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Prevent and Undo Mistakes in Surgery

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Abstract

Introduction: Reporting "wrongs" or negative results in Medicine is essential and doing so in surgery should be a moral obligation, to prevent others from making the same mistakes that can bring negative results. Prevention is better than cure!

Method: A review is made of the aggravations or negative or non-positive effects that we have found in our own surgical practice in the Surgical Service in the County Hospital of Alcoy, Alicante, Spain for 40 years, and that we publish in order to show that there is a place for surgeons to teach others, so that they avoid negative consequences.

Results: We have found 23 subjects to make a correction of the original descriptions or at least draw attention that their correction was necessary.

Discussion: Reporting positive results is important in all scientific aspects, but they are much so to communicate the negative effects of our actions, and even more so as doctors in Medicine.

Keywords: Negative results; Non-positive results; Medicine; Surgery

Introduction

We expose a series of cases or episodes in which the principles of reporting negative or non-positive results have been or can be implemented.

Hepatic necrosis

A chronic alcoholic patient suffered constant pain from chronic pancreatitis. A cephalic pancreatectomy was proposed and performed. At surgery, injury of the hepatic artery occurred, and its immediate repair resulted in occlusion of the vessel, and postoperative hepatic necrosis that in those times (1983) before the liver transplant, led to death [1]. It was essential for us to report this disaster. The surgical journals refused to publish it. And they only accepted it when we took responsibility for possible lawsuits. Medical obscurantism leads other surgeons to ignore the complications of a technique.

Foreign bodies forgotten in the abdomen

A preventable surgical complication. We only know of few references, most of them in radiological journals and published in English. The standard procedure is counting process by the scrub nurse and then the circulating nurse in the operating room.

But ... that is not enough, because human failures are frequent that they must be prevented in detail. I was trained as surgical resident in NYC and two very important technical details were used: 1) Small gauzes were not allowed in the abdomen because due to of its small size, they can be easily forgotten, and 2) The scrub nurse used a large ring, that was tied (Figure 1) and unleased easily to the lap-pad [2-4]. No compress without ring was allowed to enter the abdominal cavity. At the end of the procedure the rings were counted. In cases of any doubt an intraoperative X-ray would rule out easily any metal body in the abdomen. This incident has never occurred in our hospital for 34 years. Then by "budgetary or technical decisions" that maneuver was abandoned. One year later, a patient died due an abandoned lap-pad left in the abdomen. And the ring system has been reinstated with very positive results.

Hepatic complications after bariatric surgery

Obese patients operated on with the complex Laparoscopic Duodenal Switch (LDS) technique may suffer liver complications. Baltasar [5,6] showed that some of this hepatic complication were not serious, but ... hepatic failure is always possible. Castillo from Santander, Spain reported the first liver transplant for this pathology [7]. There are only nine liver failures published in the world, and two of them are ours [8]. Is it that we are worse surgeons? Publishing negative results is seen

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as "unprofitable" when in truth it may be the other way around. In our second case, a liver transplant plus reversal of the Bilio-pancreatic Diversion (BPD) was possible and very successful.

Colonic perforation at colonoscopy

As the colon is generally well prepared, contamination is minimal and early colonic repair is the solution. The most important risk factor for this complication is the experience of the endoscopist [9]. All these explorations, from the legal aspect, should be "taped". This complication is not infrequent, now that colonoscopy is done as a screening method of colonic cancer.

Massive intestinal necrosis after VARY-Billroth-III

We used a novel technique in the treatment, now abandoned, of gastroduodenal ulcus in 129 patients. Vagotomy, antrectomy and reconstruction in Y-de-Roux to avoid reflux gastritis [10]. The results of the operation were very good, but two patients suffered intestinal necrosis, at long-term, and it was necessary to perform an intestinal resection. It was then very important to publish it so that other surgeons were aware of this complication.

