



COMPARATIVE STUDY BETWEEN MORBID OBESE PATIENTS WITH BMI 40-45 OPERATED ON GASTRIC BY-PASS AND VERTICAL GASTRECTOMY AT 5 YEARS



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Introduccion

Obesity

- Chronic disease with high prevalence.
- Increased body fat associated with a Increased health risk (WHO).
- Alarming growth in recent years.
- Great economic burden Health departments.
- High mortality rate.

Principles of Bariatric Surgery

- Improve the patient's quality of life and resolve their comorbidities through sufficient weight loss and maintained over time.
- Salamanca Declaration 2004
 - -Should benefit 75% of patients in the long term.
 - -Morbidity < 10%
 - -Mortality < 1%
 - -Reoperation rate < 2% per year.

There is **no ideal technique** and requires the **collaboration of the patient**, proper diet, exercise, taking vitamin supplements and lifelong follow-up.

Indications Bariatric surgery

- BMI > 40 or >35 with major comorbidities.
- Age 18-70 years.
- Obesity of years of evolution.
- Continued failures after conservative treatments.
- Psychological stability.
- Ability to understand the goal and consequences of surgery.

Patient assessment

- Endocrinological.
- Psychiatric.
- Respiratory.
- Cardiological.
- Abdominal ultrasound.
- Gastroscopy.
- Complete analytics.
- Anaesthetist.

HYPOTHESES WORK

MAIN OBJECTIVE

Compare the results of weight loss at 5 years in 2 groups of patients with a BMI between 40 and 45 kg / m² operated by Gastric By-pass and laparoscopic vertical gastrectomy.

HYPOTHESES WORK

SECONDARY OBJECTIVES

- Evolution of major comorbidities
- HT
- Sleep apnea
- Dyslipidemia
- Type II diabetes mellitus
- Iron
- Calcium
- Vit D
- Vit B 12
- Evolution of health-related quality of life.
- Surgical time.
- Cost of surgical material used in the operating room.

Materials and methods

TYPE OF STUDY

This is a **descriptive, comparative and analytical study** without specific intervention obtained from the prospective database of Bariatric surgery where all patients operated on for morbid obesity operated on at the University Hospital of Alava since 1992 are registered.

STUDY PATIENTS

We have selected 106 morbidly obese patients with BMI between 40 and 45 kg / m². operated by Gastric By-pass and vertical gastrectomy between 1997 and 2010 having at least 5 years of postoperative follow-up.

A sample size calculation has been made.

By literature it is established that there is a mean difference in BMI between the two groups of 2.2 with a standard deviation of 4. With a confidence level of 95% and an accuracy of 10 points, it is estimated that **106 patients (53 patients per branch) should be recruited.**

