

Case Report

Hematemesis then Hemoptysis: A Complex Medical Management of an Exceptional Double Complication of Bariatric Surgery

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Abstract

Objective: We reported the occurrence and management of massive hemoptysis after Gastro Bronchial Fistula (GBF), 10 months after sleeve gastrectomy. In the medical literature, there does not exist other case report of sleeve gastrectomy complicated by hemoptysis and only one case of mild hemoptysis after an adjustable gastric bands tub.

Data Sources: References were extracted from PUBMED.

Study Selection: We associated the key words: hemoptysis, bariatric surgery, gastro bronchial fistula, complications, exhaustively without limitation in date of publication. Case reports, series of case reports and reviews have been analyzed and included in our article. We also researched recommendations about the perioperative nutrition and the management of massive hemoptysis.

Data Extraction: The data of the case report were identified from the medical record of the patient, after agreement for the use of the data was obtained. Using the bibliography, we found incidence of GBF and hemoptysis after bariatric surgery.

Data Synthesis: The GBF is a rare complication of bariatric surgery with an incidence of 0.2%. One case of hemoptysis had been described after adjustable gastric bands tub and no case after other bariatric surgery. At present, no consensus exists on the management of GBF. We described the succession of sub diaphragmatic GBF with conservative treatment, severe hemoptysis with cardiopulmonary arrest following pulmonary barotrauma and bronchial flooding and the final total gastrectomy under veno-venous extracorporeal lung supplance.

Conclusions: Hemoptysis after sleeve gastrectomy is an exceptional complication; the prognosis depends on the severity of the hemoptysis. A chronic cough after bariatric surgery, even much later, can be the only clinical sign of GBF and should be explored with thoraco-abdominal CT scan and oesogastroscopy.

Keywords: Bariatric surgery; Cardiopulmonary arrest; Complications; Extracorporeal lung supplance; Gastro bronchial fistula; Hematemesis; Hemoptysis

Introduction

The Gastro Bronchial Fistula (GBF) is a rare complication following bariatric surgery with an incidence of 0.2% [1,2]. Review of the medical literature found only 36 case reports of GBF after sleeve and Roux en Y gastric bypass [3]. The time between the surgery and the occurrence of the symptoms of GBF varied from 1 to 30 months. The usual clinical presentation was chronic cough, recurrent left pneumonia, persistent left pleural effusion,

pleuropulmonary abscess, left lower thoracic pain, surgical material expectoration (clips) and hematemesis [1-6]. Only one case of hemoptysis caused by GBF, late after an adjustable gastric bands tub [6], has been reported. We report the case of GBF complicated by hematemesis followed by hemoptysis two weeks later, in a patient who underwent sleeve gastrectomy. We obtained the informed consent to realize this case report.

Case Report

A 43 years old man (136 kg/180 cm/BMI = 42) underwent sleeve gastrectomy by laparoscopy. Postoperative course was uneventful, and the patient returned to home two days later. Six

months later the weight loss was 64 kg. Odynophagia associated with inflammatory biologic syndrome was explored at month 8 and Computed Tomography (CT scan) demonstrated gastric fistula with left gastric excavation and oesogastric fibroscopy showed 2-3 mm defect in front of the excavation. Internal drainage was performed with double pigtail drain. The control CT scan at month 9 demonstrated surgical material under the diaphragm with infiltration of the peritoneal fat into the contact, residual pneumoperitoneum and no leak of ingested contrast agent. A new CT scan 10 days later (systematic control) demonstrated densification of the perigastric peritoneal fat in contact of the spleen with non-collected liquid areas and probable communication with pleural space.

Ten months after the sleeve gastrectomy, the patient presented hematemesis with hemorrhagic shock. He required 6 Red Cells Packs (RCP) transfusion and vasopressive support with norepinephrine up to 1.75 mg/h. Because CT scan made suspect aneurysm of the splenic artery, embolization of the left gastric artery with Gelitapson® (2018 Henry Schein) was performed. The follow-up in Intensive Care Unit (ICU) was uneventful, without recurrence of bleeding. The CT scan Figure 1, performed 3 days after the embolization, did not demonstrate active bleeding or false aneurysm and the decision of the staff was to perform planned total gastrectomy and wedge resection of the left lower pulmonary lobe, after a 3 weeks period permitting parenteral feeding of the patient hoping better postoperative digestive healing and recovery.

