Duodenal intussusception of the remnant stomach after biliopancreatic diversion: a case report

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Abstract

Background: We present a rare case of an antegrade intussusception of the remnant stomach four years after a biliopancreatic diversion.

Case presentation: A 55-year-old female patient presented with epigastric pain in our emergency room. Laboratory parameters showed an anemia as well as elevated transaminases and hyperbilirubinemia. The CT scan showed an intussusception of the remnant stomach into the duodenum followed by cholestasis. At laparotomy the remnant stomach was resected.

Conclusion: Bowel obstruction and intussusception after bariatric surgery are a rare but often unrecognized complication. Sonography as well as a CT scan should be performed. The exploratory laparoscopy however is the most valuable diagnostic tool in patients with suspected intussusception, due to the high rate of non-specific symptoms and misinterpreted radiographic investigations.

Keywords: Morbid obesity, Scopinaro, Small bowel obstruction, Intussusception

Backround

Bariatric surgery is a suitable treatment of morbid obesity with long term sustainable weight-loss [1,2]. Surgical procedures are standardized, highly efficient with low rates of complications and mortality. One of the rare long term complications is small bowel obstruction [3], which can be caused by internal hernia or intussusception, with higher risks after procedures involving a Roux-en-Y reconstruction compared with sleeve gastrectomy [4,5]. A very rare but often unrecognized problem is intussusception, most frequently seen (86%) as a retrograde intussusception of the common channel towards the jejunojjunostomy [6].

Case presentation

The 55-year-old female patient arrived in our emergency room with epigastric pain for two days. The patients' prior events are sown on Table 1.

On arrival in our emergency room, the blood work showed normal leucocyte counts and a normal CRP value, but elevated transaminases and hyperbilirubinemia. An ultrasound in the emergency room showed a hyperchoic
mass in the liver hilum and intrahepatic cholestasis. With
the epigastric pain continuing, we decided to perform a
CT-scan with oral contrastation (Fig. 1a), in which evi-
dence was seen of an intussusception reaching the liga-
ment of Treitz with consecutive intrahepatic cholestasis.
A complete antegrade intussusception of the remnant
stomach into the duodenum reaching up to the ligament
of Treitz (Fig. 2b) was found during surgery. The intussus-
ception was reduced (Fig. 2c-d) and the remnant stomach
was resected (Fig. 1, right). The gastrojejunal anastomosis
ulcer was resected as a short segment. A new anastomosis
was fashioned using a linear stapler. The biliary as well as
the common channel remained unchanged with 250 cm
and 100 cm respectively. The alimentary channel was
shortened to 80 cm.

Following the procedure, no further blood transfusion
was needed, and the patient was discharged on the sixth
day after surgery. The pathological examination showed
a tumor free specimen with chronic antrum gastritis and
no indication of malignancy.

Discussion and conclusions
Intussusceptions leading to small bowel obstruction after
bariatric surgery are rare. A retrospective single institution
study of Zak et al. [7] showed a higher incidence of
repeated operations after Roux-en-Y gastric bypass com-
pared to sleeve gastrectomy. After six years of follow up,
6,9% of 934 patients undergoing RYGB required
reoperations for other reasons than cholecystectomy.
Non-healing ulcers and intussusception were responsible
for 3,7% of these. In their review including 9527 patients,
Koppmann et al. [3] described an overall incidence of small
bowel obstruction after RYGB of 3,6%. Those complications
include internal hernias (due to a Petersen’s space hernia,
the mesomesenteric defect at the jejunojejunostomy and in
the case of a retro colic technique, the mesocolonic defect)
in ≤1% in most RYGB studies, an obstruction a the jejuno-
jejunostomy (due to luminal narrowing or acute angulation)
in 0,5% and incisional hernias in 0,3% of the cases. In only
10 reported cases included in their review, an intussusce-
tion was the cause of the small bowel obstruction. An
intussusception can be retrograde or antegrade, but the
retrograde intussusception of the common channel is the
most common one (86%). Female gender and weight loss
are risk factors for intussusception [6]. The most common
symptoms are abdominal pain and/or nausea and vomiting.
A peritonitis is very uncommon and only 10% of the
patients have a palpable mass [8]. Compared to laboratory
parameters and physical examination, imaging is much
more effective method for diagnostics, with the CT being

Table 1 Schematic life-line of the patient including year, weight and event

| year     | event                                              | weight (kg) | weight change (kg) |
|----------|----------------------------------------------------|-------------|--------------------|
| 1995     | Vertical gastroplasty by Mason                     | 185         | −90                |
| 2012     | Gastrogastric fistula                              | 90          | 87                 |
| 2013     | Biliopancreatic diversion by Scopinaro             | 177         | −107               |
| early 2017| Anemia; gastrojejunal ulcer in ogd                  | 70          | −3                 |
| mid 2017 | Resection of remnant stomach                       | 67          |                    |

Fig. 1 Vertical gastroplasty by Mason (left). Biliopancreatic Diversion by Scopinaro (middle). Resection of remnant stomach and redone gastrojejunal anastomosis (right)
the technique of choice, with a sensitivity ranging between 64 and 81% [3, 9], but also with its limitations due to a weight limits or the radius of the gantry. An endoscopy might show a stenosis or an ulceration of the upper gastrointestinal tract, but also has its limitations, even with the double-balloon-technique, when trying to reach the remaining stomach. The exploratory laparoscopy is the most valuable diagnostic tool in patients with suspected intussusception, due to the high rate of non-specific symptoms and misinterpreted radiographic investigations. In summary, when presented with a small bowel obstruction after bariatric surgery, the surgeon has to compare the risk of an increase of the patient’s mortality in case of a bowel necrosis due to a delay in diagnostics with a relatively minimal morbidity of a negative exploratory laparoscopy.

In conclusion, agreeing with the personal guidelines presented by Bag et al. [6] and Koppmann et al. [3], we strongly emphasis the importance of early imaging diagnostics, preferably the CT and exploratory laparoscopy or even laparotomy in more complex cases.

Abbreviations
BPD: Biliopancreatic diversion; RYGB: Roux-en Y gastric bypass

Availability of data and materials
The patients data is in our patient information system. Upon request, more information may be send to you via email.

Authors’ contributions
J-NK is the corresponding author, drafted the manuscript and implemented the suggested changes by the reviewer, JB was the surgeon on call and acquired the patients’ data and the intraoperative pictures. ML provided the pre-surgical data of the patient and supported her with the nutritional expertise and finalized the visualization of the anatomical changes. CS provided the endoscopic expertise. MA provided the postoperative data, acquired the patient’s permission for publication. TB helped structuring and revised the manuscript critically for important intellectual content and provided us with the background information. All authors read and approved the final manuscript.

Ethics approval and consent to participate
No ethics approval was needed.

Consent for publication
Written informed consent was obtained from the patient for publication of this article and any accompanying tables/images. A copy of this written consent is available for review by the Editor of this journal.

Fig. 2 a Coronal cross section CT with oral contrastation with a target sign. b Intraoperative image of the negative lumen of the intussuscepted remnant stomach. c Blunt manual reposition of the remnant stomach. d Fully repositioned remnant stomach (top) with the transverse colon (bottom) as a size comparison.
Competing interests
The authors declare that they have no competing interest.

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