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Psychological Effects of Surgical Intervention for Morbid Obesity

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"One summer I was living in the country, and for awhile I got into a very sensible routine around eating, and I also hiked for about four miles a day. But I lived near a town that had three or four bakeries. I always knew they were there, and one rainy afternoon it got to be just too much. I went into one of the bakeries and bought a piece of cheesecake and several other things. I remember the first bite: it was so good. But then the mania started and I just gobbled everything down. I ended up feeling sick but I didn't care."(Millman, 1980)

Feelings such as these could be elicited from most any obese person. Obesity is a life-threatening disease affecting anywhere from 10% to 30% of the population in the United States. It can be defined as occurring when a person's weight is 10% in excess of the normal body weight. Excessive or morbid obesity is present when there is a 20% increase over the normal weight. It is medically accepted as the cause of or associated with a variety of health hazards such as diabetes, hypertension, and coronary artery disease. The general mortality is 42% over the average for obese men and 36% over the average for obese women. There are other disadvantages for the obese person, including impaired job opportunities, increased cost of clothing, shyness, and difficulty in relationships. There is broad agreement among the medical community that a reduction in the incidence of obesity would

advance public health. Women are generally more often obese than men, although these figures may be skewed since more women seek medical aid than men and female obesity is less culturally acceptable than male. The medical costs of obesity can be calculated, and they are astronomical, but the psychic costs to the millions who are obese can only be guessed at.

A recurrent theme in the study of obesity is the almost despairing report of failure of long-term treatment. Careful studies have revealed that "most obese persons will not enter treatment; of those who do, most will not lose weight; and of those who lose weight, most will regain it." (Stunkard & McLaren-Hume, 1979)

The traditional medical view ascribes these failures to an inability of obese people to control their food intake, a view as useful as ascribing alcoholism to an inability of the alcoholic to control alcohol intake. The traditional response by medical personel has been frustration and even anger based on that underlying theory. Most health care deliverers and many therapists throw up their hands in disgust when faced with the obese patient who whines "I want to lose weight, but I just can't". In response, many are turning to surgery as an operative solution for morbid obesity. But there is no simple answer to obesity.

Newer research findings lend support to the concept of

obesity as a disease of multiple etiology. Evidence has been developed that supports a) the influence of social factors on the prevalence of obesity, b) the influence of situational determinants on overeating, c) the distinctive characteristics of the physiology of adipose tissue, d) the determinants of disturbance in the body image of some obese persons, and e) the effectiveness of behavioral measures and other therapies in the control of obesity.

SOCIAL CLASS

Within the very recent past a series of studies have documented unsuspected determinants of obesity: social class and sex-role stereotyping. To a remarkable degree, the prevalence of obesity in the general population is under the control of social factors. Socioeconomic status as defined by education and occupation is inversely related to the prevalence of obesity, particularily in women. In underdeveloped countries, the upper classes are obese; in the developed countries, the opposite is true.

In the Midtown Manhattan study, a comprehensive survey of the epidemiology of mental illness, 1600 adults were divided into three weight categories: "obese", "normal", and "thin". Socioeconomic status was divided into "low", medium", and "high". There was a marked inverse relationship between the prevalence of

obesity and socioeconomic status. Data revealed a rate of obesity of 30% in low status women, 16% in medium staus women, and 5% in high status women. Among the men, the differences were similar but not as striking with 32% in low status men and 16% in high status men (Srole, 1962).

Two other studies have corroborated the Manhattan study. A study from London found an inverse relationship between social class and obesity, although the differences were less marked (Silverstone, Gordon, & Stunkard, 1969). The second study, carried out by Hinkle (1968) on the executives of Bell Telephone, was designed to determine the effect of socioeconomic status and upward mobility upon the incidence of coronary artery disease. In direct contrast to the expected results, higher status was inversely related to coronary artery disease. Examination of the data revealed that obesity was inversely correlated with status also.

By far, women comprise the greater number of obese people. Recent analysis of obesity from a feminist perspective suggests that obesity is a reaction to being female in the American society rather than a character defect. Viewed this way, fat is a social disease and not lack of self-control or will power. Over-eating can be thought of as a definite and purposeful act that is directed, either consciously or unconsciously, at challenging

sex-role stereotyping and the culturally defined experience of womanhood. (Orbach, 1978)

Berger (1972) postulates that women are taught to regard themselves as objects or commodities. A woman's identitity depends on how she and others see her:

> "Men act and women appear. Men look at women. Women watch themselves being looked at. This determines not only most relations between men and women, but also the relation of women to themselves." (Berger, 1972)

This emphasis on appearance as the central aspect of a woman's life makes her self-conscious. It demands that she occupy herself with body and self-image. As discussed later, obese people have body image disturbances. Within this lies the paradox that eventually traps many women into the perpetual struggle to lose weight. Ideally, there should be no discrepency between body structure, body image and social acceptance. Obese women live under the pressure of a derogatory social environment. Such a continuous insult can result in a dual system of actual body image and desired body image. The inability to maintain weight loss reflects the fundamental body image disturbance. A woman must be sexually attractive as defined by the ever-changing current standard in order to obtain a husband and then keep him. This is an extremely self-centered activity. Then she must easily shift

into being a wife and mother which is other--centered activity. In anger at having to be what everyone else defines them to be, women can turn to eating as a way of providing themselves with the emotional nurturing they are not receiving. After all, she is responsible for the care and feeding of everyone else. If she is a career woman, she is often not taken seriously if she presents herself as attractive. At the same time, if she is not attractive, her chances of success in business are severely limited. By being obese, she can make a statement that says "I am substantial, you have to deal with me." Caught in paradoxical tension, fat can be a positive rejection of sex-role stereotyping.(Orbach, 1978)

SITUATIONAL DETERMINANTS

Recent studies have demonstrated the surprising degree to which the eating behavior of obese people is under environmental control. Miller, Bailey, & Stevenson (1950) in a study of behavior of hypothalamic obese animals, suggest that such behavior is characterized by an impairment in the mechanism of satiety, and probably also by an impairment in the drive to eat. The animals overate when food was freely available, but when an impediment was placed in their way, food intake decreased to far below that of the control animals. This view of the food intake of the animals has proved compatible with the clinical picture seen in many obese patients. A characteristic complaint is the inability to stop

eating once they start, but it is the exceptional obese person who presents a picture of voracious overeating, or a desire for food which drives him in the way that a desire for narcotics drives the addict, or the need for a drink drives the alcoholic.

An ingenious experiment by Nisbett (1968) assessed in man the behavior described by Miller. Subjects who were college males were invited to participate in an experiment that required fasting during the testing period. They performed a bogus task and then were asked to fill out a questionaire in a room containing a chair, table, and refrigerator. On the table was a bottle of soda and either one, two, or three sandwiches. Subjects were told that there was more food in the refrigerator if they wanted it.

The procedure was designed to reduce any possible self-consciousness on the part of the obese subjects. Food intake paralleled that of the obese animals. When provided relatively unlimited access, the obese subjects ate considerably more than did their normal weight controls. When the impediment of taking additional food from the refrigerator was introduced in the one sandwich condition, however, the food intake of the obese subjects fell considerably below that of the controls. This experiment was the first direct demonstration in man of a kind of eating behavior characteristic of a wide variety of experimentally obese animals.

PHYSIOLOGY OF ADIPOSE TISSUE

A series of studies by Hirsch (1968, 1969) has established that the fundamental characteristics of adipose tissue are determined early in life. Overfeeding in the critical period produces a highly cellular adipose tissue. With increasing age, adipose loses its ability to grow by cell division, and by adult age, an increase in body fat is accomplished by an increase in cell size, not by an increase in cell number. There is little difference in the metabolism of fat in obese and nonobese subjects. There is simply more room within a specific number of cells for storage of fat in obese patients.

This work has clinical significance in that people who become obese in the critical period of infancy or childhood will have a greater difficulty in weight reduction because of the increased number and size of adipose tissue cells. In contrast, the adult-onset obese person simply has an excess load of fat. A juvenile-onset person would achieve a similar weight loss to an adult-onset person by decreasing the fat content of the excessive number of adipose tissue cells to an abnormally low concentration. The adult-onset would need to lose only the excess fat stored in her appropriate number of fat cells. Clinically these two groups are different and recognition of this factor may be useful in the establishment of more realistic treatment goals for people with juvenile-onset obesity.

BODY IMAGE

A distinctive kind of disturbance in body image has been observed as one of the very few psychopathological characteristics specific to obesity. These disturbances, which affect only some obese people, appear to be persistent, unaffected by weight reduction, even of long duration, and relieved only by psychotherapy (and often not even then).