The frustrated hope of the vertical banded gastroplasty

The operation described as VBG, by Mason in 1982 opened the door for all surgeons to perform bariatric surgery [11]. The most frequent failure of this surgery was that the staples of the gastric division "loosened" and the restrictive effect of the operation disappeared. The solution was to cut and divide all the viscera with staples, in this case the stomach, to avoid re-communication. Baltasar published this modification in 1990 [12], but ...and two years later it was published by McLean [13]. In 1991 the results seemed to be very good [14], but ... five years later we reviewed the same 100 patients and the results were so bad that we asked if it was "a frustrated experience" [15,16]. And in less than two years everyone stopped using it. That is the benefit of publishing negative results!

Total gastrectomy's

The complications of bariatric surgery that may require a total gastrectomy are rarely reported. Serra [17] in 2006 reported 9 patients who needed this therapy, with excellent results and then many publications have cited this work. But... nobody seems to need to "confess", when it should be the other way around to prevent others from suffering it.

Pharyngoesophageal lesions due to Chlorine ingestion

Four patients had a intake of chlorine as a suicidal attempt with severe esophageal lesions, they underwent immediate esophageal and stomach resection and then colon transposition [18]. Two of these patients with colon plasty to the pharynx later developed severe late stenosis in the hypopharynx and needed operations by the Plastic Surgery with a free vascularized dermo-cutaneous graft from the forearm. The skin of the donor was covered with thigh skin graft [19]. For our General Surgery Service, it is the most serious case that we had encountered and the "miraculous solution" was found after searching for years.

Internal hernia after Laparoscopic Gastric Bypass (LGBP) for obesity

One woman suffered this complication and resolved with re laparotomy [20]. The importance of publishing this complication is that it is the first world report of hernias in LGBP, and then, its diagnosis and treatment generated a literary explosion.

Figure 1: Lap-pad with ring to avoid forgotten bodies in abdomen.

Patient 1 Patient 2

Figure 1: Patient 1: Neck and donor area.
Patient 2: Donor and recipient areas.

Cardiac tamponade caused by cardiac perforation by a central catheter

A central catheter was placed in the operating room thru the jugular vein with the Seldinger technique after a gastric bypass operation. At 24 hrs he suffered a sudden deterioration while in the ICU and cardiac arrest. Autopsy confirmed right atrial perforation and pericardial effusion with plugging that caused exitus [21]. Delayed perforation is less common. The teaching of this case is that you have to suspect it. Months later another patient suffered the same complication and early diagnosis allowed open pericardial drainage and patient recovery. The publication of poor clinical results can help save lives in other patients!

Postoperative pancreatitis with "cutaneous burn" secondary to LDS

One patient suffered pancreatic fistulae to the skin two weeks after LDS probably caused by lesions of the anterior capsule of the pancreas and they healed after two months [22]. This type of episode in Bariatric Surgery and is totally preventable (Figure 2).

Rigid endoprosthesis due to severe stenosis and leakage after DS

A re-operated patient after Vertical Banded Gastroplasty (VBG) had an open DS reoperation for weight gain three years later. He developed a large gastric fistula at the esophageal-gastric junction that could not be repaired. A rigid, non-extractable esophageal stent (before the existence of extractable ones) was used [23]. The patient was asymptomatic for months, and then he suffered an obstruction above the stent due esophageal mucosa hyperplasia. It was resolved with a total gastrectomy. Sometimes in surgery, therapies previously not reported must be developed to solve especial

emerging complications. Removable stents are made today by many commercial companies and is the standard treatment.

Total gastrectomy's after DS in obesity

DS is the most complex operation in bariatric and gives the best long-term weight loss results. We have operated 950 morbidly obese patients with this technique [24]. The mortality of our group with the LDS is 0.43% and the leakage rate is 6.5%. We present 9 patients with leaks who required total gastrectomy without mortality. The results of weight loss are good and the quality of life acceptable in all but one of them who suffers episodes of hypoglycemia. This publication has been cited often.

Y-de-Roux diversion to treat gastric tube fistulas in laparoscopic Sleeve-Forming Gastrectomy (SFG)

Prevention and the diversion of the fistula are basic in the management of this serious complication. We reported in three publications the correction of this complication [25]. Bariatric surgeons know now how to prevent them, treat them with endo-stents and divert them when they become chronic.

