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Stricture after laparoscopic sleeve gastrectomy – case report

Zwężenie po laparoskopowej, rękawowej resekcji żołądka – opis przypadku

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Summary

One of the specific complications associated with laparoscopic sleeve gastrectomy is sleeve stenosis. It takes place mostly at the incisura angularis. We describe a 17-year-old patient with a stricture of sleeve and symptoms of severe gastrointestinal obstruction immediately after surgery. The patient underwent relaparoscopy on the 21st postoperative day, followed by two sessions of endoscopic dilatation using balloons with a diameter of 16 and 18 mm, respectively, on the 28th and the 41st postoperative day. Relief of clinical symptoms was obtained despite persisting mediocre degree of stricture in the radiological image. The study presents the course and outcomes of treatment, and discusses the basic issues related to the strictures after laparoscopic sleeve gastrectomy basing on the available literature.

Treatment of the strictures after sleeve gastrectomy is generally long-term and difficult and requires a lot of experience from the surgical and endoscopic team. The choice of the method of dealing with this complication depends on experience, the length of stricture and its location. Development of a surgical technique preventing the occurrence of stricture is of great importance.

Streszczenie

Jednym ze specyficznych powikłań związanych z laparoskopową, rękawową resekcją żołądka jest zwężenie wytworzonego mankieta. Do zwężenia dochodzi najczęściej w okolicy kąta żołądka. Opisujemy przypadek 17-letniej pacjentki, u której doszło do zwężenia wytworzonego mankieta i wystąpienia objawów wysokiej niedrożności przewodu pokarmowego bezpośrednio po zabiegu operacyjnym. U pacjentki wykonano relaparoskopię w 21. dobie pooperacyjnej, a następnie przeprowadzono dwie sesje rozszerzania endoskopowego przy użyciu balonów o średnicy 16 i 18 mm odpowiednio w 28. i 41. dobie pooperacyjnej. Uzyskano ustąpienie objawów klinicznych pomimo utrzymywania się miernego stopnia zwężenia w obrazie radiologicznym. W pracy przedstawiono przebieg i wyniki leczenia oraz omówiono podstawowe zagadnienia związane ze zwężeniem wytworzonego mankieta po rękawowej resekcji żołądka na podstawie dostępnej literatury.

Leczenie zwężeń po rękawowej resekcji żołądka jest trudne, na ogół długotrwałe i wymaga dużego doświadczenia od zespołu chirurgicznego i endoskopowego. Wybór metody postępowania w przypadku tego powikłania zależy od posiadanego doświadczenia, długości zwężenia i jego lokalizacji. Ogromną rolę odgrywa wypracowanie techniki operacyjnej zapobiegającej wystąpieniu zwężenia.

INTRODUCTION

Bariatric surgery is a recognized method of treating morbid obesity (1-5). Sleeve gastrectomy, gaining increased popularity, is one of the operating methods used in the surgical treatment of obesity (6, 7). One of the specific complication associated with this procedure is stenosis of the sleeve (8, 9). The choice of the method of dealing with this complication depends on experi-

ence, the length of stricture and its location. The primary method of treating strictures after sleeve gastrectomy is dilatation with endoscopic balloons (10, 11). In the absence of efficacy of endoscopic methods, surgery should be considered (10, 12-14). We describe a case of successful endoscopic balloon dilatation in the management of symptomatic stricture after sleeve laparoscopic gastrectomy in a 17-year-old female patient.