A study of 74 randomly selected obese people revealed disturbances in three aspects of the body image of some of these people (Stunkard & Burt, 1967). Others were entirely free of these disturbances. The disturbances were noted in a) view of the self: many were revolted by the sight of their bodies; b) self-consciousness in general: many harbored an intense self-consciousness and even misconceptions of how others viewed them; c) self-consciousness in relation to the opposite sex: many exhibited disturbances ranging from avoidance and inhibitions to hateful devaluation of the opposite sex.

One of the most surprising aspects of the body image disturbance is the age of onset. This disturbance occurred almost exclusively among people who had become obese during childhood or adolescence, the so called juvenile-onset obese. It has long been established that adolescence is a critical period in sexually-related body image development. In a group of 2000

children followed for thirty years the odds against a obese child becoming a normal weight adult were 4 to 1; for those who did not reduce during adolescence the odds were more than 28 to 1 (Schachter, 1968).

DEVELOPMENTS IN THERAPEUTIC TECHNIQUES

These research developments have two major implications for therapy. There is a strong probability that obese people, particularily those with early onset obesity, suffer from a metabolic disorder. Nonetheless, their food intake is determined to a considerable degree by environmental factors. Appropriate use of these findings could be effective in the control of food intake by these obese patients.

With the view that obesity is a disease of multiple etiology, it follows that the psychological aspects of the disease are also multiple. What has frustrated clinicians and obese persons alike for many years is the realization that there is no one source of obesity nor one answer. Bruch (1957) and Yudkin (1959) suggest that some people need to be large in body to compensate for feelings of inferiority and therefore have a vested interest in remaining fat. Craddock (1978) postulates that the majority of obese people keep themselves in emotional balance by eating. They eat to prevent or relieve anxiety or depression, but are not psychiatrically impaired and fall within the normal ranges

psychologically. Newburgh (1931) noted that some individuals use food as comfort and compensation for a lack of love. These people are most often children who lack love from one or both parents, single people or couples who have no children, and unhappy people living in stress and generally lacking affection. Conrad (1954) speculated that specific intrapsychic factors such as efforts to prevent loss of love, to express hostility, to symbolically undergo pregnancy, or to avoid sexual temptations are the basis of obesity.

Whatever the etiology may be, it was not until recently that any therapeutic intervention began to approach even nominal success. Failure was reported following some ambitious and sophisticated treatments at the same time that success was reported for some of the more superficial treatments. Drugs have been tried extensively, as well as radical fasting regimens. Surgical small bowel intervention proved to be even more life threatening than obesity in long term studies (Halverson, 1978). More recent surgical intervention by gastric restriction hold more promise but essentially remains most effective in conjunction with supportive therapy.(Mason, 1980)

BEHAVIORAL THERAPY

Stuart (1967) reported on the successful treatment of eight obese person using behavior therapy and heralded a new era in the treatment of obesity. Behavior therapy has probably offered

greater promise of positive results than any other form of treatment because unlike any other form of psychotherapy, it focuses on the patient's actions and interactions within the current environment. Nisbett's (1968) work mentioned above, substantiates this focus. Behaviorists in general consider obesity as a problem of behavior, not attitude. The treatment of obesity has typically stressed the developement of "self-control" by the over-eater. This lack of self-control is often regarded as a personal fault. Behavioral therapy recognizes that self-control is a set of responses designed to modify the probability of another set of responses occurring and that self-control responses are acquired through social learning (Stuart, 1974).

The relevance of the concept of self-control is under attack. Stunkard (1970) has demonstrated that in comparison to nonobese people, obese people are far more likely to respond to external events as cues for hunger than to gastric "rumblings". In addition, Schachter (1968) showed that when eating cues are absent, as on religious fast days, obese people are more likely to observe the restrictions than the nonobese. These and other studies suggest that one of the requirements for the treatment of overeating must stress environmental management rather than self-control because the cues of overeating are environmental rather than intrapersonal.

The task of the behavior therapist is to help change the inappropriate behavior and facilitate the maintenance of the new desirable behavior patterns. This usually involves the direct modification of the patient's life style in order to reduce or eliminate one set of behaviors and increase the incidence of desirable behaviors leading to appropriate new behaviors. Then the patient's social and physical environment is restructured to support the new behavior and discourage the return of the inappropriate behavior.

Behavioral treatment procedures fall into three broad categories: environment control; dietary tailoring; and exercise. Within these categories, several different stategies are commonly used: positive control, systemic desensitization, aversion control, extinction, and modeling.

First, an effort is made to establish firm control over the eating environment. This requires the elimination or suppression of cues associated with problematic eating while strengthening the cues associated with desirable eating patterns. A food diary is kept listing all the times, places, activities, people, amounts, type, and emotions associated with food. Once the problem behaviors are identified, such as eating in front of the TV or in bed at night or constant early evening snacking, the process of extinction can begin. Positive consequences are withheld or

attached to other behaviors and gradually the old behavior is extinguished and the new behavior positively reinforced by the therapist and environment. If the problem is eating in front of TV, eating is restricted to a room without TV and for every week that food is not eaten in front of the TV, a non-food treat is encouraged such as a trip to the park or a movie.

Second, an effort is made to establish a dietary program for each person on an individual basis. Part of behavioral therapy must be a manipulation of the energy balance between the consumption of energy as food and the expenditure of energy through exercise. Weight can be lost only through an increase in the amount of exercise, holding food intake constant; a decrease in food consumption, holding exercise constant; or an increase in exercise and a decrease in food consumption. Declining exercise is associated with "creeping" overweight. Inadequate diets of the wrong kinds of food lead to physiologically higher proportions of calories available for adipose tissue.

Third, an effort is made to develop an individual exercise program based on walking in most cases. In introducing the need for exercise, the patient is offered a choice between adherence to a punishing diet which may lead to chronic discomfort and a more permissive diet coupled with exercise which may lead to discomfort for an hour or less per day. Other successful patients can be used

in this area to model appropriate behaviors.

As an example, the therapist working with an obese patient might use the following techniques: modeling, with pictures of thin people; contracting, to encourage the patient to eat in only one room in the house; positive reinforcement, to support the finding of pleasure in rewards other than food; extinction, by withholding attention to decrease repeated references to food; and covert self-instruction, to interrupt the obsessive thoughts about eating.

Early results from behavioral studies were highly encouraging (Stunkard and Mahoney, 1976). More recently, studies evaluating the long-term efficacy of behavioral therapy have questioned this initial enthusiasm. The status of behavioral therapy for obesity can be summarized in the following four conclusions:

1) Behavioral treatment has been more effective than other methods on a short-term basis. Stunkard (1979) reviewed thirty studies and found consistant better weight losses in mild to moderately obese patients using behavioral therapy.

2) The outcome is characterized by marked individual variability. Some people will lose a great deal of weight; others lose hardly any weight. Very rarely is weight gained during the therapy. This variability suggests that the

critical variables governing weight loss have yet to be identified.

3) The amount of weight loss in most behavioral studies has not been clinically significant. Jeffery (1978) reviewed 21 studies and found that the mean weight loss was 11.5 pounds. However, in view of the treatment philosophy of gradual behavior and weight change, seizable weight loss would be expected only after prolonged treatment or long-term followup.

4) Long-term evaluations of outcome have been relatively lacking and when they have been done they provide mixed results at best. The findings from 15 controlled studies of followups of over one year yielded the following conclusions: weight loss was maintained at one year in 10 of the 15 studies; no further weight was lost after the cessation of treatment; maintenance of weight loss began to drift after the first year; and there is still far too few studies to adequately evaluate the long-term results of behavioral therapy.(Wilson, 1980)

HYPNOTHERAPY

The other therapeutic modality that has recently attracted attention is hypnotherapy. Hypnosis can be viewed as the art of influencing people without their conscious awareness that enables

them to present resistances. The techniques are similar to those used by advertising, the very same advertising that encourages over-eating behaviors. In a hypnotic state, a message or suggestion is grasped more readily because of the hyperawareness, focused attention, and lack of conscious resistance. Suggestions are in reality new conditioning, and recent data indicates that conditioned reflexes established under hypnosis are more durable and less likely to go into extinction (Kroger, 1973).

Before hypnotherapy is attempted, every obese patient is seen by a physician and evaluated for organic causes. Then the general emotional stability of the patient is assessed to determine the importance of the symptom to the patient. Not all patients are accepted for hypnotherapy. If the need to eat is deeply rooted for the patient, then insight therapy is initiated. After progress has been made, hypnosis can be introduced. (Crasilneck & Hall, 1975).

The patient then is requested to keep a daily food diary of all foods consumed and their quantity. From this, a calorie intake is calculated. Unlike behavioral therapy, there is no attempt to link up the eating cues in the diary. Then each patient is asked to maintain a total calorie intake of no more than 900 calories a day. It is suggested that daily weights be recorded and weight checked at every visit. A full length photograph is taken at the

beginning of treatment for the pupose of later body image comparison. Each patient is asked to walk at least a mile daily to decrease any anxiety associated with the dieting.

