

- Not all excess weight is lost
  - Major Undertaking with risk of complications including mortality
1. Extensive patient counselling which involves discussion of all the three surgical options with special emphasis on the risks of each procedure.
  2. Careful evaluation of the patient's expectations is essential. Some patients want a better weight loss and don't mind the risks associated with a sleeve or a bypass while others are not prepared to take those risks and want a gastric banding.
  3. Factors like Hiatus hernia and reflux oesophagitis.
  4. Assessment of patient's compliance in future.
  5. A frank discussion of the surgeon's experience of a particular procedure.

Gastric banding is suitable only in a limited number of patients who are well informed and understand the working of a band. They understand the need for some self-discipline, need for a monthly follow-up initially, need for band adjustments. Weight loss after gastric banding is inferior to sleeve and bypass. So patient's expectations should be defined. They should understand that weight loss after a gastric banding is modest and can be variable.

Decision between sleeve gastrectomy and gastric bypass rests on the following factors:-

1. Patient's preference
2. Surgeon's preference
3. Duration of Diabetes Mellitus
4. Presence of reflux symptoms and hiatus hernia.

Bariatric surgery is an extremely effective means of sustained weight loss. The impact on co-morbidities is impressive with remission/improvement of Type II diabetes, sleep apnea, hypertension, PCOD in majority of the patients. Extensive patient counselling; both by a surgeon as well as a nutritionist, detailed clinical evaluation and a well trained team are the keys to a successful result.

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## Surgical Cure for Type II Diabetes -From Bariatric Surgery to Metabolic Surgery

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**Abstract:** India is fast becoming the diabetes capital of the world. A significant proportion of these patients are overweight or obese. Bariatric surgery leads to a remarkable impact on type 2 diabetes mellitus. Remission of the disease occurs in 60-80% of the patients undergoing surgery i.e. these patients are off any anti-diabetic medication while maintaining normoglycemia. The impact occurs early in the post-operative course before any significant weight loss has occurred. Thus, factors other than weight loss are responsible. The possible mechanisms include role of gut hormones like GLP1, faster gastric emptying, decrease in inflammatory status and improvement in insulin resistance. Due to this remarkable impact of bariatric surgery on diabetes mellitus among the morbidly obese population, there is a lot of research going on in the field of metabolic surgery where standard bariatric surgery procedures or some similar novel procedures are being used in diabetic patients with class I obesity or normal BMI patients in hope of remission/resolution of diabetes. Surgical cure of diabetes is possible in near future and it may become the standard of care in a select group of diabetic patients.

Diabetes is a global epidemic affecting about 250 million people worldwide. Being overweight increases the chances of becoming diabetic ten-fold. For those who are obese, the risk of becoming diabetic increases 30-fold. The twin problem of diabetes and obesity in India is increasing at an exponential rate. India leads the world with the largest number of diabetic subjects, earning the dubious distinction of being termed the "diabetes capital of the world". According to the Diabetes Atlas 2009 published by the International Diabetes Federation, around 50.8 million people in India are affected with diabetes and this number is expected to rise to 87 million by 2030. The so-called "Asian Indian Phenotype" refers to certain unique clinical and biochemical abnormalities in Indians like increased insulin resistance, greater abdominal adiposity i.e. higher waist circumference despite lower body mass index, lower adiponectin and higher C-reactive protein levels. This phenotype makes Asian Indians more prone to diabetes and premature coronary artery disease.

Type II diabetes is considered a progressive and relentless disease with progressive beta cell failure. The progressive nature requires ongoing assessment of metabolic control and usually leads to an intensification of

therapy with increasing doses of hypoglycemic agents, including insulin. Furthermore, obesity appears to be the engine driving the epidemic of diabetes and it is most unfortunate that many of these therapeutic agents are associated with weight gain. Thus, the search for cure and/or better control of T2DM is an ongoing process.

In a landmark article entitled "Who would have thought it? An operation proves to be most effective therapy for adult onset diabetes", Pories et al highlighted the drastic impact of surgery on Type 2 diabetes Mellitus. Since then the conventional modality of treatment is being challenged by growing number of surgeons. Published research is providing further evidence that surgery can be more efficient than either standard or intensive medical treatment alone.

It has been well-documented that bariatric procedures such as sleeve gastrectomy, Roux en y gastric bypass and biliopancreatic diversion promote evident and sustained weight loss, with clear improvements in hyperglycemia, dyslipidemia, hypertension and associated co morbidities, as well as mortality in morbidly obese patients (BMI>35.0 kg/m<sup>2</sup>). The impact on type 2 diabetes is particularly impressive with 70-80% patients