

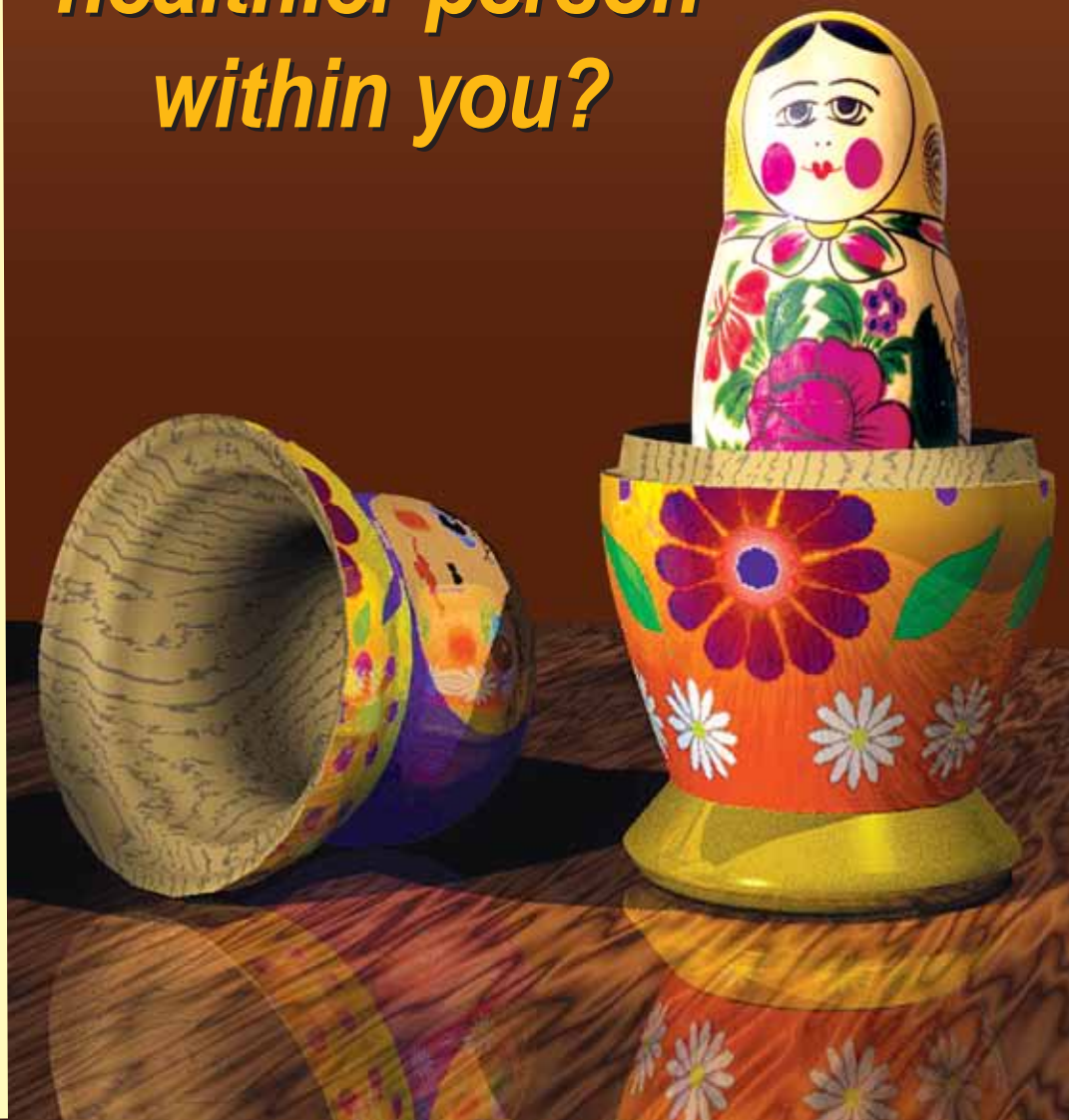
# MARUTHUVA VIVEKAM

Doctors Advice - For a Healthier Life

*Is there  
a slimmer,  
healthier person  
within you?*

**New** 

*MIOT Keyhole  
Surgery For  
Permanent Weight  
Reduction*



# From the Chairman's Desk



Dear friends,

Thank you for your overwhelming response to our campaign for keyhole surgery. Your calls and emails continue to pour in. In this edition we tackle a very contemporary issue – obesity. Currently with the fitness fever sweeping the country – there are slimming parlours, personal trainers, herbal drinks, etc available in every corner. But for the severely obese all these usually mean only a temporary weight loss. As a part of our mission to promote keyhole surgery, we at MIOT are happy to announce keyhole surgery for weight reduction. This is the only sure way to lose

drastic amount of weight permanently.