The hypnotic state is induced and a series of suggestions are implanted. A typical pattern would include: 1) the suggestion that there will be reduced hunger; 2) that the hunger the patient does feel can be easily satisfied by a small amount of food; 3) that the smaller amounts of food that he eats will give him more enjoyment than the larger amounts he has been used to; 4) that in order to achieve this enjoyment, he will eat slowly and chew each mouthful; 5) that he will experience a feeling of fullness sooner and then will stop eating; 6) that he will be proud of every pound lost; 7) that regardless of the circumstances, he will quietly go about losing his weight; 8) that he wants to and can lose weight; and 9) that he will be relaxed, at ease, free from tension, stress and strain, and free from excessive hunger. The last suggestion implanted is that the weight loss will be consistant and permanent.

Each one of these suggestions is reinforced during each hypnotic session. Each patient is taught self-induction and relaxation techniques and instructed to use them twice a day and whenever he begins to feel anxious or hungry at an inappropriate time.

During the weight loss all patients reach periodic plateaus of weight. The discouragement caused by these is minimized by discussing in advance the possibility of such plateaus. The resistance is thereby decreased or eliminated and the patient is able to move on to the next expected plateau. Often at the time of a plateau, additional psychotherapy is instituted if the resistance seems particularly strong.

Mild to moderate obesity can be viewed as largely a habit disturbance and to that extent is amenable to a relatively brief period of treatment. If the patient cooperates by maintaining the diet, doing the prescribed exercise, and most importantly, using the self-hypnosis and relaxation techniques daily, a weight loss of up to 10 pounds a month can be achieved, and therapy need only last 6 to 8 months (Crasilneck & Hall, 1975). In more severe cases of obesity or in cases where a great deal of insight therapy is used in conjunction with the hypnotherapy, the rate of loss is less and the duration of therapy is longer. In all obese patients, the goal is for the patient to have achieved some stategies for coping with the compulsive eating habit by the time that the weight-loss goal has been achieved.

Studies in the literature indicate that there is a high degree of success in both the process of weight loss and the maintenance of the loss. Wollman (1962) reports successful weight

loss in 450 patients using hypnosis. Glover (1961) reported an average of 30 pounds lost in 4 months in 27 obese patients using hypnotic technique. Hanley (1967) reported an average weight loss of two to three pounds a week using group hypnosis. And there is an overall reporting that up to 80% of patients treated with hypnotherapy lose weight, however there is still a 20% residivism rate amoung that group.(Kroger, 1973)

PSYCHODYNAMIC THERAPY

Psychodynamic theory attempts a sophisticated analysis of the developmental sources of obesity. In analytic theory, obese people have certain basic deficits in their functioning due to the abscence of appropriate responses for expressing needs. They suffer from a pervasive sense of ineffectiveness, passivity, lack of volition, and a conviction of being influenced by others. They experience themselves as helpless products without active self-awareness.(Bruch, 1973) They present themselves as passive and helpless, someone who gets fat "just looking at food".

Evoking awareness of impulses, feelings, and needs that originate within the person is considered the essential step. Then a sense of competence in areas of functioning which previously have been deprived can be developed. This focuses the therapy not on the intrapsychic conflicts and the disturbed eating function, but rather on the repair of the underlying sense of incompetence,

conceptual defects and distortions, isolation and dissatisfaction.

This is accomplished by a non-traditional, fact-finding, non-interpretative approach.(Bruch, 1973) Minute attention is paid to the discrepancies in the patient's recall of the past, to the way current events are misperceived or misinterpreted, and to the inappropriate ways of responding. As alternatives are explored and examined, the person is led to experiencing herself as not utterly helpless or the victim of a compulsion that overpowers. Clarification of what the person is saying is best carried out step by step by the person, rather than by being given summation explanations from the therapist's insights.

The fact-finding treatment approach is termed the constructive use of ignorance. The therapist must always be ready to ask "What is there that I do not know?" People respond well to this objective fact-finding attitude as they recognize the therapist as a true colaborator in search of unknown factors and not as someone who has secret knowledge that is being withheld from them. The therapeutic goal is to make it possible for the person to uncover her own abilities, her resources and inner capacities for thinking, judging, and feeling. Once this capacity of self-recognition has been experienced, there is a change in the whole atmosphere of involvement. A more mature and realistic approach to life influences weight indirectly. The solution to

underlying emotional problems by opening up alternative ways of experiencing satisfaction can remove the basis for the excessive eating. Whether this results in long-term weight change depends on each individual's process which progresses at each person's own rate. Statistics on long-range treatment results are currently almost nonexistent but are in the process of being gathered. (Bruch, 1973)

GROUP THERAPY

Group therapy has also been used in the treatment of obesity. It's use seems dependent on the lack of severe psychiatric illnesses in the group participants. The groups are formed specifically for the attainment of weight loss and the modification of eating behaviors. It is hypothesized that the process of the group can improve the general adaptation and emotional well-being of the group members as well as provide the support system necessary for successful self-image.(Wollersheim, 1970) As the treatment progresses and the extent to which eating and obesity are embedded in the patients' defense systems is uncovered in the group, the goals of the group are modified away from weight loss to weight loss maintenance.

Studies indicate that the group therapy approach to obesity is most effective when the group is oriented to specific treatment based on learning principles and behavior change than when based

on social pressure treatment (Wollersheim, 1970). The social pressure treatment was essentially a TOPS (Take Off Pounds Sensibly) group whose sessions included a weigh-in, verbal praise for weight loss, and the wearing of signs to designate loss, gain or stable weight. The theory of this technique was to foster a high positive expectation for losing weight and to develop and use social pressure to help in weight reduction. The long-term results of such groups has yet to be systematically studied, but preliminary results indicate a rate of maintenance success lower than that of individual treatment.(Sager and Kaplan, 1972)

FEMINIST THERAPY

Feminist therapy is based on the view that fat is not deviant but simply an ineffective way of resisting female stereotyping. As such, it seeks to take women who are compulsive eaters and end the compulsion rather than institute the compulsion of dieting. Food is used to pamper. Every eating experience is encouraged to be a pleasurable one in response to stomach hunger. There is no regimentation or balancing of food intake. Feminists (Orbach, 1978; Millman, 1980) propose that the body can tell us what to eat, how to have a nutritionally balanced food intake and how to lose weight. In the demystifying of food lies the freedom from loss of control and insatiability. To this end, women are encouraged to go out and obtain exactly the right food they desire

rather than settle for whatever is around. The goal is for the compulsive eater to break her addictive relationship toward food.

The techniques of feminist therapy are basically those of group therapy with discussions focusing on the role of women in society and the relationship of obesity to that role. Six important steps (Orbach, 1978) are taken within the group:

1)Demonstrating that the compulsive eater has an interest in being fat.

2)Showing that this interest is largely unconscious.

3)Doing specific exercises that bring this theme to the woman's consciousness.

4)Exploring the meanings for each individual woman, once this interest in fat is recognized.

5)Exposing the purpose of the fat for each woman.

6)Reclaiming by each woman the aspects of herself that she has previously attributed solely to the fat.

Fantasy is used to experience feeling comfortable in a new, thin body as well as to expose the benefits of being obese. As in group therapy, the theory is to foster a high positive expectation for losing weight and to develop and use group support as well as group pressure to help. The feminist literature to date does not report outcome results other than anecdotally. Those anecdotes report not astounding weight loss, but rather lowering of weight to an acceptable personal level by the women involved.

COGNITIVE THERAPY

A case can be made for the inclusion of cognitive behavioral therapy as an adjunct technique in an overall approach to the problem of obesity. If the overeating behavior is linked with irrational thoughts such as "I should be able to lose weight and keep it off and if I don't I am a worthless and hopeless person.", then the techniques of disputing, exhorting, and humorizing the irrational beliefs are applicable. Once cognitions and emotions around overeating are attacked and altered, cognitive therapy would use operant behavioral conditioning to reinforce the behavior and cognition changes. There is no data as to the efficacy of cognitive therapy as the sole treatment of choice for obesity although studies are currently ongoing.

WASHINGTON UNIVERSITY STUDIES OF SURGICAL INTERVENTIONS FOR MORBID OBESITY

The approach for treating obesity that I am currently developing stems from the extensive reading and research I have done over the past five years on the topic of obesity. Initially, I approached obesity from the traditional medical model and the particular perspective of surgical intervention as the treatment of choice. I participated as a research associate with Dr. John Halverson of the Department of Surgery, Washington University School of Medicine, in the analysis of one hundred small bowel bypass patients. These operations had been performed by another

surgeon and the patients were inherited for management by Dr. Halverson. A summary of that data will be presented in this paper.