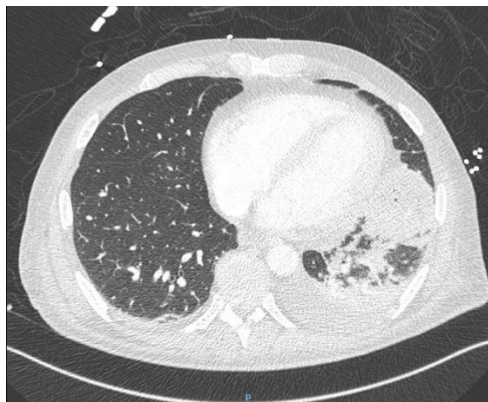


Figure 1: CT scan at Day 3 after hematemesis. No bleeding, collection in front of the left lower pulmonary lobe and left pleural effusion.

The GBF was confirmed by oesogastroscopy and oesogastric opacification with gastrograffine Figures 2,3. A post-pyloric nasoduodenal probe was inserted during this procedure for artificial nutrition. Anti-biotherapy was introduced for pneumonia. No drainage was performed because of the little size of the collections.

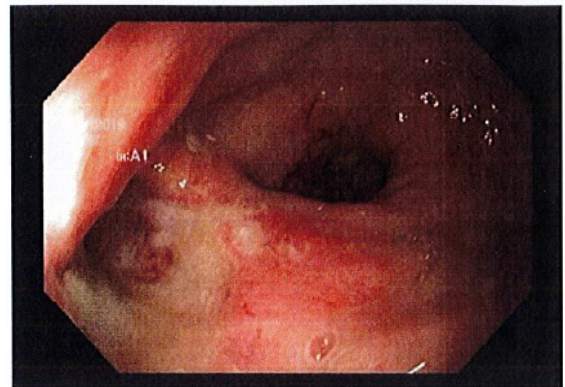


Figure 2: Gastroscope after the hematemesis. Defect in the gastric wall (origin of the gastro bronchial fistula (yellow arrow).

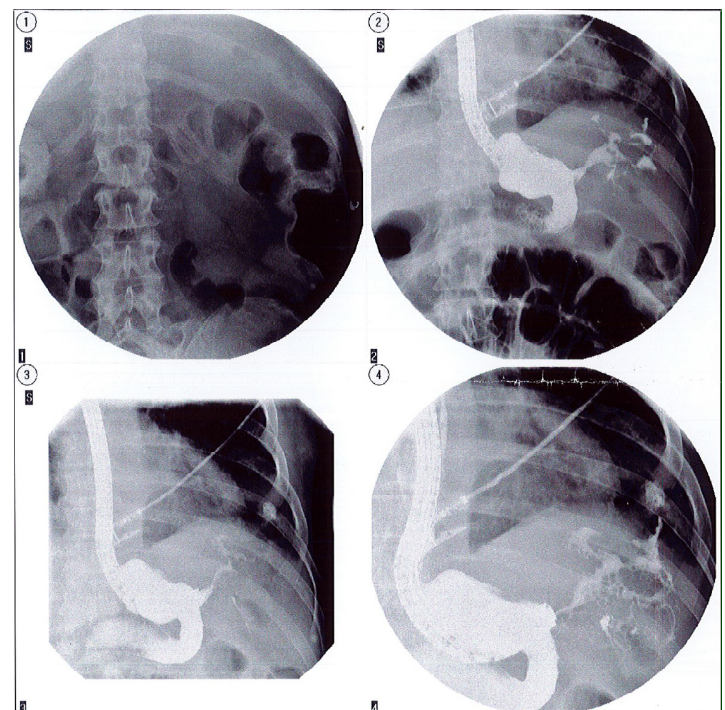


Figure 3: Oesogastric opacification. Opacification of GBF with communication between the fistula and the sub diaphragmatic collection (red arrow) and the left inferior bronchus (yellow arrow).