We hope you find this issue useful. As always, your feedback is welcome.

Goodbye and Good Health!

Mrs. Mallika Mohandas  
Chairman, MIOT Hospitals

## Laughter is the Best Medicine



"I'm going to order a low calorie salad, but I want you to bring me lasagna and garlic bread by mistake."



"It's the hottest new diet! You attach this special modem to your stomach and upload your fat to a skinny person on the Internet!"

Front Piece



# Do chubby children make fat adults?

**Prof. Dr. P.V.A. Mohandas**

Last summer, when our grandchildren came here to spend their vacation with us (grandparents), Mallika was quite upset that they were skin and bones. She rang up our daughter Radhika, who herself is a practicing doctor in the United States, to complain that she is not feeding the kids properly. My daughter advised her not to overfeed them lest they become fat as they grew up.



to divide their weight in kilos by height in metres.

In America and other European countries where they have conducted surveys of BMI in 7 year olds, they have found an increase in the percentage of overweight children from 8% to 21 %.



The cause of obesity is not over eating in adulthood but overfeeding in childhood. In many countries they have begun screening all 4 years old in order to curb health risks linked to obesity. They subject all the children to BMI (Body Mass Index) and prescribe a suitable diet for those children who are overweight. The best index for obesity in a child is

Obesity in children is increasing day by day with junk food like hamburgers and pizzas, french fries and colas. These children grow up prone to heart problems, blood pressure, diabetes and strokes.

**So the treatment of obesity really starts in childhood.**



MIOT Keyhole SURGERIES

For more information visit : [www.miothospitals.com](http://www.miothospitals.com)

Chairman's Desk



# The wider your waistline, the shorter your lifeline

With 300 million obese adults worldwide, obesity is becoming a problem we can no longer ignore. It takes its toll psychologically and physiologically. **Dr. J. Mubarak** examines causes and solutions.

## What is Obesity?

In simple terms obesity means – overweight. Any person who weighs much more than normal, we term obese.

Overeating is the commonest cause of obesity worldwide; especially when the calorie input far exceeds the calories burned. Obesity could also be due to heredity or hormonal disturbances (especially in females), PCOD - Polycystic ovarian disease, Hypothyroidism, Pituitary disorders like Acromegaly and other rare congenital disorders.

## How to Measure Obesity

- The simplest formula is the Brocas Index - Measure your height in centimeters and minus the value by 100.
- For eg. if your height is 165 cms then your ideal weight is  $165 - 100 = 65$ , so 65 kg is your ideal weight.
- The internationally accepted formula is **BMI** - Body Mass Index.

$$\frac{\text{Weight in Kgs} \times 100}{\text{Height in meters square}}$$

2 Indian Criteria for Obesity (Indian Institute of Nutrition, Hyderabad)

BMI	23 - 25	Overweight
	26 - 32	Obese
	33 - 37	Severe obesity
	> 37	Morbid obesity

## Types of Obesity

**Apple shaped obesity** - If you have never heard the term, it means carrying excess weight in the stomach region, also called abdominal fat.



**Pear shaped obesity** - excess fat in the stomach and at hips



**Central Obesity** - the most worrying, and the type that afflicts most Indians - a central pot belly with thin, slender limbs.



## Complications of Obesity:

If you're obese you are at risk of developing one or more serious medical conditions, which can cause ill health and premature death. Obesity is associated with more than 30 medical conditions. These include: diabetes, fatty liver, gall bladder stones, pancreatitis, sleep apnea syndrome, Gastro esophageal reflux disease, Psychological problems like depression, eating disorders, Degenerative diseases like osteoarthritis of knees, heart problems and cancer.

## How to overcome obesity

Obesity prevention should start from childhood.