At the same time, Dr. Halverson was initiating a study of gastric restriction as an alternate, and safer, operation for morbid obesity. Both of us were interested in enhancing the success of the operation by carefully screening the candidates for underlying psychiatric disorders. Since I had experience as a research associate in the Department of Psychiatry of Washington University Medical School, I developed a preliminary evaluation for research purposes. Further studies will be developed based on information obtained from this preliminary work. At the same time, Dr. James McClure of the Department of Psychiatry became involved in the psychiatric evaluation of candidates for the operation and the administration of various psychological tests preoperatively and postoperatively. Over the past two years, 33 out of 69 carefully selected morbidly obese patients who underwent gastric bypass have been medically and psychiatrically evaluated. The medical data has been reported elsewhere but will be summarized. (Halverson, 1980, 1981). This is the first reporting of the psychological data.

MEDICAL INTERPRETATIONS

As defined by the medical community (Mason, 1980), morbid obesity is a body weight that is more than 100 percent above the person's ideal weight. There is debate on how to determine ideal body weight, but most surgeons use the life insurance weight

tables. Another accepted standard is 100 pounds for five feet and five pounds for each inch thereafter for women, and 106 pounds for five feet and six pounds for each inch thereafter for men. Excessive body weight is considered morbid at the point where it interferes with lifestyle and the ability to work. It brings an increased risk of death and of other serious medical problems including heart disese, diabetes, hypertension, breast cancer, and cancer of the endometrium.

And yet, in a medical sense, obesity itself is a benign disease. It is only linked with other diseases and does not itself kill the patient. And since it is not contagious, despite the fact that it is epidemic, it does not threaten the population with extinction. Why then such a seemingly drastic intervention as a major operation?

The answer lies in what the medical community views as the failure of medical treatment of obesity. All too often, the busy internist cannot manage the time nor the effort involved in extensive nutritional and exercise counseling necessary for even minimal successful weight loss. There are no acceptable drugs for the management of hunger for the morbidly obese. Bariatric doctors (Gomez, 1980) believe that the inability to control hunger is the crucial obstacle. This concept has been reinforced in the behavioral and hypnotic literature. It is nearly impossible for an

individual to maintain the caloric deficit necessary for weight loss for an indefinite time while remaining hungry. Therefore, the obese person returns to previous eating patterns.

Within the medical community, there are several theories for the etiology of morbid obesity. Some doctors think that there are no psychological underpinnings at all, but a metabolic disturbance in the neuro-hormonal axis. A region in the brain, the hypothalmus, is postulated to be the location of the processing of the body's hunger messages. A satiation center located there provides information on fullness. If there are lesions in this region such as tumors, inflammation, or congenital abnormalities, over-eating will occurr. (Herberg, Franklin, and Stephens, 1975)

Biochemists (Apfelbaum, 1972) who disagree with Hirsch, think that caloric expenditure provides a clue to the etiology. Once the person gets beyond a certain amount of fat, and this may vary for person to person, the energy expenditure decreases tremendously. The fat cells themselves are not originators of calorie burning. A lean person gives off a heat radiation that burns up calories. Excessive fat cells hinder heat radiation. For this reason, even though obese people may be eating fewer calories, as little as 400-500, they continue to gain weight. The etiology of weight gain may then lie in calorie utilization by specific amounts of excessive body mass.

Endocrinologists (Keen, 1975) propose a theory of hyperinsulinism which postulates that the body produces too much insulin, which may itself induce insensitivity to insulin. When this occurs, there is lessened ability to ulitize glucose by the cells, and the excess glucose in the bloodstream is converted into stored fat. Most of this work is highly experimental and has yet to be widely accepted.

JEJUNOILEAL BYPASS

Review of Medical and Psychological Findings

Surgical intervention is based not on the etiology of the disease but in interrupting the process by which food is utilized in the body. There are two classifications of operations: one causes malabsorption and the other causes a reduction in intake. The intestinal bypass was designed to create malabsorption. People could eat everything they wanted and because of the malabsorption, the calories would not be utilized. The gastric bypass, by limiting the size of the gastric pouch, limited the intake. There is no known malabsorption component to date in the gastric bypass.

The first jejunoileal bypass was done in 1955. The technical operative procedure went through various changes altering the amount of small bowel bypassed and the location of the anastamosis of large and small bowel. While each technical adaptation produced

slight differences in physiological result, the overall results are comparable.(Buchwald, 1975)

The initial enthusiasm for the jejunoileal bypass was based on its astounding and seemingly easy weight loss while allowing the obese person to eat anything at all, even the "forbidden foods." Within two years, a net weight loss of 35% to 40% is commonly experienced.(Halverson, 1978) This initial enthusiasm has been tempered by a growing list of complications. Foremost among these is liver dysfunction occurring in as many as 45% of patients. 5% of these people go on to develop liver failure. Also commonly reported are electrolyte and vitamin deficiencies associated with diarrhea. 8 to 10 bowel movements per day is average. Many of these deficiencies can be treated with medications, and there is a trend toward improvement of these deficiencies with the passage of time. However, this does not always occur and these deficiencies can be life-threatening. There is also a debilitating fatigue that occurs post-operatively as well as a "bloat syndrome" that is characterized by intermittently severe cramping abdominal pain. Gallstones, kidney stones, joint pains and hair loss are also sequellae to jejunoileal bypass. (Buchwald, 1975)

In the study of 101 jejunoileal bypass operations performed

from 1972 to 1975 at Washington University Clinical Research Center, the above results were duplicated. (Halverson, Gentry, et al, 1978, 1980) All were morbidly obese as defined, with men averaging 128% and women 121% above their ideal weight. Even though the patients experienced some benefits from the weight loss such as reduction of blood pressure, improved glucose tolerance tests, and lowered serum cholesterol levels, there was a 5% death rate and a 25% reversal rate over the three years of the study. (The surgical term for reversal is reanastamosis- reconnection of the separated segments of small bowel.)

The weight loss was considerable during the first year, with a plateau effect occurring in most patients in the second year. Most patients lost up to a mean percent of 60% of their excess weight. 15% lost over 50% of their original weight however 5 of these people had to be reversed and one died after having refused reversal.

At a mean of 50 months post-operatively, 70 living patients were available for follow-up. At this time, 36% had regained 5% or more of their original weight and 14% have regained 20% of the weight they had lost. This weight gain is presumably due to continued high caloric intake together with adaptation of the functioning small bowel segment. In addition, 25% of women and 5% of men had not lost a significant amount of weight and remained

over 200 pounds. Marked electrolyte deficiencies and diarrhea persisted into the late post-operative phase. Gallstones, kidney stones, joint pains, and vitamin A deficiency occurred significantly.

Of the 25% of patients who had to be reversed, 22% were done because of liver dysfunction, 22% because of malnutrition and debilitating weakness, and 17% because of electrolyte imbalance. After reversal, these patients regained up to 86% of their original weight.

The 70 living patients available for follow-up can be characterized as follows: 21% have no problems and have had satisfactory weight loss; 34% have minor problems like controllable electrolyte or vitamin deficiencies or intermittent diarrhea; 39% have major problems like recurring kidney stones, unoperated gallstones, and persistent severe electrolyte deficiencies; 6% are doing poorly because of exhaustion, depletion requiring hospitalization, and debilitating diarrhea. Of the 101 original patients, the status of 98 is known. The operation on a strictly medical basis must be considered an absolute failure in 28% of the patients. Only 18% of the entire series can be considered to have a good result. Consequently, it has been concluded that intestinal bypass is not an appropriate operation for morbid obesity.(Halverson, Scheff, and Gentry, 1980)

A review of the psychological literature of patients undergoing jejunoileal bypass supports the surgical conclusion. Harrington (in print) combined data from twelve studies that investigated postoperative psychological functioning in 871 patients. Of these patients, 62% experienced psychological difficulties: 18% experienced severe psychopathological reactions; 11% experienced mild psychopathological reactions; and 33% engaged in potentially serious noncompliant behavior.

Psychopathological reactions included anxiety reaction, depression, suicidal ideation and attempts, anorexia, psychogenic vomiting and gagging, alcoholism, psychosis manifested by hallucinations and delusions, and severe psychological regression. Mild reaction was defined as greater emotionality as displayed by mild depression, irritability, and increased anger. Reactions were defined as severe if they required professional treatment on either an outpatient and/or inpatient basis, or had persistent suicidal ideation, suicidal gestures or attempts, persistent depression, anxiety resulting in anxiety attacks, or psychogenic vomiting and gagging.