Twenty days after the hematemesis, and two days before the planned total gastrectomy, an 800 mL hemoptysis suddenly occurred, associated with polypnea and capillary desaturation despite the application of high concentration mask. Selective oral intubation of the right bronchus was necessary to exclude the bleeding of the left bronchus. The mechanical ventilation was

rapidly impossible and followed by capillary desaturation < 60% and insufflation airway pressure > 80 cm H₂O (59 kPa). Subcutaneous emphysema, upper cava syndrome and cardiorespiratory arrest rapidly followed. External cardiac massage, during a 10 mins period of low flow, associated with bilateral pleural drainage and 3 mg Epinephrine, permitted recovery of efficacy cardiac rhythm without supplementary use of vasopressive agents (blood lactate=9 mmol/L just after the recovery). The laboratory examination before and after the cardiorespiratory resuscitation are reported in Table 1.

Table 1-Evolution of the laboratory examination one hour before hemoptysis (H-1) and six hours after resuscitation (H+6)

Biologic parameters	H-1	H+6
Hemoglobinemia (g/L)	9,7	8,5
Platelets (10 ⁹ /mL)	392	317
Prothrombine rate (%)	78	63
Serum creatinine (μmol/L)	43	61
CPK (U/L)	13	104
LDH (U/L)	159	354
Serum AST (U/L)	60	83
Serum ALT (U/L)	76	76
Serum GGT (U/L)	42	58
Serum PAL (U/L)	96	120
Total bilirubin (μmol/L)	3	9
ultrasensible Troponine (ng/L)	8,82	58,5
PaO ₂ /FiO ₂	Not applicable	115

AST, aspartate aminotransferase; ALT, alanine aminotransferase; GGT, gamma glutamyl transpeptidase; CPK, creatine phosphokinase; LDH, lactate deshydrogenase

Cardiac echography did not demonstrate cardiac failure. Bronchial fibroscopy demonstrated red blood without extrinsic bronchial compression. After clinical stabilization, thoraco-abdominal CT scan Figures 4,5 was performed, that demonstrated right pneumothorax, moderate pneumomediastinum, important subcutaneous emphysema interesting the thoracic and cervical area but no active bleeding. Parenchymal lung condensation extended to almost all the left lung with partial collapse, and traces of any brain bleed were observed in the right bronchus.



Figure 4: CT scan after the massive hemoptysis and resuscitation. Right pneumothorax, moderate Pneumomediastinum and important subcutaneous emphysema interesting the thoracic and cervical area. Parenchymal lung condensation extends to almost all the left lung, with partial collapses, false aneurysm of the ventro-basal segmentary bronchial artery and trace of any brain bleed in the right bronchial tractus. In the abdomen: fistula tract between the gastric surgical slice and the left bronchial tractus, especially the left ventro basal bronchus. False aneurysm of the splenic artery in contact of the surgical gastric section.

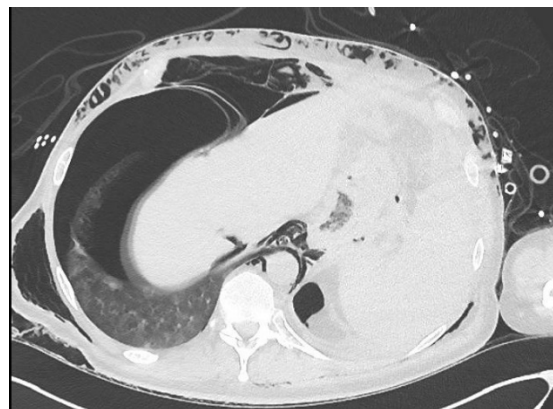


Figure 5: Abdominal CT scan after the resuscitation demonstrating waste aeric effusion in the peritoneum and the retro peritoneum.

Uni pulmonary mechanical ventilation was performed during, 24 hours. Because of difficulties to clear the CO₂ from the blood (arterial blood gas showed PH 7.16 and PaCO₂ 10.1 kPa) and the need of rapid surgery, veno-venous Extracorporeal Lung Suppleance (ECLS) was implemented. Total gastrectomy with oesophageal anastomosis and Roux en Y anastomosis was performed under ECLS, two days after the cardiac arrest. Anti-biotherapy was adapted to bacteriologic pulmonary sampling (*Klebsiella variicola*, *Streptococcus* and *Enterococcus faecalis*).