### Age Group

**Infants** - Encourage sustained breast-feeding for 3-6 months. Discourage early introduction of solid foods (emphasize vegetables)

**Toddlers** - Nutrition - In diet, more, vegetable and fruits. Less juice and sweetened beverages. Encourage outdoor games. Restrict television viewing to less than 1 hr per day. No eating while watching TV.

**Behavioral** - Avoid cooking special meals for kids. Emphasize family meals. Do not use food as reward or punishment. Do not encourage eating beyond satiety (no clean plate syndrome). Be a role model yourself (healthy diet, green vegetables, exercise and minimal TV viewing)

**School age children** - All the above plus encourage sports, and outdoor games. Support a healthy body image, emphasizing strength and fitness.

## Article

### Adolescent - Discourage:

- Take outs or restaurant meals
- Grazing rather than eating meals.
- Withdrawing from sports and physical activity.

### Ideal diet to overcome obesity (specially for working people)

- 6 am tea/ coffee without sugar
- 8 am breakfast - Oats / Com flakes
- Before going to office take a tiffin carrier which has 4/5 boxes
- Each box should have the following - Few pieces of apples, Few pieces of cucumber / salads, 1 cup butter milk, 1 cup soup, 1 cup juice without sugar, a flask containing sugar free tea
- For lunch - three cups of cooked vegetables, one chappathi, one cup of dal, one cup sprouts, Rasam one cup
- Evening - Tea with skimmed milk
- Dinner - few pieces of apple and salad



### Conservative approaches for the treatment of obesity

**These include:** Diet control, Behaviour Therapy, Drug therapy and Exercise.

### Drug Therapy

Treating obesity with drugs is unsuccessful because it results in only 5 -10 % weight loss.

In almost all cases weight gain recurs after stopping the medicines. Also all obesity drugs and appetite suppressants have to be taken long term and cause side effects.

Herbal medicines are unregulated and relatively untested.



### Behaviour Therapy

Set the right goals. Successful weight managers are those who select 2 or 3 goals at a time that they are willing to take on. For instance, "Exercise more" is a commendable resolution but not specific. "Walk five kilometers everyday", is specific and measurable but not attainable. Hence you need to set yourself a target like - "Walk 30 minutes five days each week", which is specific and attainable.

- Self-monitoring – Maintain a food diary to record your calorie intake.
- Weigh yourself regularly.
- Don't eat while watching television.
- Meet friends and colleagues in non-food settings.
- Keep fresh fruit available at home, rather than pastries and chocolates.
- Slowing the rate of eating can allow satiety (fullness) signals to develop earlier.
- Take up a sport.

### Weight loss through Surgery

This is an important option for adults with severe obesity which is discussed in the next article.

Remember, obesity is a life-threatening disease.

**Dr. J Mubarak**  
Obesity Specialist

## FREQUENTLY ASKED QUESTIONS

### Q Who should undergo Weight Reduction Surgery?

A Weight Reduction surgery can be performed on anyone between 18 – 80 yrs, of age who has been obese for at least 5 years; Has medical problems that are made worse by obesity; Has been unable to reduce weight or maintain weight loss through other means

### Q Is weight loss guaranteed?

A Yes, weight loss is guaranteed.

### Q Will my figure be shapelier?

A You will experience uniform weight reduction after surgery. But to tone your figure, you need to exercise.

### Q Are there any side effects?

A There are no side effects.

### Q Since my stomach is smaller, will I get enough nutrition?

A You will get your normal nutrition, which you can supplement with B12. Women may have to take extra calcium during pregnancy or menopause.

### Q Will I get tired because of less food?

A No. On the other hand you will feel better as you lose weight.

### Q How expensive is this procedure?

A Keyhole Surgery costs Rs. 2.25 lakhs – inclusive of hospital stay for 4 days.

# Winning the Battle of the Bulge

*Advances in weight reduction surgery now make it a viable option for the severely obese, says Dr. Maran.*

In this affluent world with rising economic prosperity, keeping control of one's weight is a major battle. Some people just surrender to temptation, resulting in an accumulation of fat that leads to many complications. This was a problem in the developing countries but today, in an emerging India too, it is becoming a concern. Currently there are over 300 million obese adults and 1.1 billion overweight people worldwide. Obesity is on the verge of surpassing smoking as the # 1 cause of preventable death.

