Portal vein thrombosis following laparoscopic sleeve gastrectomy: A rare case report

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ABSTRACT

Introduction: Portal vein thrombosis (PVT) is a relatively uncommon complication after sleeve gastrectomy.

Case Report: A 33-year-old female underwent an uncomplicated laparoscopic sleeve gastrectomy for the treatment of morbid obesity, and presented on postoperative day-14 with epigastric pain. Computed tomography scan revealed left portal vein thrombosis. She promptly improved after initiation of low-molecular-weight heparin and was discharged on hospital day-5 with oral warfarin.

Conclusion: Although uncommon, PVT should be included in the differential diagnosis for unexplained abdominal symptoms after laparoscopic sleeve gastrectomy.

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CASE REPORT

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Keywords: Laparoscopic sleeve gastrectomy, Morbid obesity, Portal vein thrombosis

How to cite this article

Abu jkeim N, Al Hazmi A, Alawad A, Ibrahim R, Abudamis A, Tawfik S, Mansour M. Portal vein thrombosis following laparoscopic sleeve gastrectomy: A rare case report. Int J Case Rep Images 2015;6(9):555–559.

Nidal Abu jkeim¹, Ahmad Al Hazmi¹, Awad Alawad², Rashid Ibrahim¹, Ahmad Abudamis¹, Samir Tawfik¹, Mohammed Mansour¹

Affiliations: ¹Department of Surgery, Prince Sultan Armed Forces Hospital, Al madinah, Saudi Arabia; ²Department of Surgery, Faculty of Medicine, University of Medical Sciences and Technology, Khartoum, Sudan.

Corresponding Author: Awad Ali Mohamed Ahmed Alawad, MD, Department of Surgery Prince Sultan Armed Forces Hospital, Al madinah, Saudi Arabia; Ph: 00966509246018; Email: awadali82@hotmail.com

Received: 03 May 2015

Accepted: 25 June 2015

Published: 01 September 2015

doi:10.5348/ijcri-201589-CR-10550

INTRODUCTION

Portal venous thrombosis (PVT) is a potentially lethal condition with multiple causes, both systemic and local. Postoperative portal venous thrombosis is a known complication following surgical operations that involve manipulation of splanchnic veins, such as splenectomy [1]. However, with the broad use of laparoscopic surgery over the last 30 years, case studies have emerged of PVT, in the absence of direct manipulation of the portal or mesenteric vessels. Among the laparoscopic operations with reported postoperative PVT are appendectomy, cholecystectomy, and colectomy, as well as Nissen fundoplication, and sleeve gastrectomy for morbid obesity [2–6]. Although the cause of PVT following laparoscopic surgery is obscure, it is well known that increased intra-abdominal pressure induced by pneumoperitoneum (using carbon dioxide) results in reduction of blood flow in the portal vein, which may enhance thrombosis.

Laparoscopic sleeve gastrectomy is emerging as a popular operation for the treatment of morbid obesity, with acceptable morbidity and long-term weight reduction. Here we report an even more unusual case of PVT, 14 days after an uncomplicated laparoscopic sleeve gastrectomy.

CASE REPORT

A 33-year-old woman presented initially to our department with morbid obesity. Her past medical history was remarkable for diabetes mellitus and bronchial asthma. She had no remarkable family history of hypercoagulable state or thrombotic events. She was not taking oral contraceptive pills. After an extensive multidisciplinary workup, she was planned for a laparoscopic sleeve gastrectomy. Her preoperative liver function tests showed normal hepatic enzymes (alanine

aminotransferase 27 U/L, aspartate aminotransferase 10 U/L, alkaline phosphatase (105 U/L), and total bilirubin (10.4 $\mu\text{mol/L}$). Preoperative coagulation parameters were all normal. She underwent an uneventful laparoscopic sleeve gastrectomy. Water was administered orally on postoperative day-2 after an upper gastrointestinal contrast study revealed no leak from the staple line. Throughout her hospital stay, she was treated with subcutaneous injection of enoxaparin 40 mg once per day. She was discharged home on day-5 with subcutaneous enoxaparin.

