

MAGNETIC RESONANCE CHOLANGIOPANCREATOGRAPHY PITFALLS: BILIARY STONE MIMICKERS

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Introduction

Magnetic Resonance Cholangiopancreatography (MRCP) has been considered the gold standard for pancreaticobiliary duct imaging and abnormality identification. For being non-invasive as compared to Enodoscopic Retrorade Cholangiopancreatography (ERCP) , more comprehensive evaluation than ultrasound, and superior soft tissue contrast compared to computed tomography (CT), avoiding risk of radiaion and consequences of contrast injection.

A number of anatomical variations and other artifacts may manifest as apparent filling defects and pseudo-lesions. To provide the proper diagnostic report, a radiologist should be aware of and familiar with these problems. Herein, we reviewed different pitfalls (biliary stone mimickers) encountered in MRCP.

Aim of the work

This study aimed to identify pitfalls in Magnetic Resonance Cholangiopancreatography (MRCP) that can mimic biliary stones.

Patients and Methods

PATIENTS: This study was carried out on 30 patients referred to the Radiodiagnosis Department of Alexandria Main University Hospital for Magnetic Resonance Cholangiopancreatography study from October 2023 till January 2025.

METHODS:

All patients were subjected to: Full history taking [demographic data, general medical history focusing upon the manifestations of obstructive jaundice: right hypochondral/ epigastric pain , itching and jaundice ,surgical history for cholecystectomy, laboratory investigations serum bilirubin (total, direct and indirect), cholestatic markers: alkaline phosphatase, gamma glutamyle transferase], ultrasonography, computed tomography if indicated and MRCP.

Results

This study was carried out on 30 patients, with 22 (73.3%) females and 8 (26.7%) males, having mean age averaging 47.3±18.0 years.

Different biliary stone mimickers were described as following (Table 1)

Table (1):Distribution of the studied cases according to MRCP pitfall (n = 30)

MRCP pitfall	No.	%
Vascular Impression	8	26.7
Flow artifact	7	23.3
Pneumobilia	5	16.7
Clips	4	13.3
Parasite	1	3.3
Pseudocalculus sign	2	6.7
Bulging papilla	4	13.3

