

## Bariatric Surgery and Reinventing the Wheel



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Bariatric surgeons are on the lookout for advances, improvements, and refinements of their procedures to achieve better results for their patients. Some younger, ambitious surgeons entering the field of obesity surgery, hoping to implement a change, inaugurate a cycle of “*reinventing the wheel*”—a phenomenon that is not always a good thing.

As a long-time reviewer on the editorial board of the journal of *Obesity Surgery*, I have read and evaluated many papers and have also run a busy bariatric practice since the mid-1990s. Twenty percent of my practice is now comprised of revision cases following various bariatric procedures; these are quite problematic, involving numerous complications compared to primary bariatric cases. During these activities, I have had a chance to witness the rise and fall of several cycles of reinventing the wheel.

What is the definition of reinventing the wheel? It is the rediscovery of an old idea in surgery,

### About Article

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In this month’s *Viewpoint* column, Dr. Khaled Gawdat discusses “reinventing the wheel” (reviving or refining a formerly discarded metabolic / bariatric surgical procedure) as a function of: 1) insufficient standardization of procedures across surgeons; 2) the 2-3 years in which patients live with outcomes of a ‘recycled’ or reapplied procedure before its clinical efficacy is known; and 3) procedural ‘innovation’ without prior research or consultation of seasoned practitioners.

Insufficient procedure standardization makes for varied results reporting across surgeons and centers, and for problems in data pooling for summary analyses. The bariatric literature holds numerous calls for...

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abandoned for a variety of reasons, that is then added to or modified, putting it into practice once again while usually overlooking the past experience and weak points of the old technique. This practice often initiates a short or long cycle of re-implementing the old technique followed by abandoning it once again. This is not good for patients or for the field of bariatric surgery.

Why do we feel the need to reinvent the wheel? The first reason is that each surgeon who performs a new bariatric procedure does so in a slightly different and non-reproducible manner, with somewhat different results. Bariatric patients have surgically created anatomic variances—a significant disadvantage in attempting to achieve standard results across surgeons. For example, one can perform a gastric bypass procedure with zero weight loss because the gastric pouch was made too large and the gastrojejunostomy too wide. One may employ the extreme form of gastric bypass, that using a micro pouch with a band around the pouch and a narrow stoma, and have very good and sustained weight loss. In the end, both procedures are called “gastric bypass,” although the results can be quite discrepant. Also, some bariatric surgeons are happy with the short- and long-term outcome of gastric bypass; some are not happy with the outcomes. Thus, there is a definite need for a unified definition of success in the field, and standardized, reproducible results for every bariatric procedure. This need will only be fulfilled if fixed criteria are established and used that address each aspect of the new anatomy constructed during bariatric surgery, such as pouch size, limb length, etc.

The second reason that some surgeons feel impelled to reinvent the wheel is the pattern of weight loss, wherein a grace period of 2-3 years is

...standardization of nomenclature, endpoints, operative measurements, and laboratory tests (e.g., Fried et al, *Obes Facts* 2008; Deitel, Gawdat, Melissas, *Obes Surg* 2007); however, achieving enacted consensus on these functional issues has often failed, or only spurred incremental change. Quality assurance organizations, such as the Surgical Review Corporation, with its Center of Excellence (COE) and Bariatric Outcomes Longitudinal Database (BOLD) initiatives, are designed to move surgical teams closer to this goal. The urgency of the need to obtain insurance for bariatric surgery has, perhaps, done the most to galvanize standardizing initiatives. Authors of the literature, editors, and bariatric professional organizations (e.g., ASMBS, IFSO, EASO, IASO) must act independently and cohesively to move the field in this direction.

All bariatric procedures deliver good initial weight loss. Procedures not discontinued very early for intractable problems with morbidity or inadequate weight loss require roughly 3 years to accumulate enough data to estimate a...

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needed to determine the true result of the surgery. All bariatric procedures can produce an initial satisfactory weight loss, or at least, some weight loss; only in the intermediate term can we observe whether this loss is maintained, or whether it is unsatisfactory. Also, several years are required to evaluate new bariatric techniques; with bariatric surgery's rapid progress, hundreds of thousands of cases may be performed with defective or inadequate procedures before their deficiency is identified.