Late gastric leak after SFG and its serious consequences

The SFG is one accepted technique in Bariatric Surgery. Being one of the simplest bariatric techniques, it is punishable by a severe very early (before the second week) fistula at the level of the gastroesophageal junction).

Late leaks are very rare [26], but complex to treat and we present two clinical cases

1) Case 1: A woman with SFG suffered a leak at 10 months. Conservative management was unsuccessful and required a total gastrectomy. She is now asymptomatic.

2) Case 2: A 65-year-old male BMI-40, with multiple comorbidities (hypertensive, diabetic, COPD with CPAC, atrial fibrillation, hypertensive heart disease, smoking, etc.) had the SFG in 2008. Then with IMC-19, 2 years later has all comorbidities cured.

Then suddenly he had abdominal pain suddenly and a left subphrenic collection was diagnosed. Percutaneous drainage was done. Conservative treatments (prolonged enteral nutrition, sealants and stents on two occasions) failed. By X-ray a fistulogram through the drain identifies the passage of contrast to the stomach. However, the leak was never demonstrated by oral contrast. One month after admission, the patient suffered episodes of transient cerebral vascular accidents. He was treated percutaneously with carotid intraluminal prosthesis. Abdominal aorta angiogram was normal.

Then he was treated by sequential Laparotomies (LT)

LT1. After 4 months waiting period with internal drainage, he had Roux-en-Y loop diversion of the fistula tract without incident.

LT2. Four days later he developed symptoms of peritonitis, and laparotomy was performed. A massive intestinal necrosis was present. The whole necrotic intestine was resected, conserving a loop of 20 cm above of the Y-de-Roux aboral, 60 cm of the proximal jejunum and 35 cm of distal ileus. In total 115 cm of intestine wax resected and three ostomies were done. The abdomen was not surgically closed but a skin zipper was used to review daily the viability of the bowel.

LT3. The abdomen was explored 3 days later, and a good condition of the abdomen was verified, without any pathological collections and that of the intestinal loops were healthy.

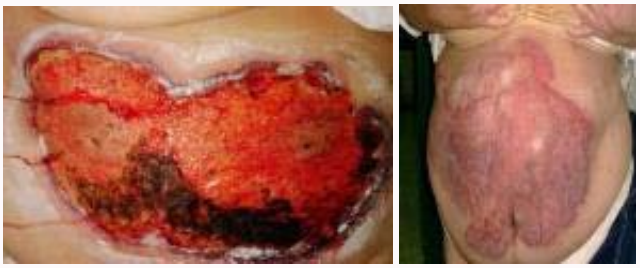


Figure 2: Two pancreatic fistulas after LDS.

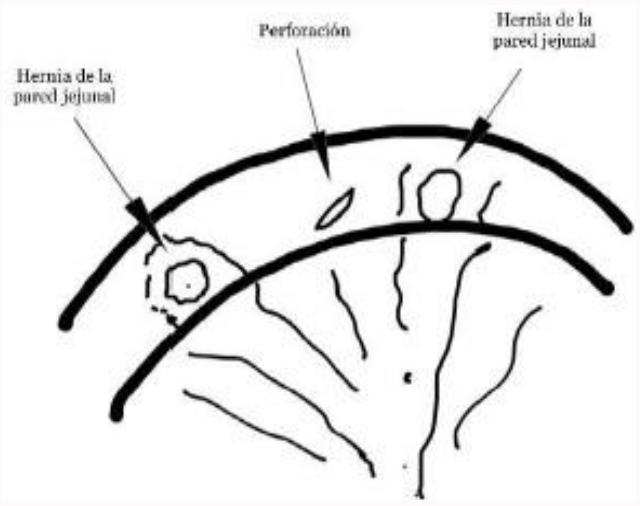


Figure 3: Mucous hernias without muscle protection.

LT4. He was re-operated at 28 days and the intestine re-anastomosed, jejune-ileal end-to-end, and the distal part of the Y-de-Roux to the proximal jejunum leaving the Roux-Y and in both cases repaired. But in the immediate postoperative period he suffered a new leak and a new correction.

