CASE REPORT – OPEN ACCESS

International Journal of Surgery Case Reports 78 (2021) 116–119

Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

A case report of double cystic duct during laparoscopic cholecystectomy in patient with chronic calcular cholecystitis

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ARTICLE INFO

Article history:
Received 27 May 2020
Received in revised form 16 October 2020
Accepted 17 October 2020
Available online 23 November 2020

Keywords:
Case report
Double cystic duct
Cholecystectomy

ABSTRACT

INTRODUCTION: Abnormal anatomy of the biliary tree predisposes patients to higher risks of ductal injury and postoperative complications. One of the extremely rare abnormalities of the cystic duct is the duplication of the cystic duct with a single gallbladder. The diagnosis is usually established during surgery. we report a case of double cystic duct with literature review.
PRESENTATION OF CASE: A forty-two years old female patient who complained of recurrent biliary colic 9 months prior to the presentation. Murphy's sigh was negative and with no other relevant clinical signs.
DIAGNOSIS AND THERAPEUTIC INTERVENTION: Abdominal ultrasound showed multiple gall stones; the largest one was about 11 mm in diameter. Laparoscopic cholecystectomy was done under general anesthesia with 4 ports insertion. A double cystic duct accidentally encountered after clipping and cutting what was apparently a single cystic duct. Intraoperative cholangiogram was done to confirm the anomaly and exclude CBD injury.
CONCLUSION: Double cystic duct is a very rare variant of the cystic duct anomaly. Proper knowledge of this anomaly should be kept in mind to avoid any unnecessary steps.

1. Introduction

Abnormal anatomy of the biliary tree predisposes patients to higher risks of ductal injury and postoperative complications. As it is known the congenital abnormalities of the extrahepatic biliary duct system are possibly the most frequent variations of the human body [1].

One of the extremely rare abnormalities of the cystic duct is the duplication of the cystic duct with a single gallbladder. The diagnosis is usually established during surgery [2]. Only 17 cases have been reported in literature [3–18].

We report a case of a female who had two separate cystic ducts exiting from a single gallbladder managed in academic institution.

2. Patient information

2.1. Demographic data

Forty-two years old female patient, housewife, with BMI 30 kg/m^2.

2.2. Presentation

She is presented with recurrent biliary colic 9 months prior to the operation and she was referred by her family doctor.

2.3. Past medical and surgical history

She was medically free with negative past surgical history.

2.4. Drug history, family history and smoking history

No relevant drug history, family history nor any relevant genetic information. There was no smoking history nor other special habits of medical importance.

3. Clinical finding

Murphy's sign was negative and other clinical findings was irrelevant.

4. Timeline

The patient presented 9 months prior to intervention.

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https://doi.org/10.1016/j.ijscr.2020.10.079

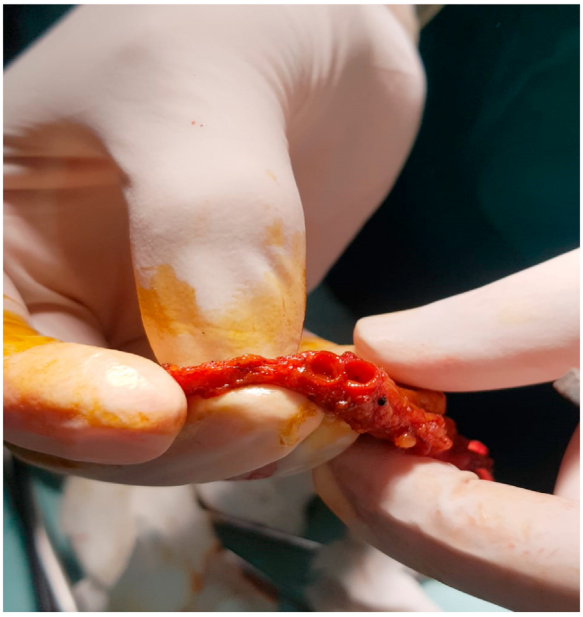

Fig. 1. Showed double cystic duct originating from a single gall bladder.

5. Diagnostic assessment

5.1. Diagnostic methods

Vital signs, blood examination, electrocardiography and echocardiography were within normal range. Abdominal ultrasound showed multiple gall stones, largest one about 11 mm in diameter. Oesophago-gastro- duodenoscopy (OGD) was to exclude reflux esophagitis as she gave history of dyspepsia; it was normal.

5.2. Diagnostic challenges

There were no financial challenges as the patient was treated in an academic institution- our institution -.

6. Therapeutic intervention

6.1. Pre-intervention considerations

Patient optimization for the intervention took place by careful full examination and pre-operative assessment.

6.2. Type of intervention

Laparoscopic cholecystectomy.

6.3. Peri-intervention consideration

Laparoscopic cholecystectomy was performed under general anesthesia with 4 ports insertion; visual umbilical port 10 mm, the 1st working port was 10 mm subxiphisternum to the right, the 2nd working port was 5 mm put at the level of the fundus of gall bladder and finally the assistant port was 5 mm at anterior axillary line 10 cm from costal margin.

Dissection started in the triangle of Callot and critical view of safety was identified then the cystic duct was clipped with two titanium clips proximally and a distal one at the gall bladder.

