Biliopancreatic Diversion with a Duodenal Switch

Douglas S. Hess MD, FACS; Douglas W. Hess MD

Wood County Hospital, Bowling Green, OH, USA

Background: This paper evaluates biliopancreatic diversion combined with the duodenal switch, forming a hybrid procedure which is a combination of restriction and malabsorption.

Methods: The evaluation is of the first 440 patients undergoing this procedure who had had no previous bariatric surgery. The mean starting weight was 183 kg, with 41% of our patients considered super morbidly obese (BMI > 50).

Results: There was an average maximum weight loss of 80% excess weight by 24 months post-operation; this continued at a 70% level for 8 years. Major complications were found in almost 9% of the cases. There were two perioperative deaths, one from pulmonary embolism and one from acute pulmonary obstruction. There were 36 type II diabetics, all of whom have discontinued medication following the surgery. Seventeen revisions were performed to correct excess weight loss and low protein levels. There have been no marginal ulcers, no cases of dumping syndrome, no foreign material used, and the procedure is a pyloric saving procedure which is functionally reversible.

Conclusions: This operation has vastly improved the lives of seriously obese patients with many comorbidities. All type II diabetics have essentially been cured of their disease. The procedure was tolerated well and patients are quite satisfied. There was minimal regain of weight with this method. © 1998 Lippincott-Raven Publishers.

Key words: Biliopancreatic bypass, duodenal switch procedure, malabsorption, morbid obesity, vertical gastrectomy, pylorus preservation.

Introduction

In 1988, using a combination of Dr. Scopinaro’s biliopancreatic diversion (BPD) and Dr. DeMeester’s duodenal switch procedures, we developed a hybrid operation which has the advantages of the BPD without some of the associated problems. This operation is now used by us for all our bariatric patients, both in primary surgical procedures and reoperations.

The difficulty of establishing an operation that has both long- and short-term success is well known. Bariatric surgery is either restrictive or malabsorptive in nature, each with its own advantages, disadvantages and complications. While trying to find a procedure that would produce better long-term results and fewer failures, i.e. regain of weight, we began to look at the Scopinaro BPD. First of all we considered it only for reoperations on failed restrictive procedures. Our first cases were reoperations with the standard Scopinaro BPD and a few without a distal gastrectomy. However, the dense adhesions found in the upper gastric area of previously stapled patients caused difficulty in placing the anastomosis and we were troubled with marginal ulcer formation. We considered a method to anastomose the ileum to the duodenum away from the site of the previous surgery. While searching the literature on the subject of duodenogastric reflux, we found DeMeester’s article about the duodenal switch procedure and adapted it to our use.

The first patient to have a BPD with a duodenal switch procedure was a male patient who had had a transverse gastroplasty 9 years earlier, in 1979. He was 190 cm tall and at the time of his surgery in 1979 he had weighed 166 kg. That surgery eventually failed due to staple-line disruption, and his weight had increased to 206 kg by the time of his reoperation in March, 1988. He also had developed chronic heart failure, shortness of breath, and was no longer able to perform many daily activities. Presently, he is approximately 9.5 years after the conversion to a duodenal switch with a BPD, weighs 125 kg, and is free from problems associated with his obesity. Due
to the success of our reoperations, we decided to use this procedure for our primary operation for both the morbidly and super morbidly obese patients.

Our first duodenal switch primary procedure was performed on a morbidly obese male patient (BMI, 46) in May, 1988. At his most recent weighing on October 29 1997, his excess weight loss was 88%, BMI was 26, and his percent of ideal weight (% IW) was 112. The first super morbidly obese patient (BMI 58.7) was a female operated in June, 1988. At her last weighing on June 10 1997, her excess weight loss was 78%, BMI was 30, and her % IW 137. Both of these patients are more than 9 years post-operation and are doing well. This operation is now our procedure of choice for surgical correction of morbid and super morbid obesity.

This paper will be limited to our first 440 patients and to primary procedures only. Reoperations are not included.

### Rationale for Duodenal Switch

Examining the experimental work on dogs of Dr. DeMeester et al. as described in the Figure 1, it is evident that a small segment of proximal duodenum protects against marginal ulceration. The surgical procedures for all groups are basically the same, except that the dogs in groups C and D had a short segment of proximal duodenum left in place before the jejunostomy. The dogs in groups A and B had a high incidence of ulcers, perforation and weight loss. Groups C and D had significantly fewer ulcers and almost no perforations; however, the weight loss did not change. Using this data and DeMeester’s report of patient cases (i.e. duodenal switch) we believed that the combination of the BPD and the duodenal switch is a logical progression of this procedure. To achieve the gastric restriction required by Scopinaro’s BPD a vertical gastrectomy is performed; this removes a large portion of the fundus and

![Diagram of duodenal switch procedure](image)

**Figure 1.** Results of four diversion procedures with their effect on ulcer incidence, perforation and weight loss (reproduced, with permission, from reference 2).