## Who should lose weight?

Anyone who is obese (has a **body mass index [BMI]** of 30 or higher); Overweight with health problems that can worsen with obesity like heart disease or diabetes, or has a waistline of 40 in. in men or 35 in. in women, combined with two or more health problems.

If you are in the above category, it is recommended that you lose 10% of your current weight at a rate of 0.45 kg to 0.9 kg a week for six months.

## Do diets work?

Restricting calories and increasing exercise are the major components of treatment for obesity. When following this treatment plan, keep in mind that though low-calorie diets results in quick weight loss, the weight is often gained back.

Research also indicates that exercise is better for maintaining weight loss than triggering initial weight loss.

*The most important factor in a weight loss programme is your commitment to losing weight. If you are not motivated to do so, it*



*will be more difficult to make the lifestyle changes necessary to lose weight.*

If you do not lose weight, continue to gain weight, have lost weight several times only to regain it, or if your health professional is concerned about a related health problem, you need surgery.

## Should you treat obesity with surgery?

There are many young to middle-aged adults whose health is being jeopardized by morbid obesity—people who are at least 100 pounds overweight or twice their ideal weight. This excess weight often limits their ability to succeed and move ahead in both business and social situations. They



also risk such life-threatening conditions as diabetes, cardiovascular disease, hypertension, orthopaedic problems, gall bladder disease and sleep apnea. While numerous approaches to morbid obesity have been advocated, including low-calorie diets, drugs, and exercise therapy, the majority of patients fail to maintain the reduced body weight.

The only treatment proven effective in the long-term management of morbid obesity is bariatric (weight reduction) surgery—such as a laparoscopic gastric bypass or laparoscopic adjustable gastric banding (Lap-Band) procedure.

## MIOT Keyhole Surgery for Weight Reduction

Today MIOT KEYHOLE SURGERY is an effective way to permanently reduce your weight to a desired level. We achieve this by reducing the stomach capacity by 3 to 4 times the normal. The normal capacity is 2 to 2.5 liters but in obese patients it is 8 to 10 litres. This leads a person to eat 4 to 5 his normal capacity. By reducing the stomach capacity by 3 to 4 times we can achieve weight loss of 1 kilo a week.

## Laparoscopic Gastric Banding

The Adjustable Gastric Band is a hollow band made of elastic. The band is placed around the upper third portion of the stomach to create a small pouch that initially holds 2

ounces of food, and eventually holds upto 4 to 6 ounces. Creating this restricted stomach space in the upper portion of the stomach causes a feeling of fullness because the nerves that signal the brain when you're full are located in the upper area of the stomach. The band further works by slowly allowing the food you eat to be released into the lower portion of the stomach for digestion. This is a day care procedure.

## Laparoscopic Roux-EN-Y Gastric Bypass (RGB)

This is the most common bariatric procedure. First, we create a small stomach pouch with staples. This restricts food intake, then we attach a Y-shaped section of the small intestine to the pouch to allow food to bypass the first and second segments of the small intestine. This reduces your body's ability to absorb nutrients and calories. After this surgery you can go home on 3rd or 4th day.

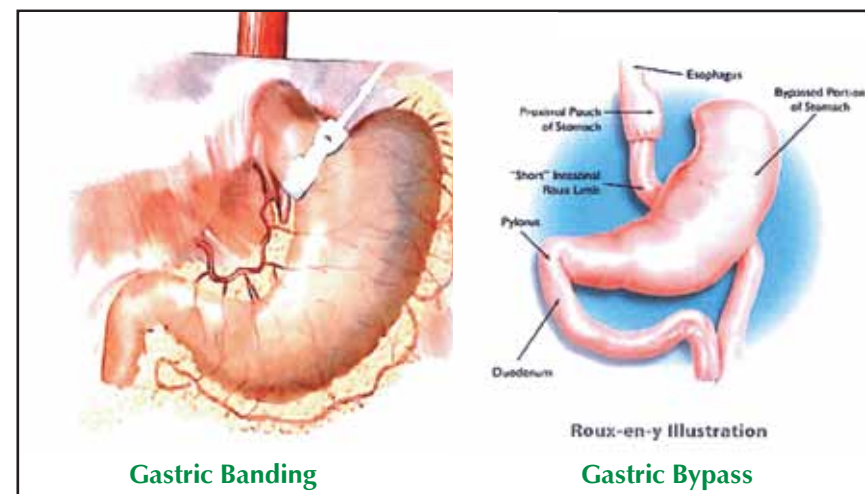
### GASTRIC BANDING

Reversible  
Upto 40% of weight reduction in 6 months  
Ideal for young patients with less complications  
No nutritional deficiency