CASE REPORT

A 17-year-old female patient, with arterial hypertension and body mass index (BMI) of 42.7 kg/m², was qualified for a bariatric surgery. In September 2010, the patient underwent a laparoscopic sleeve gastrectomy. To calibrate the sleeve, a 36Fr gastric tube was used, the staple line was oversewed with V-Lock (Covidien). The surgery proceeded as planned, the operative time was 150 minutes. On day 1, control water-soluble contrast study was performed. It is a routine procedure used in our center. The study found no passage of contrast into the distal sleeve. A similar image was maintained despite repeating the examination twice at intervals of tens of minutes (fig. 1). On postoperative day 2, the patient underwent diagnostic esophagogastroduodenoscopy. The examination showed significant swelling of the mucosa of the sleeve, closing the gastric lumen, at the location corresponding to the level of obstruction in the radiological image and a stricture at a short section enabling the passage of a gastro-scope to the distal section of the stomach. Strict diet was administered, treatment was implemented using intravenous fluids, proton pump inhibitors, H2 blockers and non-steroidal anti-inflammatory drugs. On day 3, a contrast swallow test was performed, passage of contrast into the duodenum was found, with much obstructed passage in the middle of the body of the stomach. On day 10, control esophagogastroduodenoscopy was performed (with gastro-scope 12 mm) to give passage to the distal part of the stomach by a significant degree of stricture at the previously described location – enteral nutrition tube was positioned. Another contrast swallow test was performed, on day 15, again found no passage of contrast. The patient still experienced symptoms of high gastrointestinal obstruction. It was decided to perform a revision surgery. On the 21st postoperative day, relaparoscopy was performed to find stricture in the area of incisura angularis with inflammatory infiltration involving the stomach serous and adhesions to the omentum and duodenum. The adhesions were released without achieving improvement – the stricture was still present, as confirmed by an intraoperative gastroscopy. Since the length of stricture was approximately 1 cm, it was decided to attempt to perform an endoscopic dilatation or a temporary stenting and radical surgery was abandoned. When removing the gastro-scope, the enteral nutrition probe was accidentally removed. After the surgery, the symptoms of high obstruction persisted. Complete parenteral nutrition was administered and the patient was qualified for endoscopic balloon dilatation. The first session was held 28 days after sleeve gastrectomy using a balloon with a diameter of 16 mm under fluoroscopic guidance. During the procedure, no lumen was found at the location of the stricture but a passage of the endoscope was made and after the dilatation, a tube was positioned for enteral nutrition. Nutrison, 1000 ml (Nutricia) and 5% glucose, 500 ml were dosed daily through the probe. At the same time, the patient

had orally administered liquid diet. On the 41st postoperative day, another session of dilatation was performed with an endoscopic balloon with a diameter of 18 mm. Due to good tolerability of oral diet on successive days, the enteral feeding tube was removed. A control water-soluble contrast study showed no signs of difficult passage, despite the presence of a mild stenosis in the radiological image (fig. 2). The patient suffered no nausea, no vomiting, exhibited good tolerance of mixed diet and was discharged home on postoperative day 45, 4 days after the second session of balloon dilatation. The patient came to follow-up appointments in accordance with the schedule developed by our center, that is: after 3, 6, 9, 12 and 24 months. During the follow-up, she reported no nausea, vomiting, no dysphagia. The control laboratory tests performed after 12 and 24 months showed normal peripheral blood morphology and the levels of folic acid, vitamin B₁₂ and iron. The radiographs made after 24 months, despite the stricture found, showed free passage of the contrast into the distal sleeve and duodenum (fig. 3). Body mass index of the patient before the operation was 42.7 kg/m², and her weight was 122 kg. Parameters of weight loss after 12 and 24 months were, respectively: %EWL – 81.4 and 86.6%, BMI – 26.3 and 25.2 kg/m², her weight was 75 and 72 kg.

DISCUSSION

Stricture of the sleeve after laparoscopic sleeve gastrectomy is a rare complication. The frequency ranges from 0 to 4% (8, 9, 15, 16). Diagnosis is based on clinical symptoms, radiological studies of the upper gastrointestinal tract and esophagogastroduodenoscopy (10, 13). Symptoms of the stricture within the produced sleeve are typical for high obstruction and include nausea, vomiting and the lack of oral diet toler-



Fig. 1. Water-soluble contrast study showing complete obstruction – 1st postoperative day.



Fig. 2. Contrast X-ray after endoscopic balloon dilatation.



Fig. 3. Long-term result.

ance. Delayed diagnosis or inadequate treatment can lead to dehydration, prerenal kidney failure and deterioration of the general condition of the patient. In the case described, the stricture was found on the first postoperative day, during routine radiological examinations performed. Clinical symptoms in the form of vomiting and dysphagia appeared when trying to implement an oral diet. Impairment of the passage immediately after the surgery is associated, in most cases, with the swelling of tissues and disappears after a few days of conservative treatment. In the case described, on the second postoperative day, gastroscopy was performed to find stricture and swelling of the mucosa but an endoscope passage was performed into the an-

trum with visualization of the pylorus. Gastroscopy in the complete absence of the passage of contrast in radiological examinations immediately after the surgery enables assessing whether it is possible to passage an endoscope to the distal part of the stomach. In the case of total closure of the sleeve lumen, early surgical intervention should be considered (17, 18). In our case, an attempt of conservative treatment was taken and i.v. fluids, a proton pump inhibitor, an H2 blocker and non-steroidal anti-inflammatory drugs were administered. Subsequent gastroscopy was performed on the 10th postoperative day, enteral nutrition tube was positioned and feeding started. Administration of nutrition is essential for the conservative treatment of stricture after sleeve gastrectomy. In the case of preserved passage to the duodenum, enteral nutrition is preferable, as compared to complete parenteral nutrition.