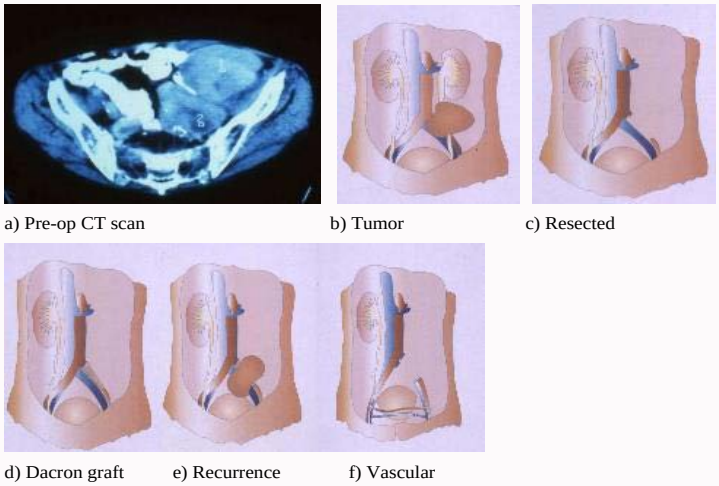
LT5. At 24 hrs suffers an anastomotic leak in the jejunum-ileal connection at its mesenteric border, he was re-operated, and an L-L anastomosis is re-created. There is evidence of a very spastic terminal ileum, possibly of ischemic origin that dilates with intraluminal catheter and glucagon and its plasticity is recovered.

LT6. The next day the patient was intervened again due to drainage of gastric contents and the new leak is evident, but now at the proximal part of the Y-de-Roux loop, in the anastomosis to the originally repaired gastric leak.

The shunt was removed; a vertical re-gastrectomy performed in the gastric reservoir and the proximal Y-of-Roux loop is anastomosed to the proximal jejunum end to side as one omega short circuit. During this procedure, a stenotic segment 10 cm length of ¡ distal ileum was detected, which it was probably the cause of the original of obstruction and all the previous leaks.

Since he had a very short small bowel, we have to be very conservative. An appendectomy was performed, and a biliary T tube inserted in both the proximal loop through the stenotic area to the cecum to maintain the intestinal passage. The patient survives the surgeries; the wound closes well and tolerates the intake.

LT7. The patient then initiates increasingly profuse rectal



a) Pre-op CT scan b) Tumor c) Resected

d) Dacron graft e) Recurrence f) Vascular

Figure 4:

bleeding, without the aboral endoscopy finding gastric pathology. It requires a relaparotomy 20 days later, to replace a larger T-tube. The impossibility of a resection of the narrow zone produced by intestinal ischemia and the multiple adhesions was evident. Intestinal hemorrhages continue, and 2 blood units are replaced on alternating days until a coagulation failure and multi-organic occurred, which led to his death 2.5 months after the first LT and 12 days after the last one, without the appearance of more intra-abdominal problems.

This second case is of a very late occurrence, because it appeared 2 years after the operation without incidents. We have no news of any other similar serious case and we must suspect a relationship with intestinal stenosis and episodes of intestinal obstruction due to mesenteric ischemia, as the repetition of leaks in each of the LT could not be attributable to a technical defect, but related to the vascular pathology of the patient, and whose hemorrhages and transfusions led him to death.

Early, Type I leaks, usually close with good drainage and nutrition in less than 41 days. Chronic Type II ones may need intervention, drainage, endoprosthesis, etc. Sometimes it is necessary, when they are transformed into chronic fistulas, a Y-de-Roux derivation or total gastrectomy.

Conclusions in late leaks: The strangest complications can be derived from the GVL. Conservative therapies usually fail. A Y-de-Roux bypass to the orifice of the leak may be the most conservative and resolutive surgical therapy. Late leaks, at 10 months and two years, have been accompanied by high morbidity and the need for radical and complex surgical therapies.

Expected BMI in bariatrics

How to measure and report results. Using the decimal system, reporting weight results with is much easier than with a weight system using pounds (pounds) and height measurements in feet (feet) is very complex. Quetelet [27] developed the formula for the Body Mass Index (BMI). BMI=Weight in Kg/m^2 height. Morbid obese patients should handle this measure. The results of loss of BMI are different depending on the initial BMI. It is not the same in super-super-obese patients with a BMI >70 that if the initial BMI is 35 to 40. Our mathematician has developed a formula based on over 7,400 measurements and takes into account the differences in the initial BMI and its results [28,29].