### GASTRIC BYPASS

Irreversible  
Upto 60% of weight reduction in 6 months  
Suitable for elder patients with more medical problems  
Minimal nutritional deficiency

In both surgeries, patients need monthly follow ups for atleast 6 months.



## Eligibility for surgery

- Age between 18 yrs - 80 yrs
- Medical causes of obesity ruled out
- BMI of over 35 with medical problems like DM/HT/Arthritis/Asthma/Sleep apnea/infertility
- Non alcoholic
- No psychiatric disorders

## The Keyhole Advantage

Many morbidly obese patients are reluctant to undergo gastric bypass surgery - traditionally an open, invasive procedure. But thanks to new, minimally invasive surgical techniques, this "last-resort" treatment has become more appealing.

Through the keyhole technique, the surgeon performs the same operation as in open surgery, but through small incisions. This offers many added patient benefits, like - less post-operative pain, reduced risk of wound infection, a shorter



hospital stay, faster recovery and a more rapid improvement in quality of life.

## What are the results?

Results vary with each patient.

Most gastric bypass patients experience fairly rapid weight loss in the first three to six months after surgery. Then, weight loss slows, but generally continues upto 12 to 18 months after surgery, averaging 70 to 75 percent of excess body weight.

With the Lap-Band, weight loss is generally slower and more gradual compared to the gastric bypass. Typically, patients lose up to 55 percent of their excess body weight within 18 months.

**The operation itself is not the whole answer.** A multidisciplinary approach - surgeon, dietician and psychiatrist and family support - is needed to help the patient lose and keep weight off. The goal is not only weight loss, but also the reversal of serious medical conditions.

**Dr. M. Maran**  
Director, Minimal Access and GI Endoscopy

## In My Own Words

*A patient discovers that her “Knee problem” was actually a “weight problem.” Mrs. K. Nalini describes her experiences with MIOT Keyhole Surgery for Weight Reduction.*



**Mr. Charles prior to Surgery**

I was always a plump child and an overweight teenager, but after marriage and 3 children my weight just went out of control. At the beginning of this year I was tipping the scales at 105 kgs.

Every now and then I would try some dieting - but all it did was increase my craving for food. Soon I would be back to the usual weight. As I grew older my weight began affecting my enjoyment in life. It was embarrassing for me to go shopping or visit the tailor. Every magazine and movie seemed to be filled with slender women. My family kept urging me to join yoga or take up exercise. But when walking itself left me breathless where was the question of running on the treadmill?

### **Knee problem or weight problem?**

Two months back I went for a check

up and took stock of myself. I was 42 years old. Severely obese. I had high blood pressure and diabetes for which I was taking medication. Even my range of exercise was getting more limited as I began developing a problem with my knee.

Finally it was my knee problem that drove me to the doctor. It was an election year and my husband an ex-Minister could not concentrate on his campaign so worried was he about my decreasing mobility. Finally, I came to MIOT Hospital to meet Dr. Mohandas.

When Dr Mohandas examined my knee, he saw that the real problem was my immense weight, putting pressure on the joint. Any positive results of the knee surgery would be overwhelmed by my other medical problems. So, he suggested that I undergo keyhole surgery for weight reduction.

### **A BIG decision**

Surgery for knee I was prepared for, but surgery to lose weight? At this point Dr. Mohandas suggested I meet Mr. Charles a patient from Seychelles who was recovering from the same surgery, in the hospital.

When I met Mr. Charles I actually felt slim in comparison. His enormous weight was spread over 2 beds. He told me that he had undergone keyhole surgery for weight reduction a week ago and he had already lost 10 kgs! He also assured me that the surgery was practically painless and left him with only 2 small scars on his abdomen.

