We are facing an expanding pandemic of Type II diabetes mellitus which is closely associated with obesity worldwide. It is estimated that 240 million people are affected by type II diabetes currently and the number will shoot up to 380 million by the year 2025. The situation is even sterner in Asia. Asians have a higher risk of developing diabetes and cardiovascular diseases than the western population with the same BMI. Moreover, the economic burden to the society and health care system is expected to escalate exponentially in the coming near future. We need a more effective and efficient way to combat and prevent complications of the disease.

Type II diabetes mellitus is a deadly chronic illness and tight glycaemic control minimises microvascular and macrovascular complications. Life style modification and strict compliance to diet and drug regimen are paramount in treating diabetes. However, optimal control or remission of the disease in the long run is rare in the majority of patients. Progressively deterioration of the disease severely affects the quality of life of patients and is typical in almost every individual. Despite great improvements on pharmacotherapy, outcome of current therapies are still far from ideal.

Developing a New Surgical Subspecialty

"Who would have thought it? An operation proves to be the most effective therapy for adult-onset diabetes mellitus." reported 15 years ago in the Annals of Surgery by Walter Pories, MD, a bariatric surgeon at East Carolina University in Greenville, is the first group of researchers who suggest bariatric surgery may be useful in the treatment of Type II diabetes mellitus even in non-morbid obese patients. They reported that 83 percent of the patients with diabetes had normal blood sugar levels at the present moment at least in Asia, many clinicians and patients are still unaware of this recommendation and the utilization of bariatric surgery to treat obese diabetes is not popular.

Subsequent studies echoed his results. A 2004 JAMA study showed diabetes resolved in 76.8 percent of patients and in 2009 the American Journal of Medicine study found that 86.6 percent of patients improved or resolved their Type II diabetes after bariatric surgery in the long-term. In 2008, a JAMA study found that 73 percent of gastric-banded patients resolved their Type II diabetes. Recent publications in the New England Journal of Medicine papers have confirmed the safety and effectiveness of bariatric surgery on diabetes. The impact of surgery is significant and prolongs survival in this group of patients. Therefore, ADA issued its annual recommendations on diabetic treatment in 2009 and stated that "bariatric surgery should be considered for adults with BMI >35 and type II diabetes". However, at the present moment at least in Asia, many clinicians and patients are still unaware of this recommendation and the utilization of surgery to treat obese diabetes is not popular.

In view of the excellent results of bariatric surgery on obese diabetes, clinicians start to wonder whether surgery is equally effective in less heavy patients. Clinicians initially thought that bariatric "cures" diabetes because of the effect of surgery on weight loss. However,
recent studies revealed that bariatric surgery has specific anti-diabetic (metabolic) effects and can ameliorate diabetes even before significant weight loss has been achieved. Typically, gastric bypass patients have their diabetes disappears in days to weeks after surgery and now several mechanisms have been discovered, namely gastric, foregut, hindgut and intestinal gluconeogenesis theories. Although the exact details are unknown, very likely all the above theories come into play. Bariatric surgery is beyond weight loss and has specific metabolic effects on diabetes. Most obesity surgical societies have now included "Metabolic" in their names and surgical manipulation of the gastrointestinal tract is a novel way to treat diabetes and more and more patients are requesting such approach.

In order to clear up the confusion and state down consensus for the use of gastrointestinal surgery to treat diabetes in a proper and regulated way, experts from different professional bodies gathered together in Rome in 2007 (1st Diabetic Surgery Summit) and led by Dr. Rubino, pioneer in diabetic surgery to discuss the evidence and the role of surgery at the present moment. In its position statement, the Diabetes Surgery Summit said "surgery should be considered for the treatment of type II diabetes in patients with a body mass index (BMI) of 35 kg/m² or more." In addition, consensus was made that "diabetes surgery may also be appropriate for treatment of people with mild to moderate obesity (BMI 30-35 kg/m²) who are inadequately controlled by life-style and medical therapy", which went beyond parameters established by the National Institutes of Health (NIH) for bariatric surgery in 1991 and the ADA recommendations in 2009. At least 5 international bodies which represent endocrinologists, internists, and obesity scientist (Diabetes UK, T.O.S. and I.A.S.O) and surgeons and bariatric-allied health care professionals (A.S.M.B.S., I.F.S.O., and Brazilian Society of Bariatric and Metabolic Surgery) have already endorsed the position statement and the paper was published recently in the Annals of Surgery.

Asians have a higher fat content and different indications for bariatric surgery as compared to the western population. In response to DSS in Rome, the first Asia Consensus Meeting on Metabolic Surgery was held by the Asia Pacific Bariatric and Metabolic Surgical Society was held at Trivandrum in India in 2008 to discuss the situation in Asia. Most experts agreed that Asians are more prone to develop diabetes at a lower BMI and early consensus for the use of metabolic surgery to treat Type II diabetes mellitus in Asia was laid and stated as the following:

1. Bariatric/Gastrointestinal Metabolic surgery should be considered as a treatment option for obesity in people with Asian ethnicity with a BMI more than 35 kg/m² with or without co-morbidities.

2. Bariatric/Gastrointestinal Metabolic surgery should be considered as a treatment option for obesity in people with Asian ethnicity above a BMI of 30 if they have central obesity (waist circumference more than 80 cm in females and more than 90 cm in males) along with at least two of the additional criteria for metabolic syndrome: raised triglycerides, reduced HDL cholesterol levels, high blood pressure and raised fasting plasma glucose levels or Type II diabetes mellitus patients who are inadequately controlled by life-style and medical therapy.

3. A surgical approach may also be appropriate as a non-primary procedure alternative to treat Type II diabetes mellitus patients with BMI >27 and central obesity (waist circumference more than 80 cm in females and more than 90 cm in males) who are inadequately controlled by life-style and medical therapy.

4. Any surgery performed on diabetic patients with a BMI less than 30 or any novel technique performed on type II diabetic patients should be done only under IRB-approved study protocol with an informed consent from the patient.

The indications for metabolic surgery should not and are not merely an extension of indications of bariatric surgery. In the future, as more evidence and results from clinical trials are being released, BMI may not be the most important criterion for such surgery. Disease-specific end-points may be more important in deciding the indications and we are expecting a very rapid change in this field in the coming near future.

Conclusions and Impact

Most clinicians and patients at present are not aware of the option of surgery for treating Type II diabetes. Increasing evidences demonstrate that gastrointestinal surgery including current bariatric surgery has a specific and independent effect on the disease. The impact of this approach is tremendous and offers new hopes to patients. Although the exact indications and mechanisms are still evolving, more and more patients are requesting surgical therapy for Type II diabetes. Future studies are urgently required to define the exact role and we are seeing an exciting sub-specialty (metabolic surgery) developing in Surgery.

References