One researcher (Epsmark, 1975) found that 61% of his 65 patients required post-operative psychotherapy for anxiety or depression. Solow (1974) reported 23% of 29 patients experienced psychiatric illness following surgery. In Lundgren's (1977) series

of 61 patients, 30% had negative psychological reactions, as defined above. Winkelman's (1974) series of 27 reported 18% psychologically disturbed reactions. Abram (1976) studied 34 patients, 26% of which had a negative psychological outcome. The other studies reviewed revealed similar findings but had fewer patients. Starkloff with the largest sample (349 patients), found the lowest rate of psychological disturbance.(7%) However, careful psychiatric screening was conducted before patient selection for operation was made.

Postoperative psychopathology is not surprising if there is a high incidence of preoperative psychopathology. Solow (1974) noted preoperative maladaptive personality patterns in 40%, and a "notably deficient self-esteem" in 66% of his patients. Webb (1976) studied Abram's patients preoperatively and found 11% of all subjects who sought bypass to be "too risky psychologically" to have the operation performed. When all studies reviewed by Harrington (in print) are compiled for preoperative evaluation, of the 156 cases on whom preoperative psychological data was obtained, 74% were reported to have a preoperative psychological difficulties or have had preoperative psychiatric treatment.

Noncompliance was evaluated by exhibition of behaviors that demonstrated unwillingness/inability to comply with postoperative instructions concerning diet, return visits, and medication.

Noncompliance occurred in five basic areas: 1) failure to keep postoperative outpatient appointments; 2) failure to restrict fluid intake; 3) failure to take prescribed medications and/or vitamins; 4) failure to meet dietary restrictions on fatty foods and spicy foods; and 5) alcohol abuse. Many of the postoperative complications can be reduced when the patient is compliant. For example, diarrhea can be significantly improved through limiting of fluids, fatty foods, and spicy foods. If diarrhea is improved, the chances of severe electrolyte imbalance are reduced. Failure to return for outpatient visits allows mineral and vitamin deficiencies to progress unchecked. (Starkloff, 1975)

In comparison to other patients in medical settings, jejunoileal bypass patients have the same rate of 33% noncompliance. (Davis, 1966) While the noncompliance rates are the same, the consequences are not. A definition of successful operation must take into account maintenance not only of weight but also of health.

Because of underlying methodological flaws, the enormity and extent of the problems postoperatively are probably underestimated. Many of the studies report only on those patients who were available at follow-up. Potentially, patients who do not return for follow-up have more pathology. Some of the studies do not report deaths that occur either intraoperatively or

postoperatively and certainly some of those can be attributed to the psychological inability to handle the physiological changes. Reanastomosis is also not considered in any study except for Starkloff's.(1975) Each of these methodological weaknesses contribute to an underestimation rather than an overestimation.

The data indicates that people who have sought out operation are not free from psychological abnormalities, and in some cases are not free from severe pathology. Postoperatively, the psychopathological reactions can then be viewed as exacerbations due to physiological and psychological stresses on the personality weaknesses that are present preoperatively.

If this is the case, then careful selection of patients for operation in combination with the safest surgical proceedure seems to be the treatment of choice. Surgical intervention cannot be viewed by the obese person as the easy, "magical" way to obtain and maintain weight loss. If this attitude is either permitted or even encouraged, a given obese person's chances for successful weight loss are drastically compromised. The purpose of our study then is to design a method of intervention and report on its efficacy. The intervention was based upon careful preoperative psychiatric screening, intensive counseling, and postoperative frequent contact in combination with the gastric bypass surgical technique.

GASTRIC BYPASS

Review of Medical and Psychological Findings

Because of the surgical failure of the jejunoileal bypass, the search for another surgical technique continued. It had been observed that people having stomach operations that resulted in diminished capacity had trouble maintaining weight. The first gastric restriction operation for obesity occurred in 1969. Experimentally, first on animals, then on people, a specific set of technical criteria were established: a small pouch volume, and a small outlet from the pouch either into the jejunum or through a channel into the distal stomach. (Mason, 1980)

The small pouch severely limits the intake of food and produces early satiety. The small outflow tract delays gastric emptying and prolongs the return of hunger. Unlike the jejunoileal bypass, early results indicate that the gastric bypass does not nutritionally deplete the body. All of the calories ingested are absorbed.

Weight loss following gastric bypass has been reported in the range of 30% to 36% of original weight lost within the first year. (Alden, 1977; Buckwalter, 1977) Also reported is a late weight loss of 35% at the end of two years. The data as to whether the weight loss is permanent is not yet available. The major factor for permanent weight loss at this time appears to be the

maintenance of the small gastric pouch. With persistent overeating, the pouch may be stretched back to close to the preoperative size. The other factor is the maintenance of the small outflow tract. This has been more of a technical problem, solved in some cases by external reinforcement of the channel.

Mortality rates are reported from 0% to 5%. (Griffen, 1977; Printen, 1977) The complications postoperatively include those found after any surgery in obese people: increased incidence of pneumonia, wound infections, and blood clots. For the gastric patient, there is an increased incidence of vomiting postoperatively unless food volume restrictions are carefully observed. (Griffen, 1977) The greatest difference from the jejunoileal bypass is that there is a near total absence of metabolic complications. There is a mild iron deficiency and thiamine deficiency, both of which are easily treated. There is a reported rehospitalization rate in the first year of 12% for gastric bypass and 32% for jejunoileal bypass. (Alden, 1977) Liver functions have not been altered by gastric bypass.(Buckwalter, 1977; Halverson, 1980)

The Consensus Conference on the surgical treatment of obesity at the National Institute of Health (1978) concluded that the gastric restriction procedures have fewer side effects than the jejunoileal bypass, but that the follow-up data has not been

sufficient to determine any serious long-term effects.

There have been only a few reports of the psychological effects of weight loss after gastric bypass. Saltzstein (1980) examined 20 patients preoperatively and postoperatively. 80% continued to do well or improved from a psychological standpoint. 50% of the patients had major or minor psychological or medical complications postoperatively. All of the patients who developed complications were single, separated, or divorced; the majority were moderately or severely psychologically disturbed based on preoperative MMPI assessment. The majority of patients reported improvement in health, increased social activity, improved interpersonal relationships, and improved self-concept and morale. Saltzstein did not find a correlation between amount of weight lost and psychological changes.

WASHINGTON UNIVERSITY STUDY

Methodology

Sixty-nine morbidly obese patients were selected for gastric bypass operation following evaluation. Criteria for selection included:

1) Weight of more than 100 pounds over ideal.
2) Documentation of previous attempts at weight reduction under the supervision of a doctor or dietician.

3) Exclusion of a medical reason for obesity.

4) Good general health without evidence of peptic ulcer disease.

5) Lack of diagnosible psychiatric disorder and evidence of psychological stability. Stability was defined as acceptance of the need for extreme caloric restriction postoperatively; acceptance by the patient of responsibility for long-term weight loss; and a realistic statement on the likely impact of the weight loss on the patient's life.

Medical evaluation included studies to rule out the presence of pulmonary and cardiovascular disease. Endogenous causes of obesity such as glandular abnormalities were excluded. Radiographic evaluation of the entire gastrointestinal tract, gallbladder, and kidneys was performed.

Exhaustive dietary counseling was carried out preoperatively in order to determine the likelihood of compliance and to prepare the patient for the changes that are critical for weight loss. These dietary principles included: 1) cessation of eating when the patient no longer experiences hunger; 2) three small well-balanced meals a day; 3) no liquids taken with meals; 4) a waiting period of 5 minutes between bites of solid food, with thorough chewing; and 5) a total avoidance of high calorie liquids, including

alcohol.

Psychiatric evaluation was conducted by a Washington University staff psychiatrist using the Feighner (1972) diagnostic criteria of psychiatric diseases. Evidence of severe psychiatric disease eliminated the patient from the study. In addition, patients were interviewed by the surgeon and myself during the preparatory phase. Patients were excluded if during the dietary counseling it was felt that they maintained an unrealistic attitude about either the operation or the effect it would have upon their lives. Only 30% of all patients contacting the surgeon about the operation were chosen for the procedure. There was a rejection rate of 50% of patients actually admitted to the hospital for evaluation.

Preoperatively, five psychological measurements were administered: 1) Clinical Analysis Questionnaire (CAQ); 2) Index of Self-Esteem (ISE); 3) Optimism/Pessimism Test; 4) Eating Behavior Questionnaire II; 5) Eating Questionnaire III. All were administered by the same person to standardize administration.