On March 21st I checked in for the surgery at MIOT. The surgeon had explained the 3 types of procedures I could opt for, for weight reduction surgery and we had decided on LAP BAND – where an elastic band would be placed around my stomach restricting my appetite. I underwent the procedure successfully and was put on a liquid diet (till my stomach healed).

### **Winning the Battle**

I am currently on the verge of being discharged. My BP and diabetes are both under control without medication. I have already lost weight at the rate of 1 kg a day. Best of all, my knee problem seems to have sorted itself out and I’m told that I may not require surgery for it.

My relieved husband has returned to his campaign leaving me in the safe hands of MIOT!

Believe it or not

## Jumbo Sized Surprise

*An extremely obese woman displays an unusual “side-effect”.*

An extremely obese woman weighing about 170 kg was scheduled to undergo a keyhole gastric bypass surgery (laparoscopic roux-en-y) at a well known medical center in America.



Prior to the date of the surgery she was seen at the pre surgical assessment clinic for evaluation of surgical and anaesthetic fitness. In her medical history it was revealed that she had always had irregular menstrual periods, and her last one had been 3 months ago. The anaesthetist asked her if there was any chance she could be pregnant and offered her a pregnancy test.

### **“Pregnant? Not I !”**

It is generally recommended that women do not undergo elective surgery with anaesthesia when they are pregnant, because it poses a risk to the foetus (baby) in terms of drug effects and there is a risk of miscarriage or premature labour as well. Doctors therefore routinely address the issue of possible pregnancy among women of childbearing age when they come in for surgery. If a woman thinks there is a chance she could be in an early state of pregnancy, she is offered a spot pregnancy test before she is taken to the theatre.

The patient strongly denied she could be pregnant, reiterated that she was single and lived alone and

declined the test. On the day of surgery, the anaesthetist in charge noted these facts in her medical papers and offered her the test again, keeping in mind the history of irregular periods, emphasizing the simplicity of the test and the possible risk to the baby. At this point the patient got very agitated and angry. She demanded to know why everyone was so obsessed with this issue, and threatened to leave if she were asked once more. She assured the doctors that she was not pregnant. After making a detailed note of this conversation in the chart, the anaesthetist proceeded to wheel her into the operation theatre. She was anaesthetized and the surgery proceeded.

As the laparoscopy went under way, instruments and cameras were introduced into her abdomen through keyhole sized incisions, and the abdomen was expanded with gas for better visualization, as is the usual procedure.

### **“What’s going on?”**

One of the surgeons nicked the surface of an organ near the stomach. On closer examination it proved to be the uterus. Now what was the uterus doing in the abdomen when it should have been in the pelvis, far below where they were working? It was quite bulky.

What happened next was the stuff movies are made of. The assistant surgeon suddenly yelled, “There’s a hand coming out of the uterus!” The others stared at the video screen- they saw nothing. The assistant said, “There it is again.” They reviewed the video clips. Something was definitely bulging out of the uterus. Was it a hand? Or another body part? Opinions varied. The Obstetrician was summoned

urgently. When she placed a heart monitor on the patient’s abdomen under the drapes, there was a heartbeat. Ultrasound showed a foetus a few weeks near term. But the baby was in trouble- the heart rate was dropping. Needless to say, all ideas of performing a gastric bypass were quickly forgotten, as theatre personnel scrambled to get ready for an emergency caesarean section. Consent was obtained urgently from the family members waiting outside. A few minutes later, a healthy slightly premature baby was delivered.

### **“It’s a boy!”**

There remained many unanswered questions. Did the patient know she was pregnant? She denied it afterwards. She had felt no movements, and she had had no other indications of having been pregnant. She never weighed herself, and nobody known to her had noticed a difference in size. She was already so obese that the presence of a baby did not make a difference!

Many diseases are associated with obesity like diabetes, high blood pressure etc. But the doctors at this hospital had the chance to see something new. It goes without saying that the hospital changed its policy from then on and made pregnancy testing mandatory for all women of childbearing age when they arrive for surgery. But the learning point here revolves around the problems associated with extreme obesity. Obesity deals a severe blow to every aspect of normal life and should be dealt with effectively.