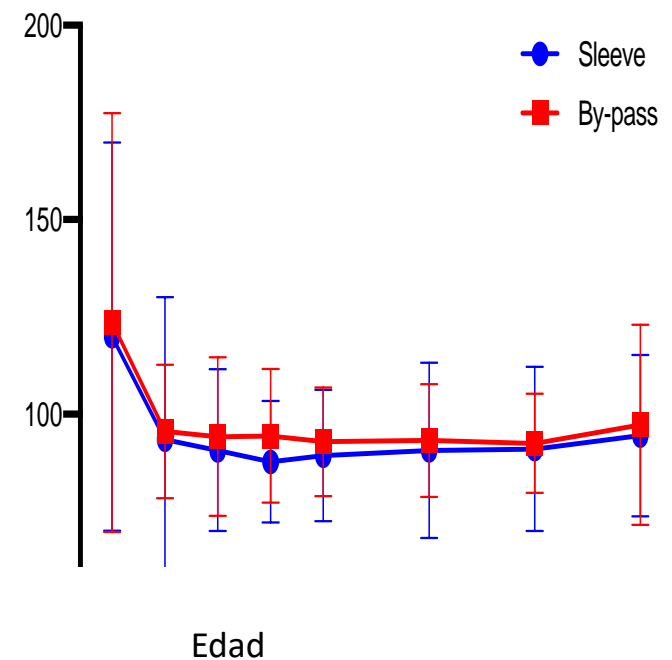
CONTEXT OF THE STUDY



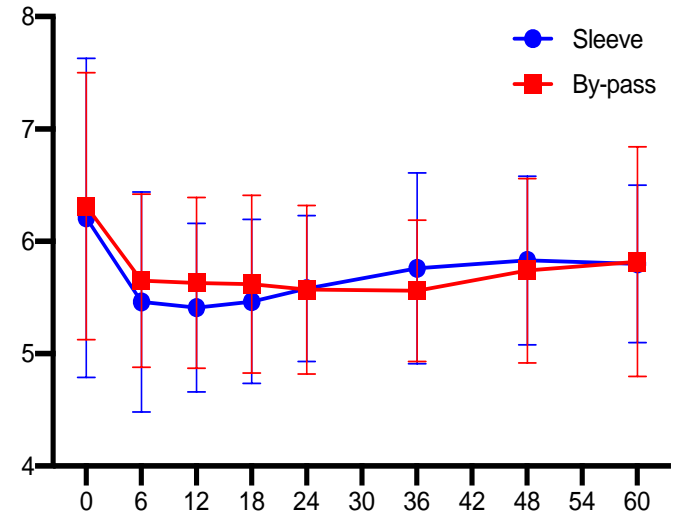
- The study was carried out in patients operated on at the University Hospital of Alava.
- It is a Hospital where preclinical (University of the Basque Country-Euskal Herriko Unibersitatea) and clinical teaching (MIR Training) is taught.

The age distribution was similar in both groups, with the means around 43-45 years.

The small difference observed does not reach statistical significance ($p=0.189$).

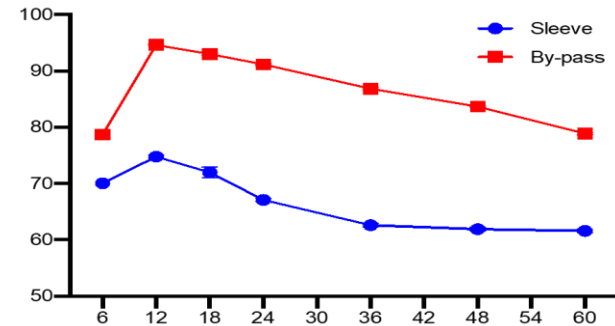


- The mean baseline BMI was also similar between both groups of patients: 41.9 ± 3.5 kg/m² (range: 34.3 to 46.9) in the vertical gastrectomy group and 42.6 ± 2.6 kg/m² (range: 38.7 to 46.9) in the gastric bypass group. Nor did this difference reach statistical significance.
- Analyzing the mean initial weight in the vertical gastrectomy group was 116.37 kg ± 15.52 (from 89 to 155.3 kg) and that of the gastric bypass of 112.534 kg ± 11.39 (from 87 to 134 kg).
- Both BMI, weight and initial age between both groups are not statistically significant, since they express a $p > 0.05$ ($p = 0.241$ for initial BMI, $p = 0.16$ for initial weight and $p = 0.193$ for age with a 95% confidence interval).



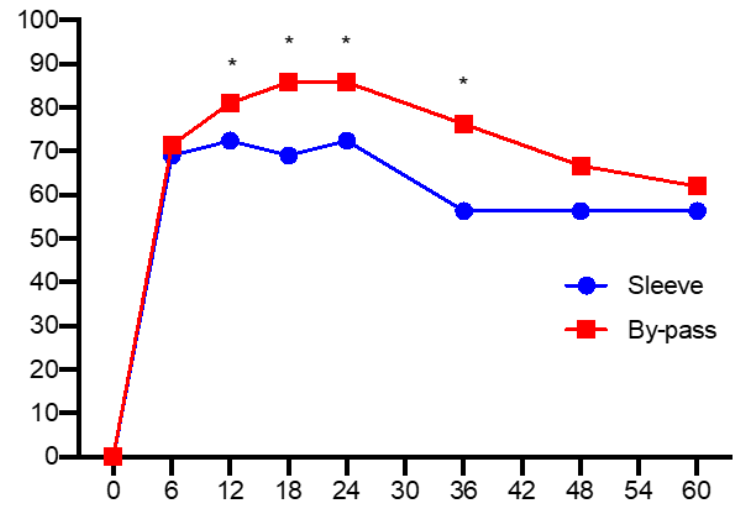
Both groups are homogeneous and can be compared statistically.