The operation performed was a standard stapled loop gastric bypass. Postoperatively, patients were seen monthly for six months, bimonthly for six months, and quarterly for the second year. Complete laboratory evaluation was performed bimonthly and on each visit a questionnaire concerning medical symptoms and psychological adjustment was completed. Patients were

readmitted to the hospital for complete medical and psychological evaluation at the end of 12 to 18 months. In addition, patients were rehospitalized when medical problems occurred. Dietary counseling was provided on an ongoing basis. At each contact, the guidelines for proper eating behavior were reinforced, including the three specific mealtimes and slow chewing. To prevent distention and vomiting, patients were warned to stop eating as soon as they no longer felt hungry. A rule of no fluids with meals was stressed to prevent premature emptying of the pouch and an early return of hunger.

Medical Results

The patients were all morbidly obese with a mean of 125 percent over their ideal weight. 87% were female and 13% were male. Six of the males and six of the females were operated on despite less than the 100 pound minimum excess. Their obesity was still considered to be morbid because of difficulties they had in obtaining and holding jobs. The mean age of the women was 32 years and the mean age of the men was 28 years. Early in the series, three patients died, one from blood clots in the lungs and two from perforation of the stomach. Postoperative complications were few. There was a wound infection rate of 3%, pneumonia rate of 3%, and mild urinary tract infection in 18%. Rehospitalization occurred in 21% of the patients. Nine of these fourteen patients

were readmitted for failure to follow dietary restrictions. Metabolic abnormalities were infrequent. Mild electrolyte deficiencies and low vitamin levels occurred in <25%, and in no case did the abnormalities threaten the patient's life. All were easily corrected by medication.

Immediately postoperatively, all patients reported feeling full after just a little food. All but one patient reported that their appetite had decreased considerably. Preoperatively, the mean number of meals eaten a day was 4.3. Postoperatively, 33% were eating three or less meals per day and 60% were eating four to six small meals a day. Meals averaged 23 minutes duration of eating. Vomiting was an infrequent problem and only occurred in patients who were noncompliant with dietary regulations.

Analysis of weight loss data was performed on 52 patients at a mean of 20 months postoperatively. 90% of patients lost more than 50% of their excess weight. Those who weighed less preoperatively lost more weight as did those who maintained a small pouch size in the late postoperative course. Patients who did not continue regular follow-up visits lost significantly ($p<.01$) less weight than those seen regularly. Only 25% continued to lose weight after the first year. Inadequate weight loss was associated with failure to stop eating when hunger ceased and with failure to eat slowly. Analysis of food lists revealed either high

caloric snacking or rushed meals washed down with liquids. Because of the tendency to relapse into these old habits, frequent contact between the patient and the medical staff has been crucial.

Noncompliance as measured by failure to keep appointments was present in 15%; as measured by failure to take medications 12%; and as measured by failure to comply to dietary restrictions 15%. These compare favorably to the noncompliance rates experienced following any major surgery and are higher than would be predicted. This is a desired result of the careful preoperative screening.

In terms of life style, patients described definite changes in how they felt physically. 68% reported feeling "much better", 29% feeling "good but could feel better", and 3% feeling "not better". 25% (17) felt "tired all the time" but six of these had experienced episodic depressions, six had not lost much weight, one had recently given birth, one was a full time homemaker with several small children, and three had fulltime employment.

50% of the patients were working preoperatively and continued to work. An additional 20% were able to work postoperatively when they had previously been unable to work due to obesity. An additional 6% were not currently working, but felt good enough to work.

Interestingly, 17% either separated or divorced within the

first two years after the operation; 6% who had not been married at the time of operation, married during the first two years.

The level of overall satisfaction with life was asked of each patient, both preoperatively and at each postoperative contact. The first six months after any major surgery is considered the recuperative phase and there are residual problems. Six months postoperatively, 26% said they were satisfied with both their preoperative lives and their postoperative lives. 20% said they were not satisfied preoperatively and remained unsatisfied. However, 54% said that they had not been satisfied preoperatively and now were. There were no patients who reported having been satisfied preoperatively and then become dissatisfied after the operation. No attempt was made to standardize the meaning of satisfaction.

While patients did not achieve their ideal weight nor did they achieve total satisfaction with their lives, these are goals rarely achieved. What was achieved was a decreased mortality risk, at a low morbidity and mortality rate, with an increase in the quality of life. It is strongly felt that the reasons for this lie in the careful selection of patients. Certainly, the absence of psychiatric problems influenced the compliance of the patients to the behavioral modifications of their food intake. The behavioral changes coupled with the technical procedure produced in carefully

selected patients a reliable weight loss. (Halverson and Gentry, 1980)

The questions then arise as to how best select patients for success and as to whether the psychological underpinnings of their obesity has been affected. The data collected was analyzied with these questions in mind. It could be postulated that there are certain characteristics shared by successful weight losers that if identified could be used to further screen preoperatively. And, if body image and self-esteem are related, an improvement in weight should lead to an improvement in self-concept.

Psychological Methodology

Five measurements were administered preoperatively and postoperatively to 34 patients: CAQ, ISE, Optimism/Pessimism Test, and Eating Questionnaires II and III. In addition a written psychiatric evaluation was given by the staff psychiatrist based on the Renard Research Interview (1976). One patient was excluded from the study because of death during the immediate postoperative phase.

The Clinical Analysis Questionnaire (Krug, 1980) was developed as a single instrument that could simultaneously measure normal and pathological trait levels and provide a full multidimensional profile of the subject. The test contains 28 scales, 16 that are normal traits, 7 that reflect depression, and

5 that were developed to measure factor-analytically-identified traits that were discovered in the MMPI item pool.(Krug, 1980) The test was administered on an individual basis and was completed by the patient without prompting by the administrator. The tests were scored by computer and took into account sex-role differences.

The normal personality traits measured were: warmth, intelligence, emotional stability, dominance, impulsivity, conformity, boldness, sensitivity, suspiciousness, imagination, shrewdness, insecurity, radicalism, self-sufficiency, self-discipline, and tension. The depression traits were: hypochondriasis, suicidal depression, agitation, anxious depression, low energy depression, guilt and resentment, boredom, and withdrawal. The five remaining traits were: paranoia, psychopathic deviation, schizophrenia, psychasthenia, and psychological inadequacy.

The Index of Self-Esteem (Hudson, 1980) was developed as part of a package of short-form measurement scales for use in clinical and research settings. The ISE is a paper-and-pencil, self-report questionnaire designed to measure the severity of problems with self-esteem. Questionnaires were administered on an individual basis and were completed without prompting. They were hand-scored and had a score range from 0 to 100. A low score of less than 30 indicates relative absence of the problem, and a

higher score indicates the presence of a more severe problem.

The Optimism/Pessimism Test was developed within the Department of Psychology of Washington University to obtain an overall description of a person as predominantly optimistic or pessimistic. Areas relate to interpersonal relationships, ability to perform tasks, and perception of the future. The test is a paper-and-pencil, self-report questionnaire administered on an individual basis without prompting. They were hand-scored and had a range from 0 to 20. A score higher than 10 indicated an optimistic view of life.

Eating Questionnaires II and III were developed within the Department of Psychiatry of the Washington University School of Medicine to aid in the assessment of obesity in the psychiatric population. Questionnaire II is a series of open-ended questions that the patient responds to in writing. It covers attitudes toward the patient's weight problem as viewed by the patient and significant others, descriptions of the importance of eating in both childhood and in the present, and successes or failures in previous attempts to lose weight. A special section was included for the bypass patients that allowed evaluation of each person's realistic perception of the operation outcome.

Questionnaire III is a structured interview that goes into more depth. It includes attitudes about foods, attempts at

previous dieting, attitudes about self as an obese person, attitudes of significant others, patterns of hunger and food intake, assessments of activity, subjective reporting of satisfaction with various aspects of living, and family occurrence of obesity. Both instruments are administered individually and the assistance of the administrator is allowed. Scoring was done by hand with a subjective interpretation by the investigator.

Psychological Results

Thirty-three patients were evaluated preoperatively and postoperatively. The data was analyzed in two major directions. 1)Is there a method of predicting successful weight loss preoperatively? and 2)What is the measurable psychological impact, if any, on patients postoperatively? Demographic data was as follows: 97% were female and 3% were male; 46% were white and 24% were black; 33% were married, 39% were separated or divorced, and 21% were single. The mean age was 31 for the women and 38 for the man.

The Renard Research Interview revealed no active psychiatric disease. This was a desired effect of the extensive psychiatric screening preoperatively. This resulted in a biased sample which effected the analysis of the data. What might otherwise be strongly positive indicators for unsuccessful weight loss have largely been eliminated. Obviously, the operation can not be

offered to simply everyone who desires weight loss. As a result, the search for indicators becomes one of finding more subtle discriminators. There was a history of primary affective disorder (depression) in 12%, alcoholism in 6%, hysteria in 3%, mild mental retardation in 3%, and anxiety neurosis in 3%. Postoperatively with a minimum of 18 months followup, there was no active or newly diagnosised psychiatric illness.