**Dr. Sudha Rajgopalan**  
Cleveland Clinic, USA.



# A Very Big Matter

As a Resident under training at the Cleveland Clinic Foundation in the United States, I once admitted a young man about 42 years of age. He had complained of difficulty breathing, and was brought by the ambulance to the hospital. Nothing unusual, one might think, except that this man weighed 700 pounds (318kg)!

## A weighty problem

I proceeded to take a medical history while examining him. He lived alone and had not left his apartment for 2 years. Worse, he hadn't got out of bed in the last 6 months! His legs couldn't support his weight any more. At this point, I noticed how large he looked as he lay in the biggest bed the hospital could find. He was of average height, but was very wide. The pads of fat hanging down from his abdomen fell over his legs so one could only visualize his

lower limbs from the knees downwards.

He had always been overweight and very fond of food, and remembered being laughed at by the other children as a little boy. As an adult, he had worked for a few years, but his weight increased to a point where he had to quit. He was on a disability allowance after that, and Medicare (the government insurance) gave him a small sum of money and a nurse who came in to take care of him Monday to Friday. He once attempted to go through a weight-reducing program at a weight loss centre, but couldn't keep up with the protocols when he returned home. After that, he gave up trying, and his weight rapidly spiraled out of control.

## Busted out

So I wondered at this point, if he was

too big to leave his apartment, how did he manage to come to the hospital? The answer was found in the emergency team's report- they told us that he couldn't fit out of the door- so they had to break down the front wall of his apartment in order to get him out! He was then carried in an extra large stretcher and transported in a special truck.

So how did he manage to do eat, seeing that he never could get out of bed? He said that the nurse left food by his bed everyday. His bedside was stocked with snacks and chips. The TV remote was always with him, and with the TV in front of the bed, he passed the time of day. "How do you use the bathroom?" I asked. The nurse just cleaned him everyday. So how about the weekends when the nurse was not around? He just lay in bed waiting for Monday when she could come again. I felt a little sick when I heard this.

