5% y prótesis metálicas 95,8% (prótesis de aposición luminal). Éxito técnico del 100% en ambos grupos, éxito clínico clínico similar (F 88,5%, FL 87,5%). Incidencias técnicas y eventos adversos intraprocedimiento: solo descritos en grupo F (7,6% y 11.5%, respectivamente) y ninguna en el grupo SF. Tiempo del procedimiento menor en grupo SF (8 min, p = 0.0341).
Conclusiones: El drenaje transmural de CP sin ayuda de fluoroscopia no comportó mayor número de incidencias técnicas o eventos adversos intraprocedimiento. Los éxitos técnico y clínico fueron similares en ambos grupos.

Introduction

Endoscopic ultrasound transmural drainage (EUS-TMD) has become an established treatment method for symptomatic pancreatic fluid collections (PFCs). This approach has emerged as an attractive, less invasive and cost-effective technique. A randomized trial by Varadarajulu et al. concluded that the endoscopic approach is as effective as the surgical, and was associated with shorter hospital stays, better physical and mental health of patients, and lower cost.[1]

This is a technically demanding procedure, which usually requires endoscopy, EUS, and fluoroscopic guidance.[2–4] EUS is used routinely in the access step of the procedure, and fluoroscopy plus EUS guidance is used in the other steps of the endoscopic intervention.

Nowadays, the use of EUS guidance is practically essential because it allows identification of the most appropriate sites for drainage, avoiding major vessels, and it permits accessing non-bulging lesions, as well as control in real time of the access and changing of devices. Conversely, the use of fluoroscopy is dispensable, offering another image during the advancing of devices during the procedure, with the purpose of improving technical and clinical aspects and avoiding technical incidences and intra-procedural adverse events (AEs).[4]

Since the first EUS-TMD in 1992 by Grimm et al., there have been numerous technical innovations.[5] Lumen-apposing metal stent (LAMS) is a good example of the appearance of new dedicated devices designed specifically for EUS-guided interventions, with the possibility of obviating the use of fluoroscopy.[6–13]

Until date the usual method to performing EUS-TMD of PFCs includes the systematic use of radiological control, but its use is not mandatory and fluoroless could offer other advantages. Firstly, most endoscopic rooms are not equipped with fluoroscopy. Secondly, the use of fluoroscopy carries a risk of radiation for the patient and the endoscopy staff as well.[14–18] Lastly, once the endoscopy team has sufficient