At postoperative day 14, the patient re-presented to our outpatient clinic complaining of epigastric pain and nausea for one day. On physical examination, her blood pressure was 130/60 mmHg, pulse rate 94 beats/minute, body temperature 37.1°C. Abdominal examination demonstrated minimal epigastric tenderness. Her laboratory results were within normal limits. Ultrasonography of the abdomen showed thrombosed left portal vein (Figure 1), which was confirmed with a computed tomography (CT) scan of the abdomen (Figure 2).

The patient was admitted to our department. A hypercoagulability workup demonstrated normal findings. She was started on therapeutic low-molecular-weight heparin (LMWH, enoxaparin). She responded to the treatment with resolved abdominal symptoms. An abdominal ultrasonography revealed scanty color filling at the periphery suggesting partial recanalization of left portal vein (Figure 3). She was discharged in good condition on hospital day-5 with oral warfarin.

DISCUSSION

Portal vein thrombosis (PVT) is a recognized complication after laparoscopic sleeve gastrectomy. There are few cases reported in literature of PVT after laparoscopic sleeve gastrectomy [3, 7–8]. Patients in these case reports underwent what was described as uncomplicated laparoscopic sleeve gastrectomy.

Increased intra-abdominal pressure induced by pneumoperitoneum during laparoscopy results in disturbed clotting parameters, as manifested by changes in prothrombin time, international normalized ratio, fibrinogen, and fibrin degradation products. It affects portal and splanchnic venous blood stream [2]. One study concluded that the radius of the portal vein and the mean portal blood stream were significantly diminished with pneumoperitoneum of more than 10 mmHg [8]. Positioning of the patient during laparoscopic surgery might likewise influence the portal blood flow leading to more stasis. Direct injury to the portal vein and its branches may also be a contributing factor but is unlikely in our case.

The diagnosis of PVT can be confirmed with either abdominal ultrasonography or computed tomography. Both imaging studies are usually used in the workup

Figure 1: An abdominal ultrasonography showing echogenic lumen of left portal vein with no flow within by color Doppler.

Figure 2: Computed tomography scan of abdomen showing attenuated and totally thrombosed left portal vein.

of unexplained abdominal pain after laparoscopic sleeve gastrectomy [2]. Our patient had both studies to confirm the diagnosis of PVT. The use of invasive portal venography is typically not necessary.

The treatment of PVT varies depending on the degree of the thrombosis and the presence or absence of intestinal ischemia. It is unknown whether prophylactic anticoagulants affect the incidence of PVT or not. Most patients who were diagnosed with PVT after laparoscopic procedures can be managed properly with supportive treatment and anticoagulation. One patient in literature required transhepatic portal vein thrombectomy for significant thrombosis [9]. Our patient promptly improved after initiation of LMWH and was discharged on day-5 with oral warfarin. The optimal duration of anticoagulation for these patients is unidentified. If the patient has primary clotting disorders, lifelong anticoagulation is needed. For those with no recognized risk factors, some recommend it is reasonable to re-evaluate the patient after approximately 6 months of anticoagulation and stop if declaration of the thrombosis is proofed. Although still a subject of debate, some studies suggest that the threat of venous thrombosis following laparoscopic bariatric surgery extends long after discharge from the hospital, and prophylaxis should therefore be sustained for several weeks into the postoperative period [10–11]. This insistent approach, however, which could also theoretically decrease the risk

of PVT, is not considered standard. In our case, LMWH was continued for 12 days after surgery.

CONCLUSION

In this report, we describe a female patient who presented with portal vein thrombosis (PVT) after uncomplicated laparoscopic sleeve gastrectomy. Although rare, PVT should be one of the differential diagnoses for unexplained abdominal pain after laparoscopic sleeve gastrectomy. Anticipation, careful clinical monitoring and early anticoagulation are crucial to reduce morbidity.

Author Contributions

Nidal Abu jkeim – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Ahmad Al Hazmi – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Awad Alawad – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Rashid Ibrahim – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Ahmad Abudamis – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Samir Tawfik – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Mohammed Mansour – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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