Due to persistent clinical symptoms of high obstruction and total lack of passage in subsequent radiological examinations, the patient was qualified for relaparoscopy. In the literature, there are cases described of early revision intervention in the case of symptomatic strictures (17, 18). Revision surgery can be effective in the presence of a large hematoma causing external compression or incorrect continuous suture causing kinking of the narrow sleeve. In such a situation, an effective management is to evacuate the hematoma or cut the continuous suture (17, 18). In our case, during relaparoscopy, inflammatory infiltration and adhesions to the greater omentum and the duodenum were found in the area corresponding to the stricture. After the release of adhesions, there was no improvement, which was confirmed during intraoperative endoscopy. It was not possible to reveal the continuous suture of the staple line. Establishment of a continuous suture can encourage the kinking of the sleeve. Many surgeons oversee the staple line (9). The aim is to reduce the rate of leaks and bleeding from the staple line. There are, however, prospective, randomized studies showing that oversewing staple line using a continuous suture do not affect the percentage of leakages and bleeding, but favor the occurrence of strictures (19). Accordingly, the merits of suturing the staple line is questioned (20). Switching to the use of fibrin glue to protect the staple line can reduce the incidence of symptomatic strictures (12). It seems that the diameter of the bougie used for calibration has smaller influence on the occurrence of strictures. Bougies having diameters of 16 to 60Fr are used (9). The rates of strictures in the case of the use of bougie with a larger diameter varies between 0.0 and 3.9% (8, 9, 21). The use of smaller diameter gastric bougies, for example, 34Fr, is not associated with a higher risk of strictures (15). In our patients, 36Fr bougie was used.

Due to the fact that the length of the stenosis recorded during the relaparoscopy was only about 1 cm, radical treatment was abandoned and the patient was qualified for endoscopic treatment. Two sessions of dilatation were performed using 16 and 18 mm en-

endoscopic balloons, respectively, on the 28th and 41st postoperative day. Short-segment stenosis may be treated successfully, in most cases with endoscopic balloon dilatation. In order to obtain the absence of clinical symptoms, typically it is required to perform several sessions (8, 10, 11). The available literature includes no clear recommendations on when, after the initial surgery, endoscopic management can be attempted. One of the reports shows a regimen of endoscopic dilation consisting of five sessions, using a balloon with a diameter of 40 mm and gradually increased pressure. The duration of the session was 10 to 20 minutes. According to the authors, in the case of no success, the regimen may be repeated after one month (11). Dilation should be continued, if gradual improvement takes place, until oral diet is well-tolerated. In order to allow oral intake, a self-expanding stent may be considered. Opinions on the effectiveness of this procedure in the case of stricture seem to split (10, 22). Failure of endoscopic treatment warrants consideration of redo surgery. This situation relates primarily to long-segment stenosis. The possible surgical options

include: Roux-en-Y gastric bypass, seromyotomy or the Heineke-Mikulicz stricturoplasty (10, 12-14). In extreme cases, a need for gastrectomy was reported (11).

In our case, the symptoms disappeared after two sessions of endoscopic dilatation using 16 and 18 mm balloons. The patient was discharged with a well-tolerated oral diet on the 45th postoperative day. During the 48-month follow-up, satisfying parameters of weight loss were recorded with complete resolution of clinical signs of the stricture and lack of nutritional deficiencies, despite the presence of mild stenosis in contrast swallow study.

CONCLUSIONS

Treatment of the described complication of sleeve gastrectomy is difficult and requires a lot of experience from the surgical and endoscopic team. Development of a surgical technique preventing the occurrence of stricture is of great importance. Treatment in these cases is generally long-term, in connection with which both the surgeon and the patient must show great patience.

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