History of Nutrition in Chile and relations with Mexico in Bariatric Surgery

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Introduction

Morbid obesity (MO) is a phenomenon of worldwide epidemic proportions. In Chile, 25.1% of adults are obese and 2.3% suffer from MO, the National Health Inquiry of 2010 reported [1]. The rate of MO are higher in the low economic levels (35.5%) compared to 18.5% in higher ones.

Multiple treatments are being tried for MO, but Bariatric Surgery (BS) is the most successful.

Many different procedures are used in BS and with different mechanism such as:

- **Restriction** (decreasing eating **capacity**)
- **Malabsorption** (decreasing bowel absorption)
- **Combination of both** as mixed restrictive-malabsorptive.

The first operation of BS with the aim to control MO was done in 1952 in Sweden [2] and during the 50s and 60s, the jejuno-colic by-pass and jejuno-ileal by-pass(JIB). Both were later abandoned because of long-term complications [3].

Mason and Ito [6] initiated in 1965 the concept of Gastric By-pass (GBP) and then Griffen [7] started with a modification with the Roux-en-Y (RNY) to prevent alkaline gastritis, and this has been the most common technique throughout the World and is referred to as the “golden standard”.

In the 70s, Scopinaro [3] proposed the Bilio-Pancreatic Diversion (BPD) concept and in the 80s, Marceau [4] and Hess [5] developed the Duodenal Switch (DS).

Many other restrictive techniques were developed in the 80s, such as: Vertical Banded Gastroplasty (VBG); Gastric Band (GB); and later, the Adjustable Gastric Band (AGB).

Wittgrove initiated in 1993 [8] the advanced use of laparoscopic techniques such as the Laparoscopic RNYGBP, used since by most BS.

Finally, in the 21st century, the Lap Gastric Sleeve was created (LGS) and is the fastest growing technique today [9].

BS in Chile

González [10] of Valparaíso Van Buren Hospital started BS in Chile in 1986 with the first JIB on 6 MO patients. The outcomes were measured by percentage of Excess Weight Loss (%EWL) >50% and comorbidities improvements. The drawbacks were significant diarrheas, liver failures and nephrolithiasis.

In 1992, Dr. Sergio Guzmán and Luis Ibáñez of Pontificia Universidad Católica (PUC), started with the first RNYGBP.
Awad [11] of San Juan de Dios Hospital was, in 1993, the second national group who published his experience. He was doing three different techniques: a) Central communication of the gastro anastomosis; b) Gastric partition with Prolene mesh reinforcement and 3) VBA. There was no mortality and only 2 patients had post-op complications. In the central communication cases the %EWL decreased. In the ones with the band, the %EWL was much better and stabilization occurred by the 12 month, but 4 of them did not improve. The patients with VBG had passed less time than the one year follow-up by the time of the publication.

Awad [12] published in 1997 the preliminary results with Laparoscopic VBG (LVBG) in 6 patients with vertical division and band. The volume of the pouch was between 70 and 100 cc. Short-term results were satisfactory but not the long-term results.

Guzmán [13] of PUC published the Preliminary results in 1999 of 90 patients with RNYGBP with gastric section and a long loop. There were no mortalities and morbidity was 24.3%. A follow-up of 56 patients at 6 months showed that 20% had dilation of the gastric pouch or staple failure in those without gastric division.

Cséndes, [14] at the hospital clinic of the University of Chile, described 50 patients with horizontal gastroplasty, gastric capacity of 50-120 cc and RNY diversion. The BMI dropped from 41 to 30. 24 months later %EWL was 68. He observed a relationship between the lesser residual gastric capacity and a higher weight loss.

The PUC [15] group published, in 2000, about 92 patients with GBP (42 with horizontal staplers and the rest with gastric division). There were no mortalities. Four patients had gastric bleeding and five patients had reopening of the stapler-line. In 80% of the patients, the results were successful and they were ones with gastric division. Diabetes mellitus Type-II (DMT2) was controlled in 76% of the cases and dislipidemia in 87%.

The UC [16] presented in 2001 a global analysis of 151 patients (42 with horizontal gastroplasty and 109 with gastric division and gastro-jejunal anastomosis). There was no mortality and the patients with failure to lose weight were the ones without gastric section and stapling failure, as has already been reported. In 2002, pulmonary attention was provided to patients before and after BS. In a protocol of 45 patients, the respiratory evaluation was done before and after BS and there was improvement by 48 hours after surgery.

