JOURNAL OF SCIENCE & DISEASES

Intraoperative cholangiography during Laparoscopic Cholecystectomy on a sickle cell disease patient at Ebolowa Regional Hospital Center: Case report

Cholangiographie per-opératoire au cours d'une cholécystectomie laparoscopique chez une patiente drépanocytaire au Centre Hospitalier Régional d'Ebolowa : cas clinique

Bisay Souhe U.B[1], Messakop Y [1], Binam Bikoi C[1], Eya Mvondo E[1], Biloo L[1], Mboua Ndenga V,[1]Guifo M.L[2], Bengono Bengono RS[1], Essola B[3] ,Bang G.A [2] , Ekono M[3] , Foumane P [1]

Cas clinique

[1]Faculty of Medicine and Pharmaceutical Sciences, University of Ebolowa, Cameroon
[2]Faculty of Medicine and Biomedical Sciences, University of Yaoundé 1, Cameroon
[3]Faculty of Medicine and Pharmaceutical Sciences, University of Douala Cameroon

Corresponding author:
Bisay Souhe Ulrich Boris, Faculty of Medicine and Pharmaceutical Sciences, University of Ebolowa ; Email : dr.bisay@gmail.com, Tel : (+237) 655072529

Keywords : Sickle cell disease, Cholangiography, Cholecystectomy, Laparoscopy.

Mots clés : Drépanocytose, Cholangiographie, Cholécystectomie, Laparoscopie.

ABSTRACT

This case report discusses the use of perioperative cholangiography during laparoscopic cholecystectomy on a sickle. Cell disease patient at Ebolowa Center Regional Hospital. The objective is to emphasize on the efficacy and safety of perioperative cholangiography in identifying biliary anatomy such as congenital cystohepatic duct and preventing bile duct injuries. The report details a specific case, the procedural techniques used, outcomes, and a brief review of literature.

RESUME

Les auteurs rapportent le cas de l'utilisation de la cholangiographie per-opératoire lors d'une cholécystectomie laparoscopique chez une patiente drépanocytaire à l'hôpital régional d'Ebolowa Center. L'objectif est d'évaluer l'efficacité et la sécurité de la cholangiographie per-opératoire dans l'identification de l'anatomie biliaire et la prévention des lésions des voies biliaires. Le travail détaille un cas spécifique, les techniques procédurales utilisées, les résultats et une brève revue de la littérature.

Citation as **J Sci Dis 2024, Vol 2 (4): 66-69**

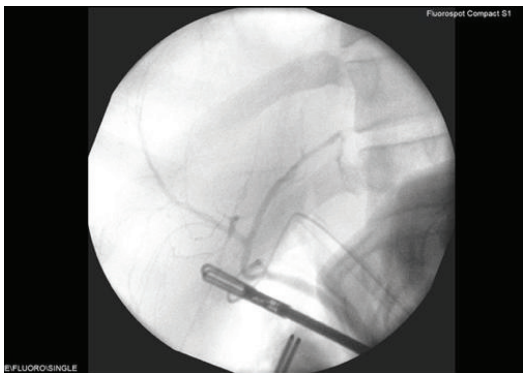
Introduction

Laparoscopic cholecystectomy is the gold standard for the treatment of symptomatic cholelithiasis, Cholelithiasis is a frequent complication of chronic hemolysis due to sickle cell disease (1). However, one of the significant complications associated with this procedure is common or main bile duct injury, fortunate discovery of congenital cystohepatic duct(2) which can lead to severe morbidity. Perioperative cholangiography has been advocated as a method to delineate biliary anatomy and reduce the risk of bile duct injury(3). This case report examines the feasibility and the result of this technique at Ebolowa Center Regional Hospital, highlighting its practical benefits and any challenges encountered.

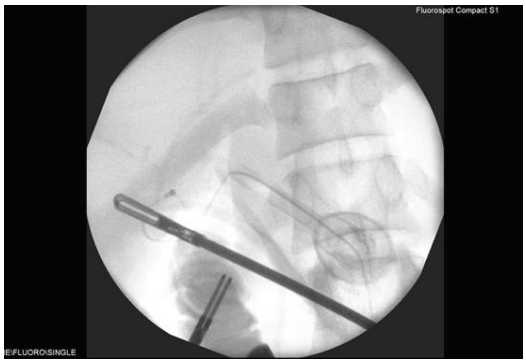
Case Presentation

A 35-year-old female known with sickle cells disease since she was 2 years old, with a weight of 57kg and 1.65m Hight, presented to the Ebolowa Center Regional Hospital with complaints of recurrent right abdominal upper quadrant pain, nausea, and vomiting over the past six months. She was diagnosed with symptomatic cholelithiasis based on clinical evaluation and ultrasonographic findings. In the preoperative assessment no significant comorbidities or previous abdominal surgeries with medical past history. On physical examination: abdominal tenderness in the right upper quadrant, positive murphy's sign. The laboratory tests showed normal liver function tests, elevated white blood cell count and c-reactive protein. The Imaging with Ultrasound confirmed multiple gallstones without evidence of bile duct dilation, a 5mm gallbladder wall thickening, wall edema, 70 mm gallbladder distention, positive sonographic Murphy sign.