Weight loss



- Gastric by-pass compared to vertical gastrectomy was associated with higher % total excess weight lost at 5 years.
- Both procedures resulted in sustained weight loss, with excess weight lost of 61.59% in the vertical gastrectomy group and 78.88% in the gastric bypass group.

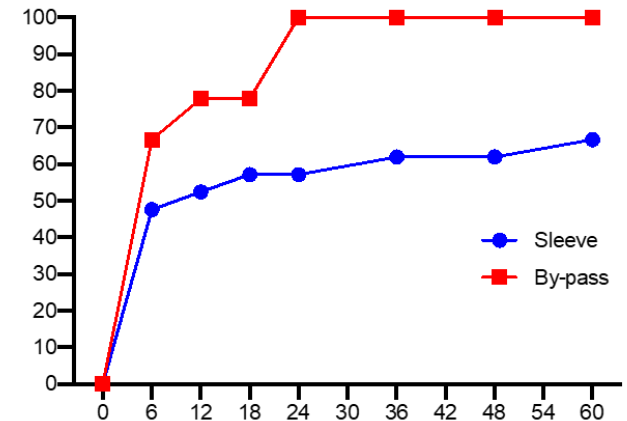
Hypertension



In both groups there is a significant reduction in hypertension. The two techniques are comparable at the beginning (6 months) and at the end of the study (60 months).

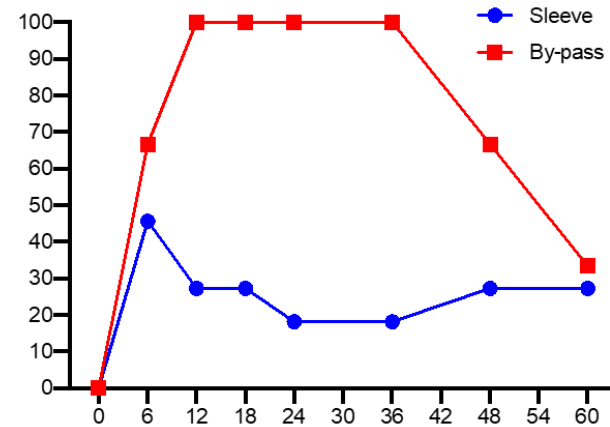
However, from 12 to 48 months the need for antihypertensive medication is significantly reduced in the gastric bypass group compared to the vertical gastrectomy group.

Obstructive sleep apnea syndrom SAHOS



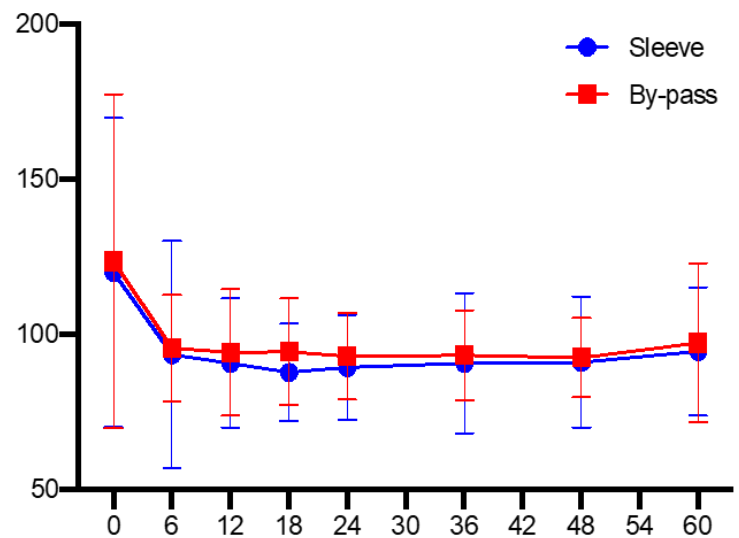
- **Significant improvement in both groups at 5 years.** Throughout all the postoperative controls carried out in this study, a significant improvement in this comorbidity was observed, **more important in the Gastric by-pass** group than in the p<0.05 vertical gastrectomy group.
- These results are not comparable with others carried out by other researchers, who find no differences in the resolution of sleep apnea syndrome between both techniques. The reason for this is unclear. There may have been selection bias in our series with significantly more OSAHS patients in the vertical gastrectomy group at baseline, making comparison between the two techniques difficult, or there may have been more severe OSAHS in the vertical gastrectomy group.
- There is a **direct relationship between weight loss and improvement or resolution of obstructive sleep apnea-hypopnea.**