Cséndes, in 2002, published a review of 180 patients treated with BS [17]; 65 had horizontal gastroplasty and the other115 had a subtotal 95% gastrectomy with a long RNYGBP loop of 120 - 140 cm. One patient died in the first group due to pulmonary embolus 18 days after surgery. The long-term results of this group were not satisfactory due to opening of the staplers, fundus dilation and it was abandoned. In those patients with gastric resection the morbidity was 11% and the %EWL was very significant. Finally the Gastroenterology Section of the Hospital Clinic of the University of Chile published the liver biopsy results in MO [18] and evaluation of the steatohepatitis was done.

The group from the University of Chile [19] published a case of Prader-Willi with MO, who had the GBP and obtained important weight loss.

Velasco and Haberle [20] in 2003 at Coquimbo Regional Hospital, reported 13 patients with MO and horizontal gastroplasty. There was no mortality and comorbidities had a significant improvement. Follow-up was very short.

Hamilton [21] in 2004 presented his experience with BS in MO at the entrance of Chile Surgeons Society on 70 patients, with a 20 months follow-up. There was a drop in BMI of 37.7 to 27.3. There were 8 late complications and 94% were happy with the treatment. Eight years later the PUC group published the GBL results followed at 5 years [22].

In 2004, in The Nutrition unit of the National Health Ministry [23], a group of experts met to propose normalization for the treatment of MO through surgery. The first part was evaluated scientifically to manage MO with BS and a second with Normalized recommendations.

In 2004, the PUC performed the first Laparoscopic Gastric Sleeve (LGS).

The UC [24] published in 2005 results of a series on 400 patients treated with RNYGBP at 36 months. Morbidity was 4.7% and mortality 0.5%, %EWL-70.

They published several more papers. In one, weight and volume of the stomach was studied and compared with normal subjects without any significant difference [25].

In 2005, the histology of the removed stomachs after GBP and distal stomach resection were analyzed [26]. There was important histological changes on the excluded stomach that could lead to have poor monitoring in a country with a very high incidence of gastric cancer.

In a study of 552 MO who had GBP and fistula was managed conservatory. All healed without surgery [27].
The 5th study, a group of 286 patients with GBP, was interesting because weight loss was inverse to the pre-op BMI [28].

The CU published [29] in 2005 a clinical case of gastric cancer 8 years after GBP in the excluded distal stomach and that was the 5th in the world literature. The same group had a study on the % of non-alcoholic steatohepatitis in MO [30], confirming the high prevalence of this condition [31], and describing that the best index of hepatic steatosis is the insulin resistance.

The PUC, in 2008, started with the use of the endoscopic endoluminal Endobarrier. Recently the same group showed the efficacy of the GBP in DMT2 management [32]. The same year they showed results at 5 years follow-up of LGB with significant complication rates and poor WL [33].

Many more works have been reported form the Chilean institutions.

In IFSO, the Latin Chapter meeting was held in Viña del Mar, Chile (2009) with an important contribution of the multidisciplinary teams and the need to bring together several bariatric centers was proposed.

In 2008, at the IFSO World Congress in Argentina, Portuguese psychologists formed a Psychologists of Bariatric Surgery Group (NPCO). During the same year our psychologists at The Center for the treatment of Obesity at UC (CTO-UC), started to keep records and contact with different psychologists working in BS in Chile. Simultaneously, the President of the BS and MS of the Chilean Surgeons Society were contacted and ask for his formal assistance to work for the NPCO of Chile. The first meeting was on December 12th at the CTO-UC. 17 psychologists attended, from 7 different centers. The Consensus discussions started in Chile for pre-surgical evaluation.

At the second meeting on 9.3.2008, 20 psychologists assisted at Clinica Santa Maria and the team of Davila Clinic was included. The consensus was Clinica reviewed and new planning was done for the next meetings.

At the III IFSO Latino-American Congress at Viña del Mar, in April of 2009, the Chilean NPCO organization was recognized by the President of IFSO Latin Chapter, Dr. Luis Ibáñez. The coordinators from NPCO Chile, Argentina, Portugal, and México formally discussed the advances and future funding with other national societies to develop a regional NPCO.

Short, medium, and long-term objectives were defined at the 3rd meeting on June 6 at Clinica Tabancura. In this meeting, the President of the Chilean Surgical Society and Bariatric and Metabolic Department recognized NPCO Chile within its body. In this way NPCO has been included in IFSO.

Nutritionists have followed the psychologist steps. In April 2010, at CTO-UC, the 1st meeting from different bariatric centers (Santa María Clínica, Las Condes Clínica, Clinica Tabancura, Clinica Indisa, Padre Hurtado Hospital and Alemana Clínica of Puerto Varas) was held. At this opportunity, the objectives, mission, and activities were planned. Since then more meetings have been carried out at other centers on the consensus on diets and nutrition on BS patients.