Vasopressive therapy, reintroduced during the surgery was stopped at Day (D) 1, ECLS interrupted at D7 and the patient was weaned from the mechanical ventilation at D11. The follow-up was marked by post anoxic encephalopathy. Forty-two days later, the patient was discharged from ICU and admitted in a rehabilitation center.

Discussion

We report for the first time the succession of hematemesis then massive hemoptysis complicated by cardiac arrest with favorable outcome. This case deals with three important questions:

- How manage GFB
- The timing of the surgery in patient with severe weight lost (46% in our case)
- How manage massive hemoptysis

In the bariatric surgery, the incidence of gastric fistula varies from 1.47 to 5.2% [1-3] whereas the incidence of GBF is lesser than 0.2% [1], with only one case reported with hemoptysis [6]. A study reported 36 cases of GBF, 67% were following upon sleeve gastrectomy, 67% were women and 50% presented history of gastric surgery [3]. The management of GBF consisted in conservative treatment (drainage guided by endoscopic and/or CT scan techniques and jejunostomy or post pyloric nasojejunal probe for enteral feeding) and in non-conservative treatments sleeve to bypass conversion, total gastrectomy; total oesogastrectomy with reconstruction by coloplasty, on digestive tractus combined with thoracic intervention-bronchial stent, wedge left lobectomy or left lower lobectomy [1-7]. At this date, no consensus exists, and medical strategies are discussed in each case. The unique reported case of hemoptysis, 5 months after adjustable gastric bands tub, did not report the cause and the retrieval of the ring associated with repair of the left diaphragmatic defect definitely treated the hemoptysis [6]. In our case, the patient underwent first conservative treatment with endoscopic drainage but because of the failure of the internal drainage, we decided planned total gastrectomy after re-nutrition by post-pyloric nasogastric probe. Because massive hematemesis occurred before the planned total gastrectomy, the total gastrectomy was performed in emergency under ECLS.

The second important point of the bariatric complicated surgery is the timing of the second surgical procedure in patient with dramatic weight lost. Indeed, the undernutrition increases postoperative morbidity and mortality, especially because anastomotic complications [8-15]. Then, according to recommendations [16], preoperative feeding should be done in patients with moderate or severe weight loss, for whom a high nutritional risk procedure is indicated (in our case, gastrectomy).

Concerning the gastric surgery, prospective study demonstrated increase in postoperative morbidity (18.3% vs 33.5%, $P=0.012$) and mortality (2.1% vs 6.0%, $P=0.003$) between

patients with artificial nutrition and patients without [17]. In our case, after the control of hematemesis and because of the absence of hemoptysis, we decided artificial enteral feeding by post pyloric nasoduodenal probe. But hemoptysis occurred at the end of the parenteral feeding period and the patient could not undergo the planned surgery.

The patient presented massive hemoptysis, while the volume was > 200 mL [18]. The sign of severity was the respiratory failure associated with blood flooding of the left lung [19]. We did not have the time to instill vasoconstrictive agent by bronchial fibroscopy. We could only verify the absence of bleeding in the right bronchus and the correct exclusion of the left lung to maintain minimal oxygenation [18]. Bronchial arteriography had not been performed because the absence of active bleeding at the CT scan and the severe clinical status of the patient. Left pneumonectomy was discarded because the very high mortality in such a patient and the presence of barotrauma in the contralateral lung. In view of the medical literature [18], the use of systemic vaso constrictive agents (terlipressine, vasopressin), bronchial arteriography and pulmonary phlebography could be considered. Because techniques of extracorporeal oxygenation are easy to perform in our center, we thought that it was the best solution permitting rapid definitely surgical procedure.

Conclusion

GBF is a rare and severe complication of the bariatric surgery followed exceptionally by a hemoptysis. The treatment is highly specific within medical and surgical level. Extracorporeal oxygenation technique played probably a crucial role in the survival of our patient with massive hemoptysis.

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