Open Duodenal Switch. Video

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The basic steps of the Open Duodenal Switch (ODS) / Bilio-pancreatic diversion (BPD/DS) are presented in this film: A upper transverse abdominal incision, the Rochard separator, the division of the stomach (Vertical Gastrectomy) to form a sleeve (gastric tube), the running single-layer anastomosis and the closure of the abdomen with running thread of Maxon 2/0

Key Words: Laparotomy Duodenal Switch; Bilio-pancreatic diversion; Gastric Tube; Gastric Sleeve; Mixed surgery

Introduction

Surgery is the most effective method to treat Excess Weight (EW) in the Morbidly Obese (MO), a patient with “chronic caloric intoxication” and a perennial, progressive, multi factorial disease causing other diseases (co morbidities) and premature death. Without treating the cause and so not obtaining a cure, the surgeon changes the digestive tract (healthy organs that do not cause the disease) in a “restrictive” form (decreasing the food intake), “mal absorptive” (decreasing small bowel mucosa exposed to food absorption) or “mixed”(using both mechanisms).

Scopinaro [1] started the “mixed surgery” in 1976 combining the principles of intake restriction by reducing the stomach volume and the mal absorptive by using a partial reduction of the intestine exposed to food absorption. Thus, The Bilio-Pancreatic Diversions (BPD) was born.

The development of the Open Duodenal Switch (ODS) was a slow process. It was Hess’s [2, 3] idea to make a modification of the BPD and performed the first ODS in March 1988 (on a BMI-60 female who 17 years later has a BMI-29) and Marceau [4,5] was the first to publish the ODS and the most extensive experience stating that the duodenum ought to be divided and “not only stapled”. Baltasar [6, 7, 8, 9] and Rabkin [10] have also added their experience.


The ODS operation consists of a Vertical Subtotal Gastrectomy (VG) with pyloric preservation for a restrictive effect and a BPD (excluding the first half of
the small bowel) by making a distal Common Channel (CC) of 65-100 cm. as the mal absorptive component. Hess [14] recommends to measure the whole small bowel from the ileum-cecal valve (ICV) and make a CC with the distal 10%, a proximal Digestive Loop (DL) of 40%, and a bypassed Bilio-Pancreatic Loop (BPL) of 50%.

The VG is the first part of the operation and can be done isolated as a primary procedure (staging) [15, 16] or the DBP can be done first, as recommended by Marceau [17], or a complete procedure (both GV and BPD) can be done.

We can measure [18] the Body Mass Index (BMI) = Kg/m², the percentage of EW loss= %EWL = [(Initial Weight – Final Weight) / (Initial Weight – Ideal Weight)] x 100 and today % Excess BMI (PBMIL) = 100 – [Final BMI - 25 / Initial BMI -25) x 100]. The Goal or “Predicted” BMI loss (PBMIL) is the Predicted BMI that depends on the Initial BMI (IBMI), and the PBMI = Initial BMI * 0.4 +12. Recently Del Castillo [19] has reproduced the same measures and obtain the same formula.

**Technique of the ODS**

The patient is supine and intubated on the OR table with the legs together. There is a strong support at the head of the OR table where the large Rochard separator is attached. The operation is always done with three trained surgeons. A wide transverse incision is used from one costal margin to the other and the oblique and partially the transverse muscles are divided by electro-coagulation.

The main incision is covered by an isolating plastic (Steri-Drape 1075 ™3M) to protect the main wound from bowel contamination (not shown in this film).

The liver Teres and round ligaments are divided and a prophylactic cholecystectomy is done since, after dividing the duodenum, it is not possible to explore the end of the biliary tree using endoscopy.

The pylorus is identified and all the vessels of the greater curvature are divided starting at 4 cm from the duodenum distal to the pylorus and reaching up to the hiatus. The duodenum is divided with a lineal stapler and the distal duodenal stump is oversewn with a Lambert-type suture at the serosa.

A 12 mm (32F) Bougie is introduced by the anesthetist and leads to the lesser curvature. The VG is done starting at less than 2 cm from pylorus (partial antrectomy) and using linear staplers to reach sequentially the fundus. Care is taken to keep away from the esophagus since this is an area of cumbersome leaks.

A continuos Lambert-type suture of Maxon (or better yet Prolene) is used from the esophagus to midline and a second one from mid-stomach to the end of the stapler-line.

The appendix is identified and removed. The whole small bowel is partially stretched and is measure with a 25 cm tape. The CL is mark at 10% of the length, generally at 75-100 cm from ICV. For the AC, another 40% of the bowel is measured. The remaining 50% will be the BPL. The mesentery of the bowel is divided at the DL and BPL junction. The DL is brought up trans mesocolic and joined by an end-to-end anastomosis to the proximal duodenal stump using continuous Maxon suture 3/0. The Roux-en-Y BPL and DL is joined by an end-to-side single layer anastomosis. Two drains are left near the VG and Duodeno-ileal in the abdomen. Abdominal closure is done by using a running stitch of Maxon in two planes, after changing gloves and gown, to prevent main wound contamination, infection and post-op hernias. The subcutaneous is profusely irrigated and drained. Silk is used for the skin.
The aim of this video is to show the technique used on 520 patients from 1994 to 2000. 5 patients (0.04%) died, 4 due to leaks, 10 required a total Gastrectomy. At that time, since the esophageal gastric leaks, having not been described, were almost unknown. Later, these leaks became common with the Gastric Sleeve.

OR time including gallbladder, appendix, gastrectomy and BPD was close to 88-90 minutes due to the coordination of the three surgeons, and the ODS is more easily reproduced than the LDS.

Mean IBMI was 51 but we have perform ODS in patients up to BMI-100. %EWL at 5 years has been > 50% in 87.5% of patients [20,21]. We think that %EWL underestimates the results in super obese patients. Using the PPBMIL, the final BMI depends on the IBMI and these figures are 100% compared with other operations, and that means that the DS is more effective than any other operation for obesity. There is randomize studies comparing DS and RNY-GBP [22,23] in the super obese, and the conclusion is that DS is a much better operation. We have shown that gastric emptying was not affected by the DS [24].

**Why do we talk about ODS in 2012?**

In a recent report in 2010 [25] from the ASMBS, the Bariatric Outcomes Longitudinal Database (BOLD) informs us that out of 57,918 patients who had obesity surgery in the US, only 499 had the DS: 337 had the ODS (67.5%) and only 166 (32.5%) had the LDS and of those 9 required conversion to ODS, four of which were done by robots. In the most technologically developed society in the world only 32.5% of the DS are LDS. So even thought the video we present is old, it is still useful and this is our aim.

**Conclusion**

The ODS, even though it is losing ground to the LDS, is a useful technique in the morbidly obese and even better in the super obese. WL measured by the PPBMIL is higher than in any other surgical technique. The ODS required less instrumental and technical cost and it should be available to surgeons in the bariatric arsenal.

**References**

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