Preoperatively the CAQ data revealed a predominately normal personality profile for the majority of patients. Overall they tended to be warm and easygoing rather than cool and reserved; abstract in thinking rather than concrete; easily upset rather than calm and stable; unassertive rather than dominant; happy-go-lucky rather than sober and serious; conscientious rather than expedient; venturesome rather than shy and timid; tough-minded rather than tender-minded; suspicious rather than trusting; practical rather than imaginative; shrewd rather than forthright; apprehensive rather than self-assured; experimental rather than conservative; self-sufficient rather than group-oriented; self-disciplined rather than undisciplined; and tense and driven rather than relaxed. The strongest positives were in conscientiousness and shrewdness. People who are conscientious tend to be more persistent, more respectful of authority, and more conforming. Shrewdness implies people whose feelings are not

easily swayed, and who are polite and diplomatic about handling other people.

Depression traits were more prevalant in the patients. Hypochondriasis reflects depression and preoccupation with bodily functions and was present in 47%. Suicidal disgust reflects dissatisfaction with life and a sense of meaninglessness that entertains suicide as a viable option. This tendency was present in 53%. Brooding discontent is a measure of craving for excitement tinged with a death wish and was present in 26%. Anxious depression reflects an area of depression that can be incapacitating and disturbing, for it results in confusion and inability to cope with sudden demands. It was present in 37%. Low-energy depression represents feelings of sadness and gloom, with no zest for life. This was present in 31%. Guilt and resentment reflects a sense of utter worthlessness resulting from committing some unpardonable offense. It was present in 47%. Bored depression reflects two characteristics: a feeling that life is pointless, and a tendency to avoid people. This tendancy was present in 37%.

Of the five remaining traits, paranoia was present in 48%; psychopathic deviation, sensation-seeking, in 16%; schizophrenia in 31%, psychasthenia, obsessional behavior with little self-control, in 31%; and general psychosis in 31%. In addition,

26% were found to have a neurotic maladjustment and 26% had irresponsible acting-out behavior tendencies. 47% had low effectiveness of behavior controls and an additional 16% had only fair effectiveness of behavior controls.

None of the traits tested by the CAQ resulted in statistical significance when compared to percent of excess body weight lost at most recent contact. Using the two tailed Students t-test, there were no significant correlations.

Postoperatively there was no statistically significant discrimination between preoperative and postoperative patients with the exception of experimentalism. This factor correlated at the p=.034 level. Postoperatively, patients were more able to challenge old traditions and seek new ways of approaching their lives. Not of statistical significance but of clinical interest is that the data suggests they become more concrete in their thinking, calmer, and more dominant. It also suggests they become less conscientious and more expedient, less suspicious and more imaginative.

There were possible clinical trends within the depression traits in that there was a reduction in the incidence of every trait postoperatively. The incidence on the paranoia scale was reduced to 31%; on the schizophrenia scale to 21%; and on the general psychosis scale to 26%. The incidence of psychopathic

deviation and psychasthenia were unchanged.

100% of patients had greater than 30 as an Index of Self-Esteem score, placing all of them in a low self-esteem category. The mean score was 47. Postoperatively, the mean score was 49. There was an anticipation that there would be an increase in self- esteem postoperatively, but the data did not reveal this. Lower or higher self-esteem scores did not correlate with amount of excess weight lost.

Only 3 patients did not have more than 10 as a score on the Optimism/Pessimism test. 32% scored 20/20 as an indication of optimism; 12% scored 19/20; 24% scored 18/20; 12% scored 17/20 resulting in an overall 80% of patients being highly optimistic. Postoperatively only one patient remained pessimistic. The overall optimism rose to 92% of all the patients with 44% scoring 20/20; 24% scoring 19/20; and 8% scoring each 18/20, 17/20, and 16/20. The mean preoperative score was 17.1 and postoperatively 17.4 reflecting the slight increase in optimism. However, this again failed to reach significance. Higher levels of optimism did not correlate with higher percent of weight lost.

The Eating Questionnaire II attempts to elicit preoperative subjective responses concerning the patients' perceptions of their weight problems. 52% were aware that their obesity was a result of overeating. There was a significant relationship at the level of

$p<.05$ (analysis of variants). If the patient was insightful and honest enough to attribute the obesity to overeating, a larger percent of the excess body weight was lost. This was not true for the 8% who attributed weight gain to snacking, wrong foods (8%), unknown causes (4%), and being spoiled (4%). The 20% who attributed their weight problems to external forces such as "bad metabolism", heredity, or medications did not lose as well postoperatively.

One of the primary motivations for weight loss prior to operation in 64% of the patients was a desire to be healthier. However, those who stated health as a factor in weight loss, did not lose more of their excess weight. Rather, those who did not state health as a reason correlated significantly at the $p<.05$ level with percent of excess weight lost. This suggests that health may not be the best stated motivator. Along with wanting to be healthier, 36% also desired weight loss in order to improve their appearance. 16% were aware that it would be easier to gain and keep a job after weight loss. 12% were motivated by their childrens' desires for them to lose weight. 12% were physically tired all the time and wanted to lose weight so as to be more active. One person (4%) admittedly wanted to lose weight only to find a husband. The remaining 4% were ashamed of the way they looked but did not express the desire to look better.

When questioned about what had gone wrong when they attempt to lose weight despite being motivated, 40% reported no will power to resist cheating. 32% reported that they fail because of feelings of nervousness and discouragement. 16% reported getting bored with the foods on the diet. The remainder either didn't know why or blamed the program they were following for not being effective.

52% realize that there is no specific event that triggers their eating behavior. However, the other 48% attributed their starting of individual eating abnormalities to either their parents or their marriages. 24% ate more when they were bored. 20% simply had to look at food in order to start overeating. One rather inventively stated that beacuse she was so big, she needs to eat more.

40% felt that they currently had good social lives but 28% reported having no social life and an additional 24% admitted to actively withdrawing from social contact.

Body image was measured by reactions to their reflections in mirrors and 80% expressed disgust when looking at themselves. 12% refuse to even look in mirrors.

Within this extensive amount of data, there were no correlations with percent of excess weight lost.

When assessed for a realistic attitude about the surgery,

36% stated that they expected the operation to assist them in weight loss. 16% expected that the procedure would help them to enforce their diets. 16% expected to be thin in time. 12% expected the operation to significantly decrease their appetite. 12% expected a new lease on life, predominantly in terms of health. And 8% expected to be able to get out and about more, becoming more physically and socially active.

When asked preoperatively what they expected to be doing in a years time, 40% who were not working hoped to be working steadily. Another 48% expected to be feeling better, looking better, being out and active, and preparing for new careers. The rest expressed a desire to be buying beautiful clothes.

The patients had heard about the operation from several sources: 60% from friends, relatives, or co-workers versus only 20% from their medical doctors. The remainder either read about it in the newspapers or heard over radio or television. Only 5 people (20%) expressed any concern over the risks involved in major surgery and these were minimal concerns. 32% did not like the idea of multiple tubes postoperatively and only 12% expressed any concern about postoperative pain.

Eating Questionnaire III attempted to elicit more in-depth preoperative responses. 100% described themseves as very overweight. 81% were very dissatisfied with how they looked at

this weight, 14% were dissatisfied, and 5% were neutral. 73% were aware that their weight affected their daily activities adversely to a significant degree. Postoperatively, 45% continued to describe themselves as very overweight. Another 45% then described themselves as slightly overweight. 10% described themselves as only above average in weight. 22% were now satisfied with how they looked at their weight, 36% were neutral, 41% were still disatisfied with how they looked, and 1% were very dissatisfied. 68% still felt that their weight interfered with daily activites, but only 18% thought that the interference was significant.

The mean age of onset for obesity was 12.3 years with 65% having an age of onset less than or equal to fifteen. All of them had tried multiple weight loss regimens averaging 3.7 methods per person. Included in the methods tried were: TOPS, Weight Watchers, diet pills, supervised diet, fads, starvation, hypnosis, behavior modification, and their own invented diets. 68% reported that they had never maintained a weight loss for more than 3 months. An additional 37% had maintained weight loss no longer than 6 months.

The majority of patients reported that the significant people in their lives such as parents and family supported their effort to lose weight. Only 13% felt that they had no support. However, 40% thought that they were also actively opposed by significant people in their lives. There was no change in these

perceptions postoperatively and they did not correlate with weight loss.

When asked to rate themselves for the presence of psychological strengths, they consistantly rated themselves low. 68% reported being unusually nervous; 85% feeling like they lacked self-confidence; 85% feeling shy and self-conscious; 85% being more concerned with what others think; 86% finding it difficult to express feelings; and 100% setting very high standards for performing. These feelings persisted postoperatively. There was some decrease in being nervous (45%); in lacking self-confidence (76%); in feeling shy and self-conscious (72%); in being more concerned with what others think (64%); and in finding it difficult to express feelings (72%). 100% continued to set very high standards for performance.