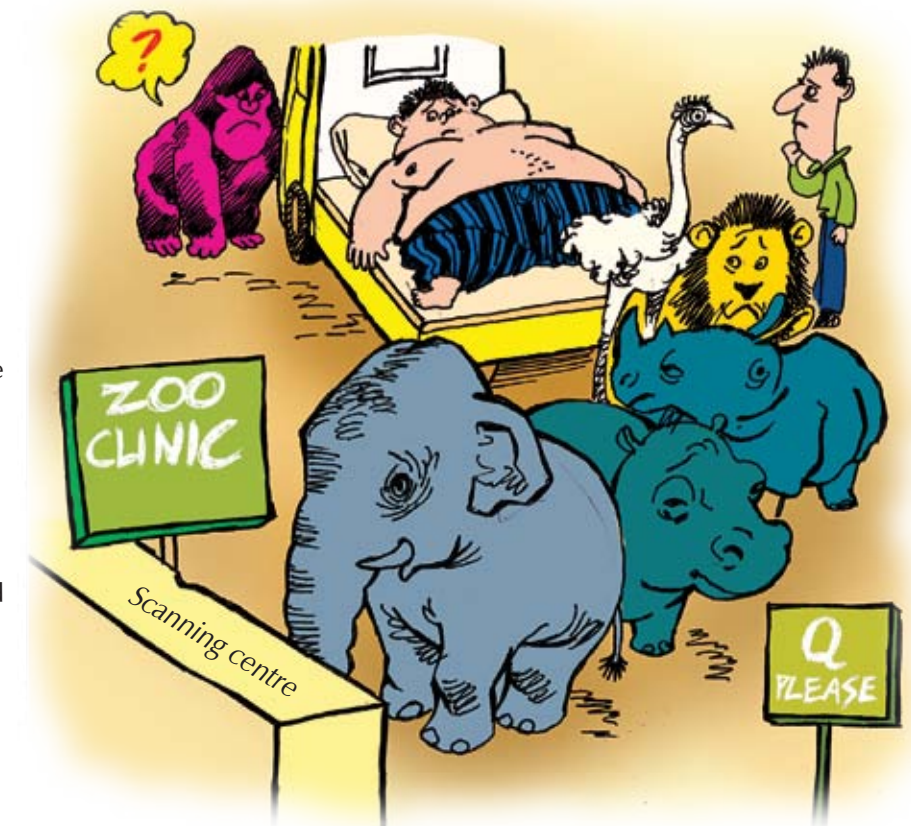
## Jumbo solution

We sent him for a chest X ray, only to get back a report that the X ray plate was too small to cover his chest and anyway nothing could be seen in the X ray owing to the immense amount of fat. He required a CT scan to evaluate his lungs. But here we had a hurdle- the CT scanner was not large enough to accommodate his size. After some discussion, the radiologist came up with the solution- he would be sent to the city zoo to be scanned in the animal CT scanner, which for obvious reasons was a lot bigger! I hadn't realized until then, that animals actually enjoy that level of medical care in the USA! I had visions of my patient going into a giant CT scanner while a couple of elephants and a hippo stood in line patiently awaiting their turn!

Anyway, it turned out in the end that there was nothing seriously wrong with his lungs and this was all due to his weight. We discussed his options with him. A gastric bypass surgery would have been ideal for him to lose weight and get back to a productive life, but he wanted to try and lose weight the traditional way first. We agreed to give him a chance at another weight loss center, after he promised to try harder this time, with the understanding that if the attempt fails, he would go in for surgery.

I never saw him after he was discharged, but I have every hope that one day he might walk again and maybe even go back to work.

**Dr. Sudha Rajgopalan Mohandas**  
Cleveland Clinic, USA.



# "There goes Fatty!"

*Diabetes and cardiac problems are not the only drawbacks of being obese. Severely overweight people suffer in many other ways as well*



Seriously overweight persons face constant challenges to their emotions: repeated failure with dieting, disapproval from family and friends, sneers and remarks from strangers. They often experience discrimination at work, and cannot enjoy theatre seats, or a ride in a bus or airliner. The severely overweight person faces challenges even in small routine acts like that others take for granted. Many may be on starvation diet but friends and relatives scrutinize their eating habits – convinced that that are

sneaking food. They cannot perform simple things; walking up stairs or tying shoes is a major ordeal. Stereotypes of obese people – such as that they are lazy – may result in lower self-esteem and poor body image. There is no wonder that anxiety and depression might accompany years of suffering from the effects of a genetic condition - one which normal people all believe can be controlled easily by will power.

## Social outcasts

Severely obese persons suffer inability to qualify for many types of

employment, and face discrimination in employment opportunities, as well. Ignorant persons often make rude and disparaging comments, and there is a general societal belief that obesity is a consequence of a lack of self-discipline, or moral weakness. Many severely obese persons find it preferable to avoid social interactions or public places, choosing to limit their own freedom, rather than suffer embarrassment.

# Surgery Without Worry

*" You need an operation"*

*The moment these words are uttered you are struck by anxiety. Images of large wounds, stitches, pain and a long hospital stay keep you away from the surgeon, usually until complications set in.*

*What's changed now?*

*MIOT's advances in medicine allow major surgeries to be performed through an opening the size of a keyhole.*

But, the benefits to you are mega-sized. Limited opening means limited exposure to infection (safer), minimal pain and a small, barely visible scar.

Your stay in the hospital is shorter (sometimes you're discharged on the same day). Your recovery is quicker and you can be back at work or the sports field in a shorter time.

Why is keyhole surgery not practiced everywhere?

Successful keyhole surgery relies on the use of expensive scopes and

miniaturised cutting instruments. Also crucial, is the training and experience of surgeons in these techniques. At MIOT, close to 1000 keyhole surgeries have been performed successfully.

Does keyhole surgery cost more? Can every major surgery be converted to a keyhole surgery? You'll find the answers on our website.

So, if you or your loved ones have to go undergo surgery shortly - think keyhole surgery. Think MIOT.

#### **MIOT Keyhole Surgeries include:**

- Surgeries for ulcers ● appendix
- gall bladder ● liver ● spleen
- pancreas ● hernias
- hysterectomy ● brain ● lung
- surgery for obesity ● shoulder
- knee ● spine ● heart surgery

**MIOT Keyhole**   
**SURGERIES**  
Safe ● Sure ● Superior