The third reason for reinventing the wheel is the ego of the surgeon. Surgeons sometimes become focused on achieving a major discovery or a breakthrough in surgery and will, therefore, defend their creation until it is overwhelmingly proven wrong or inappropriate. Only then will that surgeon, and the hundreds of new surgeon followers, drop the idea and abandon the procedure.

The lifecycle of reinventing the wheel includes: 1) finding an idea or previously used procedure that could be reapplied in a novel way in bariatric surgery; this is sometimes done without the benefit of research, as happened a few years ago in South America.<sup>1</sup> A junior surgeon began removing 3 meters of small intestine and 80% of stomachs even in teenagers based on no scientific background. Surprisingly he was not stopped. 2) The second phase typically involves evaluating the results of new procedures with changed projected targets. For example, many authors now are arguing that weight loss is not important and that 30% EBWL is acceptable<sup>2</sup>—that, it is the comorbidity we are after. This is completely ignoring the fact that we are performing weight-loss surgery. Weight loss is one of the most important therapeutic outcomes, and if one asks

... procedure's clinical efficacy—efficacy still only for the intermediate term. Long-term results can reveal insights that radically affect use of that operation; 10% to 25% of patients require revision of failed primary bariatric procedures (Benedix et al, *Zentralbl Chir*, 2009), and a higher incidence of major complications after revisional surgery of 22% to 50% (Radtka et al, *Surg Obes Rel Dis*, 2010).

In many instances, the problem of "reinventing the wheel" in metabolic/bariatric surgery can be avoided by going to the biomedical or online library to read the published studies in the field. The first laboratory for testing medical ideas should always be the scientific literature. A research-based, conservative approach that features careful review of hard-won surgical and metabolic knowledge, as well as consultation of the experts in the field of bariatric surgery, argues Dr. Gawdat, is the best means of protecting patients.

the patients' opinion, even 50% EBWL is not acceptable to most of them. So, in order to justify inadequate outcomes, the required outcomes are being altered rather than requiring the procedures themselves to be improved. 3) The third, and usually last phase in the cycle of reinventing the wheel is recognition by surgeons of the overwhelming evidence that what older generations taught us was right, and that, therefore, there was no need to reinvent the wheel.

I started my bariatric practice in the mid 1990s, the era of the downfall of the VBG and the start of the laparoscopic bariatric surgery revolution and the gastric banding phase. VBG was being used less frequently because of non-reproducible results and surgically created anatomical variability, where surgeons created different pouch and outlet enforcement sizes using different materials; eventually, poor long-term weight-loss results were demonstrated for most techniques. The idea of adjustable gastric banding was my first encounter with the cycle of reinventing the wheel. The first phase was initiated with a sound idea—to reinvent simple gastric restriction and revoke the problems with VBG through a fixed-sized pouch and adjustable outlet size. The laparoscopic approach was a great boost to the popularity of the technique when at that time open surgery was the only alternative for other bariatric procedures. In our practice, gastric banding produced inferior weight-loss results compared to VBG and had its own set of long-term complications that further decreased

the success rate of the procedure. The second phase of the cycle began with publications that touted a higher-than-accurate success rate for banding surgery by decreasing the criteria for success from the generally accepted 50% to 30% EBWL<sup>1</sup>. Also novel procedures were devised, such as performing a gastric bypass over the gastric banding pouch, and placing an adjustable band over the VBG outlet. In this version of the third phase of reinventing the wheel, a wave of recognition of the evidence of problems involved in gastric banding came to the fore, first in Europe, where banding had been pioneered, and now, with a roughly 5-year lag due to US Food and Drug Administration (FDA) clearance, in the US and other parts of the world.