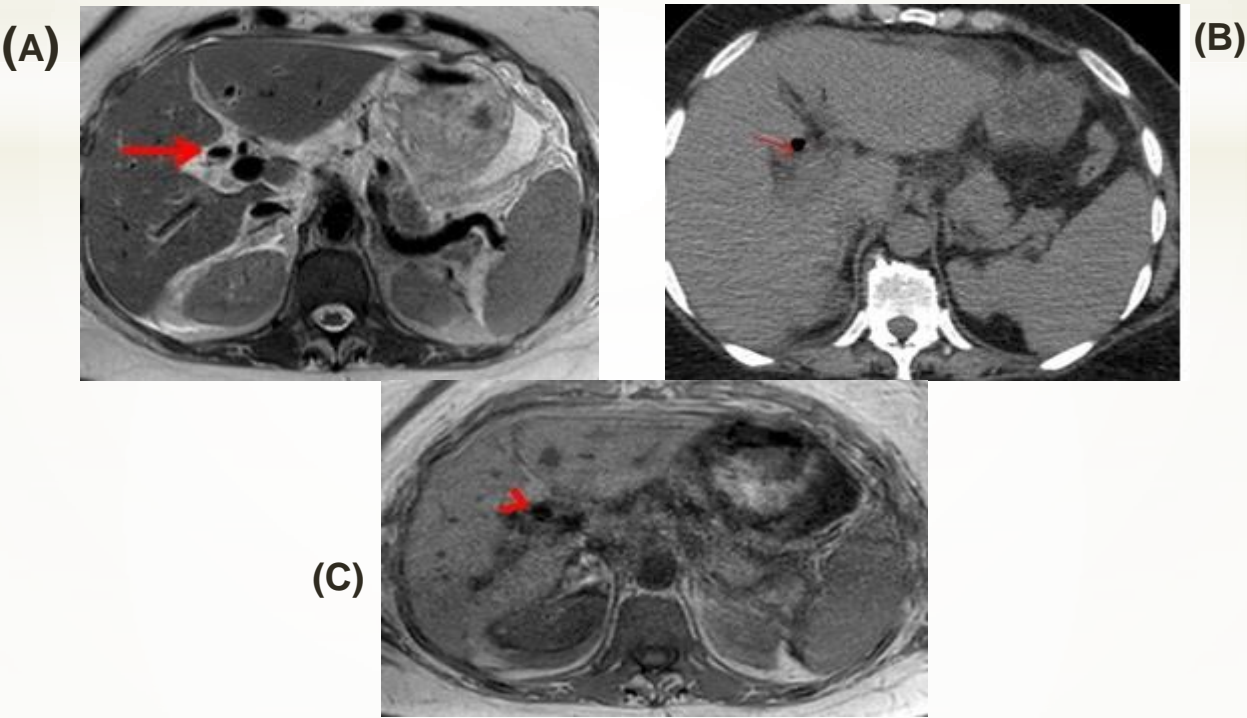


Figure (1) : 52-year-old female patient with resolved calcular obstructive jaundice by ERCP and stenting one month, then laparoscopic cholecystectomy 3 weeks ago,diffuse abdominal pain 10 days fever.biloma then pig tail insertion

A: axial T2 sequence shows signal void focus at CHD (thick arrow) , B: non-contrast CT axial cut shows pneumobilia(thin arrow). C:in phase sequence: blooming.(arrow head)

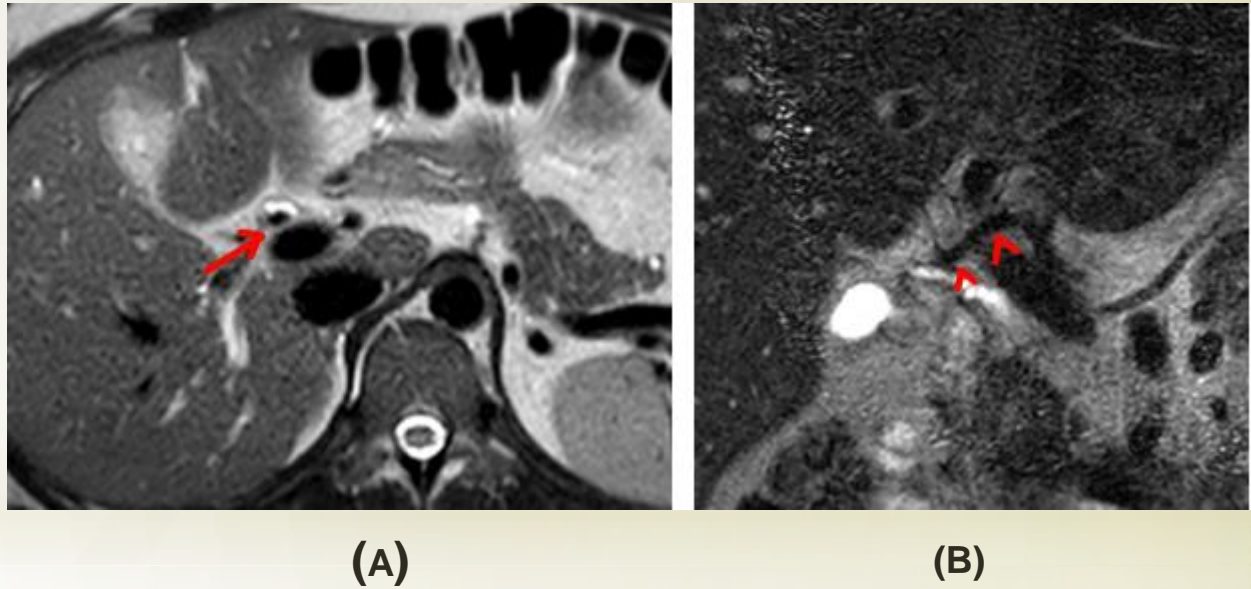


Figure (2): 27-year-old male patient with calcular gall bladder disease no jaundice,and ectatic CBD reaching 8mm on Ultrasonoraphy , MRCP done before cholecystectomy to exclude biliary stones. A: axial T2 sequence shows apparently dependent filling defect related to posterior CHD wall (red arrow) B: 3D coronal T2 sequence image revealed right hepatic artery curves posterior to the CHD (arrow heads).

Conclusion

The accurate interpretation of MRCP is critically essential in clinical practice, especially to distinguish true biliary stones from pitfalls and artifacts.

Recognizing and distinguishing MRCP pitfalls from genuine biliary pathology requires a radiologist's awareness of characteristic imaging features and clinical contexts associated with each pitfall, utilizing a full spectrum of MRCP sequences. Familiarity and thorough integration of findings will significantly improve diagnostic accuracy and patient management outcomes.