The patient was diagnosed, acute cholecystitis with cholelithiasis and scheduled for an emergency laparoscopic cholecystectomy with planned perioperative cholangiography. General anesthesia was induced, and the patient was placed in the supine position with slight reverse Trendelenburg and left tilt. Four ports were inserted: one 10mm umbilical port for the laparoscope, one 10mm epigastric port, and two 5mm ports in the right and left upper quadrant. The gallbladder was retracted, and the Calot's triangle was exposed. Dissection was carefully performed to identify the cystic duct and artery. From the cholangiography set, a catheter was introduced through the 10mm epigastric port into the cystic duct, and contrast dye was injected.



***1a**. demonstrates a normal contrast flow in common bile duct and intrahepatic ducts.*



***1b**. demonstrates a normal contrast flow into the duodenum via the ampulla of Vater.*

Figure 1: *Intraoperative cholangiography image showing the biliary tree.*

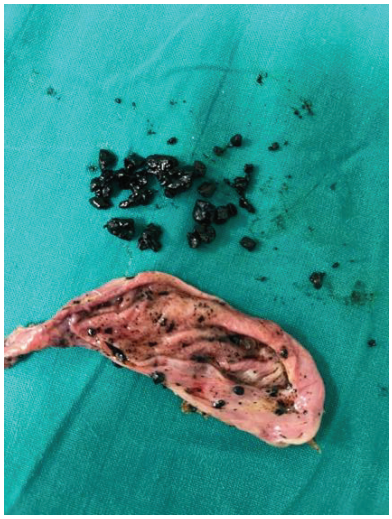


Figure 2: *Gross macroscopic gall blader with gallstones*

Fluoroscopy was used to visualize the biliary tree, confirming the anatomy and ruling out bile duct stones. The cystic duct and artery were clipped and

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divided, and the gallbladder was removed. Hemostasis was achieved, and the operative field was irrigated and inspected. The post-operative course was uneventful, and was discharged on the second postoperative day. Follow-up at two weeks showed no complications, and the patient reported resolution of her symptoms.

Discussion

Laparoscopic cholecystectomy is a safe surgical procedure for gallstones in sickle cell disease(4). There is a high prevalence of cholelithiasis found in patients with sickle cell disease, Mostly with high-age groups(5),early cholecystectomy for cholelithiasis in patients with sickle cell disease is associated with netter outcomes(6).intraoperative cholangiography during laparoscopic cholecystectomy is a valuable tool for the visualization of biliary anatomy. It aids in the identification of anatomical variations and the detection of bile duct stones, potentially preventing bile duct injuries, Zhang (7) described cases of cholangiography during cholecystectomy, and Guifo (3)presented for the first time a case of cholangiography while performing an open cholecystectomy with a remarkable outcome at the CHU in Cameroon. However, the use of cholangiography can be technically challenging in low-income countries, first of all because of lack of infrastructure, cost constraints ,and secondly, limited access to trained personnel, the lack of formal curriculum for intraoperative cholangiography interpretation in surgical education(8),it may prolong the operative time(9, 10). The present case demonstrated the feasibility and safety of this technique in a resource-limited setting. Several studies support the routine use of intraoperative cholangiography to minimize the risk of bile duct injury. According to a study by Hou, a routine cholangiography is associated with a reduced risk of bile duct injury during laparoscopic cholecystectomy(11). Another study by A. Edebo emphasizes that intraoperative cholangiography significantly aids in the detection of bile duct stones, facilitating their management during the initial surgery(12).

Conclusion

Intraoperative cholangiography during laparoscopic cholecystectomy at Ebolowa Center Regional Hospital is feasible, safe and effective technique. It provided crucial anatomical details that guided the surgical procedure and potentially prevented bile duct injury. This case supports the continued use and training in perioperative cholangiography to enhance patient safety and surgical outcomes, even if the clinical benefits, in terms of efficacy and safety, of performing the additional intraoperative cholangiography procedure during laparoscopic cholecystectomy treatment in patients with symptomatic cholelithiasis are not definitively established.

This case report is intended to provide a detailed account of intraoperative cholangiography during laparoscopic cholecystectomy in low-income country, highlighting its importance in preventing complications and improving surgical outcomes. Resource constraints, limited access to equipment, and shortages of trained personnel present a huge barrier. Solution such as pilot and targeted training programs, international partnerships, could enhance the feasibility of this technique in our country.