Leaks on malnourish patients

Caloric-Protein Malnutrition (PCD) is the most serious complication in the complex hybrid interventions of obesity surgery. Knowing the alternatives is important to decide what kind of therapy to offer such as: 1) Complete reversion to intestinal normality; 2) A Kiss-X anastomosis between AA and ABP; and 3) longitudinal lengthening of the AA using 100 cm of the ABP [30,31]. Out of 950 LDS operations for morbid obesity, 30 required bowel lengthening procedures 3.16%. Seventeen were done open and 13 as a lap procedure. Two patients of the laparoscopic performed operations had forceps perforation of the jejunum while measuring the bowel. Both had accurate closure but both of them suffered new leaks and died.

In the anatomopathological study we found multiple hernias of the intestinal mucosa through muscular defects of the intestinal wall, very close to the mesenteric vessels, not visible because the mesenteric fat covers them (Figure 1 and 3).

We have not found previous publication of this problem. And we recommend doing these operations by laparotomy.

Intraoperative urgency tracheotomy in morbid obesity

Difficult or impossible intubation can occur in the morbidly obese and depending on the initial BMI. Not being able to intubate in the operative act, and once the patient "is asleep" is an emergency that must be resolved. The anesthetists are properly aware, but... occasionally it can happen. In a series of 1,345 patients operated on for obesity, the anesthetist was unable to intubate in 3 cases and it became a vital emergency [32]. In all three cases there were two expert anesthetists. The surgical team solved it with emergency tracheotomy, easily, immediately and the postoperative course was normal. We did a survey among surgical residents and many said they had never done any tracheotomy. There is no time to call the ENT specialist, nor is it easy to do a tracheotomy if the specialist is not properly trained. We think it is essential that in the period of residents "it is mandatory" that residents do all elective tracheotomies in patients already intubated in the ICU. And so, we have programmed it in our center. We know at least one case, outside Spain, in which the death of the patient occurred due to the inability of the team of surgeons to do emergency trachea in a super-obese who was also a doctor.

Stapling of the gastric probe in bariatrics

While performing the Sleeve-Forming Gastrectomy (SFG) a gastric gauge is used. Stapling of the probe is a mayor complication rarely reported. This complication has occurred in almost all bariatric hospitals, and can be prevented with care of the anesthetist and the surgeon, and that has brought postoperative complications [33].

Telemedicine in the postoperative period

Many surgeries, even complex ones, are done today with immediate hospital discharge. But it is essential that the follow-up be immediate and accurate. Baltasar [34] has designed a system in which every four hours the patient reports pulse and temperature.

Compression packing for severe venous bleeding on the pelvis may save lives

A 69 years old male had an undifferentiated retro peritoneal sarcoma removed two years earlier with the left kidney and the left iliac artery removed (Figure 4). A Dacron aortic graft replaced the left common iliac artery. Local recurrence of the tumor occurred over the area of the Dacron graft. On the second operation a block resection of the tumor, left side of the pelvis and the left testicle was done. Severe venous hemorrhaged ensued that could not be controlled but with on-pack compression of lap-pads on the pelvis. Vascular reconstruction of the left leg vessels consisted cross-femoral tunnel of Dacron graft for femoral artery and a reversed saphenous vein for the veins return. And low abdominal belt was used to maintain constriction over the pelvis. A zipper devise was sutured to the subcutaneous abdominal skin. The zipper was opened daily in the ICU to observe the abdominal condition. Three day later the patient was brought back to the OR, the lap-pads were removed, hemostasis was complete and both cross-iliac (arterial and venous) vessels were patent [35].

Summary and Conclusion

We offer a review of several cases where negative results should be reported. To improve patients care it is essential that any poor or non-positive results should be reported. And with the above examples, we would like to encourage physicians to expose each and every one of the non-positive results for the benefit of the patients.

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