Dislipemia



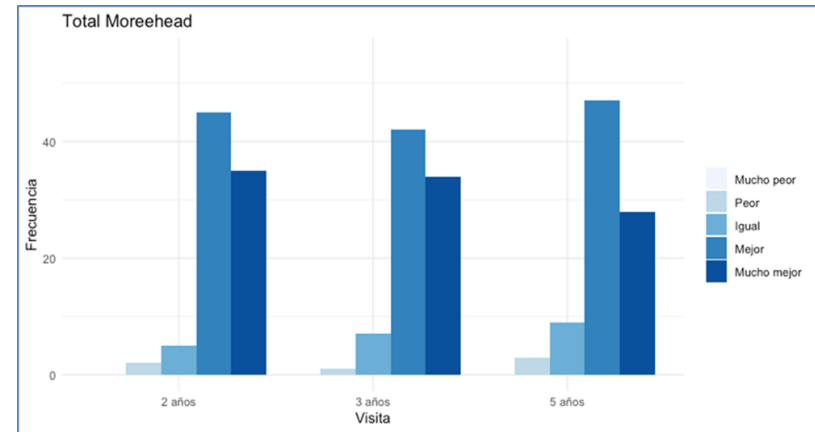
- Both techniques are compared individually at 6 months and 5 years after the intervention, an increase in the **resolution of dyslipidemia is found in both groups.**
- The month-to-month study shows that there is a significantly greater reduction in Gastric By-pass up to month 48.
- At 60 months both techniques are comparable in this aspect and there is an uptick in dyslipidemia.

Type II Diabetes



- Up to 3 years of postoperative follow-up, the reduction of antidiabetic medication is **greater in gastric bypass**.
- From the **4th year there is no difference** between both surgical techniques and there is an increase in Diabetes in the gastric bypass group.
- It may be due to the rapid weight loss and lifestyle modification after surgery in patients with gastric bypass and the subsequent weight recovery and abandonment of diet 4 years after the intervention, thus matching the results of vertical gastrectomy.

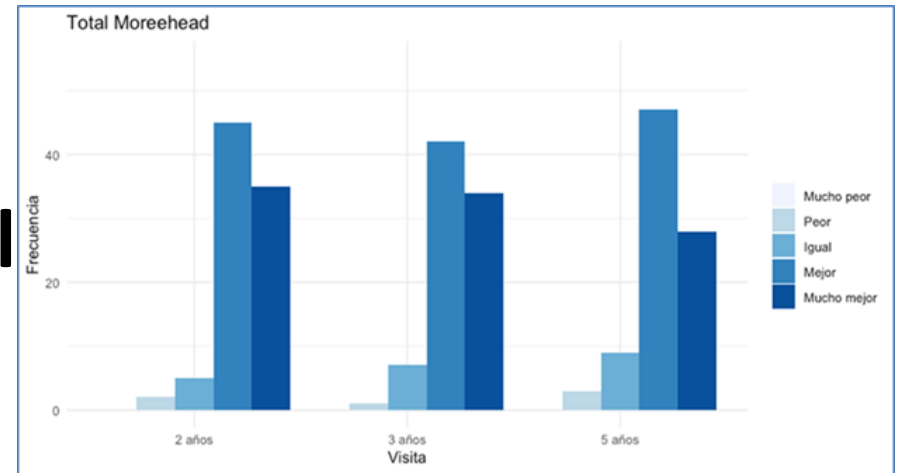
- **Health-related quality of life**



Its improvement has become a therapeutic goal of bariatric surgery.

The **progressive and notable reduction of weight leads to a significant improvement in the quality of life** of these patients. It is a very interesting and little studied topic in relation to bariatric surgery.