Funding sources: No Funding sources.

Ethical approval: Our study is exempt from ethical approval by the ethics committee of the Faculty of Medicine and Pharmaceutical Sciences of the University of Ebolowa (Cameroon)

Consent: Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief.

Author contribution: The patient was admitted and operated under the care of Bisay Souhe U.B[1], Essola B[3], [1]Guifo M.L[2]; Bisay Souhe U.B[1]concepted the study, collected data and wrote the paper with Messakop Y, Binam Bikoi C,Eya Mvondo E , Biloo L, Mboua Ndenga , Bengono Bengono RS reviewed the paper. Bengono Bengono RS, Bang G.A , Ekono M gave the final approval.

Registration of research studies: Our study isn't a first-in-man One.

Guarantor: Foumane P, Professor of gynecology, dean at the Faculty of Medicine and Pharmaceutical Sciences of the university of Ebolowa (Cameroon).

Provenance and peer review: Not commissioned, externally peer-reviewed

Conflict of interest: The authors declare no conflict of interest.

References

1. Attalla B, Karrar Z, Ibnouf G, Mohamed A, Abdelwahab O, Nasir E, Seed M. Outcome of cholelithiasis in Sudanese children with Sickle Cell Anaemia (SCA) after 13 years follow-up. African Health Sciences. 2013;13(1).
2. Shumarova S, Koichev A, Sokolov M, Arabadzhiev A, Karamisheva V. Congenital cystohepatic duct found during laparoscopic cholecystectomy. J Surg Case Rep. 2024;2024(6):rjae401.

3. Guifo ML, Essomba A, Takongmo S, Bitang MM, Chichom A, Pisoh TC. [Perioperative cholangiography: a case study at Yaounde (Cameroon)]. Med Trop (Mars). 2010;70(4):384-6.
4. Albakri LA, Algarni RA, Alrajhi RK, Yousef YA, Zaidi SF. Laparoscopic Cholecystectomy Operative Time and Hospital Stay Differences Between Sicklers and Non-sicklers: A Five-Year Comparative Cross-Sectional Study at King Abdulaziz Medical City, Jeddah. Cureus. 2022;14(10):e30952.
5. Almalki B, Banser S, Alghamdi B, Almalki M, Al-Marzouki A, Alharthi M, Radhwi O. Outcomes of Cholelithiasis Among Patients With Sickle Cell Disease: A Tertiary Care Center Experience. Cureus. 2023;15(3):e36761.
6. Zeineddin A, Cornwell EE, 3rd, Fullum TM, Chu QD, Kearse L, Ayad MH, et al. Early Cholecystectomy in Patients with Sickle Cell Disease with Uncomplicated Cholelithiasis Is Associated with Better Outcomes. J Am Coll Surg. 2024;238(4):543-50.
7. Zhang D, Dai Z, Sun Y, Sun G, Luo H, Guo X, et al. One-Stage Intraoperative ERCP combined with Laparoscopic Cholecystectomy Versus Two-Stage Preoperative ERCP Followed by Laparoscopic Cholecystectomy in the Management of Gallbladder with Common Bile Duct Stones: A Meta-analysis. Adv Ther. 2024;41(10):3792-806.
8. Wightkin SP, Velasco J, Schimpke S, Kremer MJ. Enhancing Intraoperative Cholangiography Interpretation Skills: A Perceptual Learning Approach for Surgical Residents. J Surg Educ. 2024;81(9):1267-75.
9. Fujinaga A, Hirashita T, Endo Y, Orimoto H, Amano S, Kawamura M, et al. Prediction of intraoperative surgical difficulty during laparoscopic cholecystectomy using drip infusion cholangiography with computed tomography. J Hepatobiliary Pancreat Sci. 2024;31(9):637-46.
10. Ding GQ, Cai W, Qin MF. Is intraoperative cholangiography necessary during laparoscopic cholecystectomy for cholelithiasis? World J Gastroenterol. 2015;21(7):2147-51.
11. Hou YK, Liu WK, Gao YB, Tian XD, Yang YM. Enhanced fluorescence cholangiography with indocyanine green: A methodology for reducing the potential hazard of bile duct injury during laparoscopic cholecystectomy. Hepatobiliary Pancreat Dis Int. 2024.
12. Edebo A, Andersson J, Gustavsson J, Jivegard L, Ribokas D, Svanberg T, Wallerstedt SM. Benefits and risks of using laparoscopic ultrasonography versus intraoperative cholangiography during laparoscopic cholecystectomy for gallstone disease: a systematic review and meta-analysis. Surg Endosc. 2024;38(9):5096-107.

Citation as **J Sci Dis 2024, Vol 2 (4): 66-69**