In September 2010 the bariatric respiratory therapists formed a group and a Consensus on Pulmonary Therapy and Physical activity at the Multidisciplinary meeting of Bariatric Groups at Iquique.

**Multidisciplinary Team**

MO is multi factorial and its management should be done by a Multidisciplinary Team. On the Medical and Surgical sides, a specialized team is a must in BS.

The ideal Bariatric Multidisciplinary Team should include digestive surgeons, a nutritionist, nurses, a psychologist, a psychiatrist, a pulmonary therapist, and a physical activity therapist. The team mission is to get together during the pre and post surgical period with the aim of best possible results.

BS is very effective in the management of MO, obtaining a significant short term %EWL. Some patients may regain weight 2-3 years after surgery and the Multidisciplinary Team should manage it!

This team should have available the best, attractive, and updated tools to help this patient in his new trial. The MO patient has tried almost everything with diets, master treatments, hypnosis, etc. As professionals what can we offer him/her?

**Our Multidisciplinary team has dedicated 15 years to the management and treatment of MO at the clinical and surgical level.**

The UC Health System started in the 80s and the beginning of the 90s to manage MO as a multi factorial chronic disease that should have an integral perspective. The disease was not more a “way of life” esthetic problem but a health problem that may be treated to prevent complications.

At the beginning of the 90s, a 250 kg., 45 year-old male came looking for health due to poor Quality of Life.
(QoL). He was the first treated and he was a challenge for the digestive surgeons at PUV who carry out one of the first surgeries in the country in 1992.

By 2003, the experience led to the creation of the Center of treatment of the Obesity at UC (CTO-UC) where specialists from different areas started to give joint and integral management. As Dr. Luis Ibáñez, Dean of the Medical School at PUC, “CTO-UC”, says “all these specialists started to address the needs of MO patients”.

Today the center has the leading clinical and surgical team with 6,000 MO operated patients and more than 2500 handled in a multidisciplinary program.

Recently our center has been credited by the Surgical Review Corporation (SRC) as the First International Center in BS in Chile, an institution funded in 2003 by the American Society of Metabolic and Bariatric Surgery (ASMBS).

**Discussion**

The history of BS in Chile is short. However, the advances have been very important. Many groups are fully dedicated to BS and work in this field. There are 3 of them with full dedication, such as: a) Hospital San Juan de Dios group, b) Clinic Hospital of the Pontificia Universidad Católica group and c) Clinic Hospital de la Universidad de Chile group.

It is important that each member of the team: nurses, nutritionists, pulmonary therapist, and psychologists, in addition to their assistant labor, actively participates in investigation, which should translate into publications. These members will allow other people from the medical community to enrich their own knowledge.

We should make it our job to strengthen links with other colleagues in other center and invite members from our team who do not get together with their partners, to do it to continue working on sharing experiences and establish protocols. The vision of all professionals will allow us to join forces and continue with perfecting the attention we dedicate to our patients.

**Chile and Mexican historical relations on BS and Nutrition**

Both countries are experiencing similar developments. At the 1st IFSO Latin-American Congress in Cancun 2007, a joint multidisciplinary group proposal was made in the areas of Nutrition and Psychology.

At the XIII IFSO World Congress, September 24, 2008, in Buenos Aires, Miriam Sánchez Rentería was elected in Psychology by Argentina, Brazil, Chile and Mexico as the coordinator, and the need of a similar coordinator was proposed for Nutrition.

At Guadalajara, MX, in May 2009, the 1st meeting of Specialists in BS Nutrition was held and the organization and objectives for a Consensus on Mexican Nutrition.

At the XI Mexican Congress of CMCO in Cancun (July 2009), the 1st Consensus was held by the Nutritionist in BS and 23 experts attended. The Nutritional Guides of the CMCOEM Consensus of the BS patients were finished.

At the XV IFSO, Long Beach, CA September 2010, the 1st World Nutritionist in BS meeting the questionnaires and “International norms for the treatment of bariatric patients” were published.

At the 13th National CMCOEM Congress held at Ensenada, BC, MX, in July 2011, an independent Forum by Nutritionists in BS was done. There are 14 registered nutritionists at the CMCOEM. Preparations are being made for a Diploma Degree.

At the 2nd Symposium of Nutrition by Morelia University, MX in 2011, both Chile and Mexico Groups worked together on the Multidisciplinary Management of Obesity and Overweight. Ana Palacio, Nutritionist for Chile presented “Diet Management in BS patients “and Johanna Pino of Chile Pulmonary Therapist presented “Physical Activity in the BS Patient”. Beatriz Sáinz Nutritionist [34] and Miriam Sánchez Psychologist presented together “Multidisciplinary Management in Obesity and Overweight” and “Psycho-Nutritional Methodology in Obese children”.

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