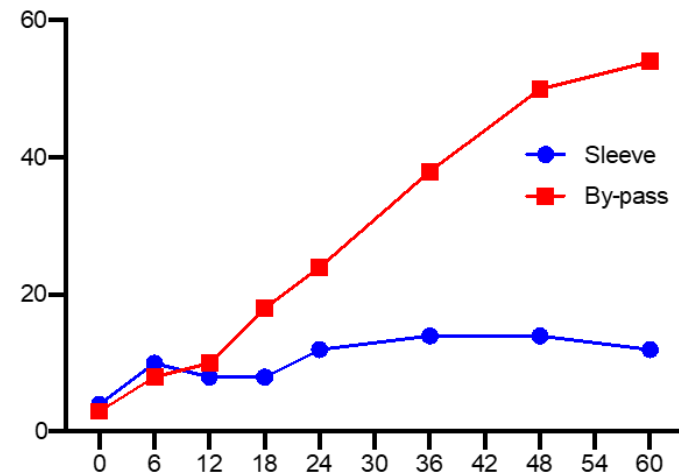
Health-related quality of life



Quality of life improved significantly with both surgical techniques in the three periods studied, with the vast majority of patients being better or much better than before surgery. There is no statistically significant difference between the two groups analyzed.

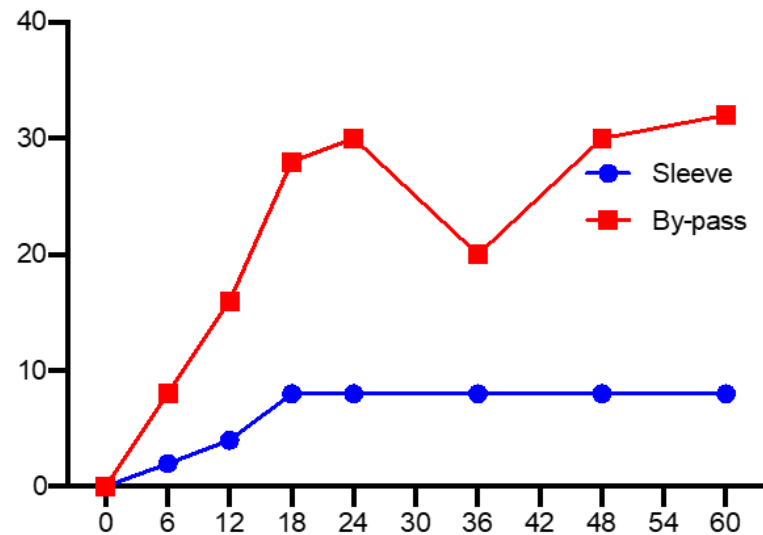
When analyzing each section of the Moorehead-Ardelt tests we observe that in all of them there is an improvement, better in **self-esteem, physical activity and sexual relations.**

Iron



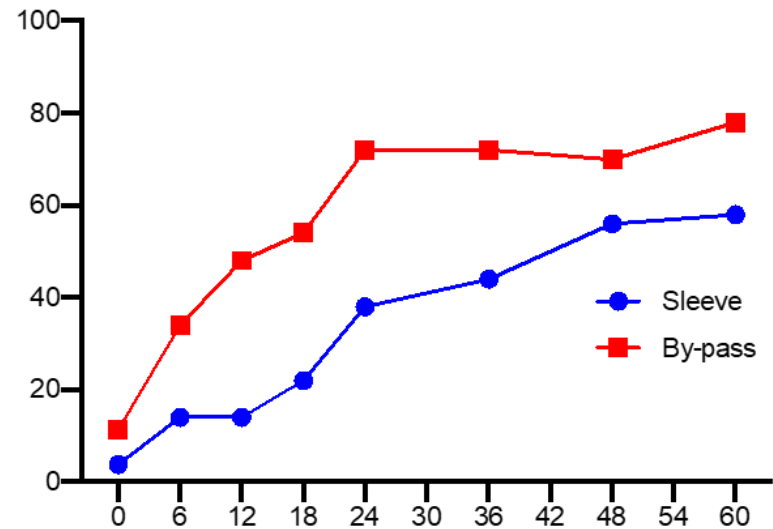
- There is an **increase in the need for iron intake** after both interventions, being **much greater and only significant in the Gastric By-pass group**.
- In the first year after bariatric surgery the need for iron replacement therapy in both surgical techniques is comparable.
- From 18 months to 5 years there is a greater need for iron in Gastric By-pass.
- These findings seem to be **related to the absorption of iron** after Gastric By-pass when there is a by-pass of the duodenum, place of preferential absorption of iron.