A double cystic duct accidentally detected after cutting what was apparently single wide cystic duct (Fig. 1). An intraoperative cholangiogram was performed to make sure it's a double cystic duct as for the first instance the double lumen gave the impression of transected Common Bile Duct (CBD) (Fig. 2).

After making

A 16-Fr tube drain was put.

6.4. Operator

Lecturer and consultant of general surgery at our institution

6.5. Post-intervention consideration

The patient had a smooth post-operative recovery and was discharged home on day two post-operatively.

6.6. Post-operative considerations

The patient was instructed to be on fat-free diet four weeks after surgery and to follow-up in the outpatient clinic.

SCARE 2018 paper was used for the construction of this paper [20].

7. Follow up and outcome

a. The operative pictures and the intra-operative cholangiogram images are attached in Figs. 1 and 2 respectively.
b. The patient was followed up clinically after two weeks of discharge and the follow-up was unremarkable
c. **Intervention adherence:** the procedure and follow-up were done according to what is generally accepted in such cases of laparoscopic cholecystectomy.
d. **Complications:** the patient had a smooth post-operative recovery with no complications.

8. Discussion

A double CD is an uncommon variation that poses a critical challenge. It is associated with a double gallbladder 80% of the time [19]. Cases of a single gallbladder with a double cystic duct have rarely been reported in the English and European literature [9,10]. Previous studies showed that the variant CD are also classified into 'H' type where an accessory duct joins the right, left or CHD, trabecular type in which the accessory duct directly enters the liver substance and 'Y' type where both ducts meet and form a single duct [19].

Our case was a double cystic duct originating from single gall bladder drained by separate opening to common hepatic duct. Intraoperative cholangiogram was performed to confirm this finding.

According to our experience it is recommended the use of intraoperative cholangiography when dealing with abnormal anatomy or congenital anomalies of the gallbladder. The evidence is anecdotal but as shown on this case report clearly seen two cystic ducts accurately diagnosed a gallbladder and prevented the surgeon from leaving an unidentified duct which later can become a challengeable problem for surgeon also double cystic duct is very challengeable due to laparoscopic cholecystectomy.

Table 1 shows literature review of the reported cases of double cystic duct (DCD).

9. Patient perspective

The procedure of laparoscopic cholecystectomy was explained to the patient with all advantages and possible complications. She agreed on the procedure and informed consent was taken from her.

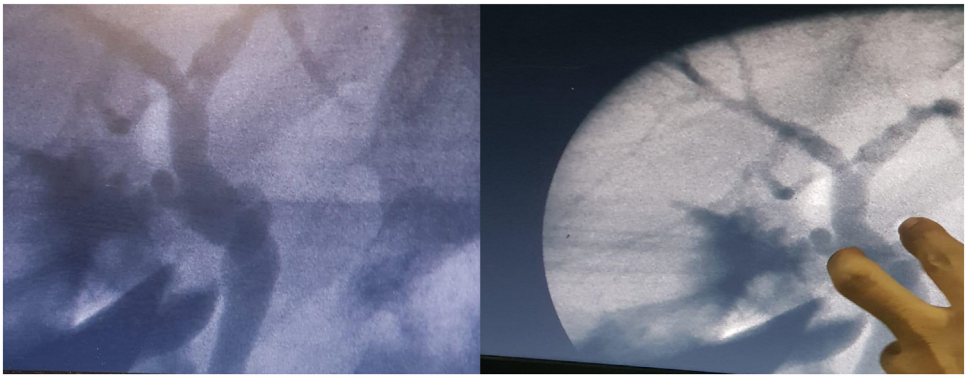

Fig. 2. Showed intact extrahepatic biliary tree after clipping double cystic duct using intraoperative cholangiogram.

Table 1
Literature review of the reported cases of DCD [3–18].

	Reference/author	Year	Age/gender	Gall bladder
1	Heyas et al.	1931	35/male	Double
2	Kennon	1933	69/male	Double
3	Wilson	1939	55/female	Double
4	Paraskevas et al.	1998	76/female	Single
5	Nakasugi et al.	1995	50/female	Single
6	Hirono et al.	1997	74/female	Single
7	Tsutsumi et al.	2000	74/female	Single
8	Shivhare et al.	2002	46/female	Single
9	Huston et al.	2006	43/female	Single
10	Yoo et al.	2008	55/female	Single
11	Vicente et al.	2009	Newborn	Single
12	Görkem et al.	2014	10/male	Double
13	Otaibi et al.	2015	54/male	Single
14	samnani et al.	2015	43/female	Single
15	Wei et al.	2015	66/female	Double
16	R.A. Agha	2016	30/female	Single
17	M.Abdelwahed et al.	2017	33/female	Single

Declaration of Competing Interest

The authors report no declarations of interest.

Funding

No Funds to be stated.

Ethical approval

No ethical approval as it was a routine laparoscopic cholecystectomy.

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 of this journal on request.

Author contribution

Ahmed M. Abdelsalam: Main operator.
Ahmed Mohamed salah: Editing the review.
Abdelrahman Mostafa: Assistant in the procedure.

Registration of research studies

Not Applicable.

Guarantor

Ahmed M. Abdelsalam.

Provenance and peer review

Not commissioned, externally peer-reviewed.

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