In a more recent scenario of reinventing the wheel, the concept of sleeve gastrectomy was put forward as another option for a simple restrictive procedure. The first sleeve gastrectomy was derived from the duodenal switch procedure developed by Hess and Marceau in 1993. The concept was initial restriction with the sleeve, followed by dilatation; malabsorption is the primary player in weight loss and weight maintenance. Many variations exist for performing the duodenal switch with sleeves accomplished with variable bougie sizes (24-60 Fr) and with a common channel ranging from 65-150 cm and, also, with highly variable results among individual procedures. Using the sleeve as a stand-alone procedure was proposed by Michel Gagner in 2000 and is becoming

a very common practice.<sup>3</sup> The sleeve gastrectomy began as a two-stage bariatric procedure with the sleeve as the first stage procedure later completed with a duodenal switch or a gastric bypass to reduce operative morbidity in high-risk patients. Good early results paved the way to using sleeve gastrectomy as a definitive bariatric procedure. The lesson learned from experienced bariatric surgeons is that stomachs dilate and simple restriction fails in the long term, even if the outlet is restricted; VBG is the perfect example of this.

A similar operation was used in England in the 1990s, the Magenstrasse and Mill operation, in which a sleeve construction without resection converts the stomach into two tubes with a narrow inner sleeve.<sup>4</sup> The procedure gave good results for awhile and now is practiced by very few. We are witnessing a changing trend in publications from papers showing good early results with the sleeve, to papers showing fair medium-term results,<sup>5</sup> to papers by authors who observed sleeve dilatation with time and devised various outlet restrictions by adjustable bands or prosthetic materials to the middle of the sleeve.<sup>6,7</sup> This brings us back, essentially, to the VBG design. Now, to obtain good outcomes with the sleeve, it will be converted to a VBG with lateral gastric resection. Progressive reduction of the sleeve size via increasingly smaller bougie sizes is also happening as experience accumulates in order to achieve better weight loss while risking more complications. Thus, these authors have observed what our early mentors

noted—that stomachs stretch and simple restriction does not work. It is my belief that, with respect to the sleeve gastrectomy procedure, this third phase of reinventing the wheel—abandonment—will follow shortly. One can also recall that the 10-year VBG results showed a very high failure rate.<sup>8</sup>

So, we conclude that in the presence of huge demand for bariatric surgery and with the high morbidity and mortality of revision procedures, we need to select an effective, durable, and comfortable procedure and stop doing easy procedures with poor short- and long-term outcomes, comforting ourselves that we can always revise. In our practice, re- re- re-dos are becoming common, although fixing a procedure for the third or fourth time is extremely problematic.

One might say, how can we know what will succeed if we do not investigate new ideas? Yet, reinventing the wheel is not trying new ideas. Waiting for 10 years and hundreds of thousands of cases to discover whether it is a good idea is a very heavy price to pay. We have as examples to remind us of this caveat the rise of the VBG in the 1980s and its demise in the 90s. In the 80s, few would argue that VBG was not the best bariatric procedure. Our focus should be on results and long-term outcomes: In that sense, BPD, DS, and a restrictive gastric bypass should be the more frequently performed procedures. Bariatric surgery is all about precise measurements and working on existing good procedures to make them



reproducible anywhere in the world by emphasizing standardization; this is truly a more effective approach in terms of patient care and outcomes than resurrecting old flawed ideas. Older surgeons have enough experience and years of follow-up to be better able to guide younger surgeons to improving existing techniques, taming them with their wisdom and insight if they invent 'new' techniques.

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Professor Dr. Khaled Gawdat graduated in 1985 from Ain Shams School of Medicine, Cairo, Egypt and completed his surgical residency in Cairo and in Boston, MA, USA, and his PhD in general surgery in Cairo. He is currently Professor of General Surgery at the Ain Shams School of Medicine, Cairo, where he has been in practice as a bariatric surgeon since 1996 and has performed over 2,200 bariatric procedures via both open and laparoscopic access. An area of special interest for Dr. Gawdat is laparoscopic revisional surgery. Dr. Gawdat is the Founder and President of the Egyptian Society for Bariatric Surgery, and a member of the Editorial Board of the journal, *Obesity Surgery*. He has presented more than 30 papers on bariatric surgery and has chaired numerous sessions at congresses of the International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO) worldwide.