Vitamin B12



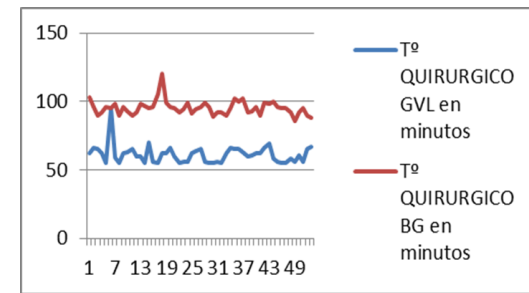
- There is an increased need for vitamin B12 in both groups, with the **decrease in vitamin B12 values being significantly greater in the Gastric By-pass group** and the need for intramuscular vitamin B12 supplementation.

Vitamin D

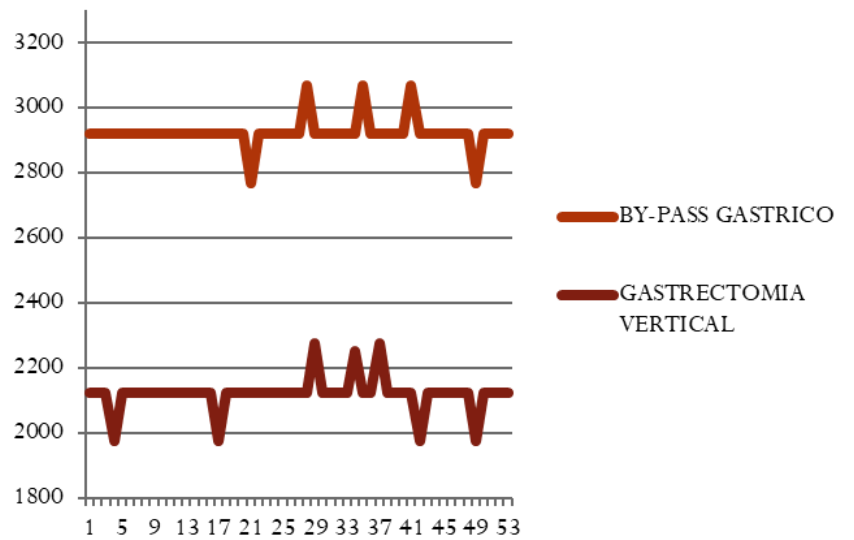


- There is an increased need for vitamin D after both surgical techniques, with vitamin D supplementation being significantly higher in the group of patients who underwent Gastric by-pass.
- Vitamin D deficiency is the most common micronutrient deficiency observed after bariatric surgery.
- This supposes an advantage of the sleeve gastrectomy in relation to vitamin D and therefore bone metabolism.

Surgical time



- The time from the first incision to the last skin point was recorded.
- Vertical gastrectomy is a technique that has an average duration of **61 minutes**, similar to data from other Hospitals.
- Gastric By-pass consumes an average of **95.3 minutes** due to greater technical complexity with the performance of 2 anastomoses and the intervention of third parties in the gastrojejunostomy (Introduction of the Orvil tube by the anesthesiologist)
- The difference of 34 minutes is important and statistically significant .



Surgical material cost

- Vertical gastrectomy is 800.14 euros cheaper than gastric bypass, a difference that is statistically significant. This higher cost is fundamentally related to endogia loads and circular anastomosis.

- **SURGICAL COMPLICATIONS**

- Within the group of patients operated on with vertical gastrectomy, 2 complications (3.77%) have been observed in the immediate postoperative period (hemorrhage and fistula) that required surgical reintervention.
- In patients operated on by gastric bypass, there have also been 2 long-term complications (3.77%) and both have required reoperation (internal hernia and severe hypoglycemia).

- **MORTALITY**

- Mortality in this study was zero in both the vertical gastrectomy and gastric bypass groups.

CONCLUSIONS

- Gastric By-pass achieves greater weight loss at 5 years, although the difference does not reach statistical significance.
- Both techniques produce an improvement in type II diabetes, Hypertension, Dyslipidemia, and Obstructive sleep apnea at 5 years.
- Improvement in the perception of Health-Related Quality of Life in both groups.
- Patients with Gastric By-pass require more Vitamin and Mineral supplements at 5 years.
- Sleeve gastrectomy is a procedure shorter than the Gastric By-pass.
- Sleeve gastrectomy is cheaper than Gastric By-pass.
- Both techniques are safe, with zero mortality and few complications.

“Without data you are just another thief with an opinion”

W. Edwards Deming