Food had many associations for them including the use of food as a reward during childhood (50%). 77% remembered being admonished to clean their plates. 75% came from families with other obese members. 61% felt that the lack of affection from their parents as children contributed to their overeating. A full 61% described their parents as tending to be rather reserved. 74% overeat when they experience negative stress or bad feelings. 34% overeat when they experience pleasant feelings or a sense of accomplishment. These people did significantly better at weight

loss postoperatively ($p < .0005$, one tailed t-test) suggesting that they have more positive feelings about themselves that can be rewarded by methods other than food in the future.

At one year post operation, 84% were glad that they had undergone the procedure. 12% had mixed emotions and 4% had negative emotions. 80% definitely would have the operation again, but 20% indicated that they would not. Eating patterns had undergone some changes. 60% reported that food did not occupy as much of their thoughts as before the operation. 32% experienced no change and 8% increased their thoughts about food. Food remained moderately or very important to 56%, but overall, 60% reported a decrease in the intensity of interest.

Current eating habits were described as eating less than normal people by 75%, the same as normal by 12%, and as overeating by 12%. The biggest changes were that they were eating less food but more frequently and more slowly. 76% were no longer experiencing hunger a lot of the time. 80% no longer ate when they were not hungry and 56% had decreased the amount of snacking they had previously done.

However, some patterns were more resilient. If they ate because they were feeling nervous or bad preoperatively, 76% continued postoperatively. If they ate because they were anxious or depressed, 72% continued. If they ate because they were in high

spirits or celebrating, 64% continued but ate less resulting in better weight loss. If they ate because they were bored, 88% continued. However, if they ate because they were unable to stop once they got started, the operation made a significant difference for 72% who reported no longer having this problem. All of the patients had reported binges preoperatively, and an astounding 92% reported cessation of this practice. This is no doubt attributable to the direct result of vomiting if binges occur.

80% reported that the future now looked much improved. 72% reported an increase in self-confidence and self-esteem. 68% reported a decrease in self-consciousness about their appearance. However, most of them still had difficulty looking at themselves in mirrors, and 44% still expressed negative feelings about their reflections in mirrors.

Discussion

Morbid obesity is a high risk to health and life expectancy. It is physically, socially, and psychologically incapacitating. A review of the psychological literature presents little evidence that nonsurgical treatment of morbid obesity alone is likely to be successful, if percent of excess body weight lost and long-term weight maintenance of loss are the criteria. Medically, a reasonable proportion of morbidly obese patients improve markedly after gastric bypass. There is increased mobility, improved

cardiopulmonary function, decreased risk factors for associated diseases and improved quality of life. Patients even report satisfaction in cases where weight loss was not significant as defined by the surgeons. Surgery is not without risk but in comparison to continued morbid obesity the risks are lower. Gastric procedures are too new to permit firm predictions about prolonged weight loss, but patients in this study who have been followed for up to two years postoperatively are maintaining their weight loss without serious complications or intolerable life-style changes.

This preliminary study of morbidly obese patients undergoing gastric bypass surgery was designed to describe the selection and exclusion criteria that would facilitate adherence to behavioral changes necessary for successful weight loss and maintainence. The psychological and behavioral outcomes of the subsequent weight loss were examined for factors that would identify potential optimal weight loss and improved psychological functioning. Identification of factors would greatly improve the appropriate selection and management of patients by the medical community.

The elimination of patients with diagnosable psychiatric diseases by rigid research criteria enabled the investigators to study morbidly obese patients with enhanced chances for successful weight loss. Preoperative insistance on psychological stability as

defined by the investigators, further increased the potential for postoperative stability. Intensive follow-up care by the operating physician is assumed to be of critical importance. The decreased rate of non-compliance and relative lack of postoperative complications bear out this approach.

When compared to even the best weight results from psychological approaches only, the total weight loss by gastric bypass is more impressive as well as more predictable. By eighteen months postoperatively, 73% of patients had lost more than 50% of their excess weight. Included in this percentage are the 41% who had lost more than 60%, and an astounding 14% who had lost more than 70% of their excess weight.

Unfortunately, none of the instruments proved to be accurate identifiers of optimal weight loss. The normal and pathological traits measured by the CAQ failed to yield descriminators. Weight loss was achieved despite uniformly low preoperative self-esteem indices. Higher levels of optimism did not result in a higher percent of excess weight lost.

The open-ended, subjective responses from Eating II and III provided the only indicators. Patients who realize preoperatively that overeating is the cause of their obesity lose significantly more weight. This suggests that patients who understand their responsibilty in their weight gain may understand and accept their

responsibility in their weight loss better. The data also suggests that patients with enough self-worth to use food as a reward rather than a relief from anxiety or boredom, succeed in higher percentages of excess weight lost. It can be speculated that this indicates a stronger ability to behaviorally substitute non-food objects into their reward systems postoperatively. While patients most often state health considerations as the underlying source of the desire to lose weight, the data suggests this may not be the best motivator. Indeed, perhaps vanity remains the true motivator. This is extremely difficult to evaluate since most patients no doubt anticipate that the physician will respond more favorably to a request for operation when based on health concerns.

The patients continued to do well or improve postoperatively. No new psychiatric diseases were discovered at one year after the operation. There were no acute exacerbations of previously existing psychiatric conditions. Also, despite the prevalance of depression traits in the population, there were no postoperative suicide gestures or attempts. Overall, there was a reduction in the incidence of abnormal psychological traits. Patients seemed to become more concrete in their thinking, calmer, and less passive as individuals.

Ironically, there was no improvement, and in fact some mild decrease in measured self-esteem. However, this data is confusing

when coupled with the subjective data that reports an increase in self-confidence. Despite this seeming discrepancy, there is an overwhelming expression of satisfaction with life postoperatively that persists well beyond the major weight loss period. This seems to indicate some internalization of personal change or achievement of stategies for coping that are not directly dependent on the process of weight loss. However, this remains highly speculative.

The multiple postulated psychological etiologies for obesity were represented within the study. Body image distortions were present but significantly unchanged in the face of marked physical appearance alterations. Although many of the patients were obese from early childhood, there was a surprising lack of reported difficulties with adolescence. Many have been able to maintain interpersonal relationships and elicit support for their endeavors from various significant others.

Specific intrapsychic factors such as efforts to prevent loss of love, to express hostility, or to avoid sexual contact which are cited in the literature as potential underpinnings for obesity were present both preoperatively and postoperatively. Eating to prevent or relieve anxiety or depression persisted. Feelings of lack of love from significant others in early childhood as a source of obesity were reported and these feelings persisted as did the eating behavior associated with compensation

for lack of love. However, there were behavioral changes in that smaller amounts of food were consumed on a more frequent basis and were consumed much more slowly. Food continued to occupy a large portion of patients' thoughts and time, but there was a reduction. Perhaps the true reduction is yet to be manifested and will only be evident as the behavioral changes become permanent.

Cessation of hunger is reported as critical in the success of weight loss. All of these patients reported a marked decrease in hunger and an increased ease in following dietary restrictions subsequently. The incidence of inappropriate eating without hunger cues decreased considerably. Patients reported a freedom from constant hunger, from cravings, and from the resulting binges. Snacking persisted but with an alteration in the type and amount of food ingested. One cookie replaced one box of cookies. The relief of hunger may well prove in the long run to be the significant factor that allows these patients to maintain their weight loss.

Noticeable improvements were reported by the majority of patients. There was a decrease in organic symptoms and health concerns, an increase in social activity, improvement in interpersonal relationships, and for many a social usefulness as measured by ability to work that had not been experienced previously.

CONCLUSION

Morbidly obese people suffer from both organic and psychological disease. The organic component is the obesity itself and its concomitant physical illnesses, and is easy to document. The extent of the psychological component which is the need and desire to overeat as well as the inability to control this behavior, is more difficult to identify preoperatively. Evaluation in order to predict an optimal response to the surgical procedure has only begun to be systematically investigated. This study was preliminary and the tests which were used are by no means proven to be the most appropriate ones. Future studies will need to retain useful sections of the current instruments while expanding other promising areas. The issue of motivation remains critical, for without continued vigilence on the part of both the patient and the care-givers, long-term maintenance of weight loss may well prove to be as disheartening as that experienced in other approaches.

What this study has demonstrated is that surgical intervention by gastric reduction is not a panacia for the treatment of morbid obesity that many hoped it would be. However, in carefully selected patients, the right operation coupled with consistent reinforcement does result in the enhancement of behavioral changes that can ultimately lead to significant and permanent weight loss without concomitant psychological deterioration.

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