Preventative Nutritional Guidelines for the Healthy Pre-Operative Individual

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ABSTRACT:
My goal was to design nutritional guidelines for a pre-operative young adult to optimize pre-surgical nutrition with an aim to avoid malnutrition in recovery and promote healing. Information was gathered from internet research, periodicals and consultations with medical professionals. It is presented only for discussion with a medical professional. Research was compiled on three non-emergency surgeries. Eating a well balanced diet, roughly comprised of 40% carbohydrates, 30% protein and 30% fat is ideal for pre-operative nutrition. Supplements may aid in the process of recovery and might be administered two weeks before surgery. There is limited research on the subject; more attention should be devoted to this topic in order to make this a simpler task. Through careful planning and a solid understanding of nutrition, a pre-surgical diet can be optimized for the trauma of surgery.

INTRODUCTION:
Estimates show 75% of Americans will undergo a surgical procedure someday and 25 million are performed every year (23). While some surgeries are unplanned emergencies, most are planned months in advance. An operation is a risky procedure, but there are measures one can take to minimize these concerns (1, 2, 4, 11, 12, 13, 14, 15, 16). Initially, concerns include immediate survival and rapid blood clotting (11, 15). Post-operatively, tissue integrity, cell regeneration, minimal bruising, skin elasticity, and overall healing can be enhanced through optimal nutrition before surgery (11, 14, 16). The two most effective steps to prepare for surgery are to be physically fit and consume a healthy diet. The components of a diet befpre surgery are different from a typical healthy diet. The body can be prepared further by getting supplemental vitamins (9, 10, 11, 16). The focus of my research involves the two weeks prior to surgery, when food intake most immediately affects one's condition for the operation.

METHOD:
Through internet, textbooks, physician consultation, and review of scholarly journals, research was collected to find a core set of guidelines for those undergoing surgery, regardless of type. Research was done for three non-emergency surgeries- gastric bypass, cosmetic breast reduction, and hysterectomy. Each procedure was examined for nutritional contraindications. Guidelines were only considered if they were not contraindicated for any other procedure. Research was conducted to find a diet that was optimal for a healthy young adult, and then amended to accommodate surgery. Additional research was conducted to explore the efficacy of supplements.

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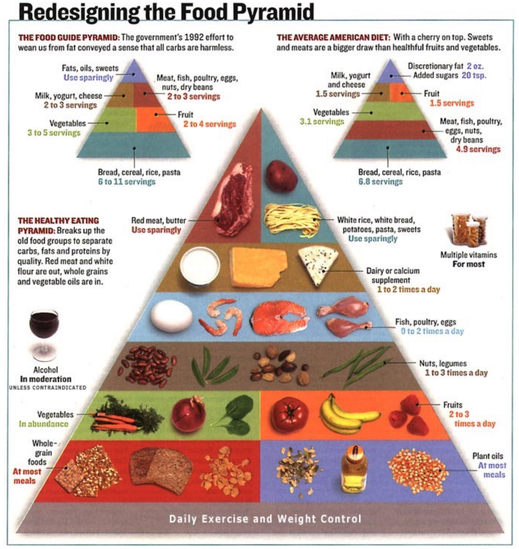
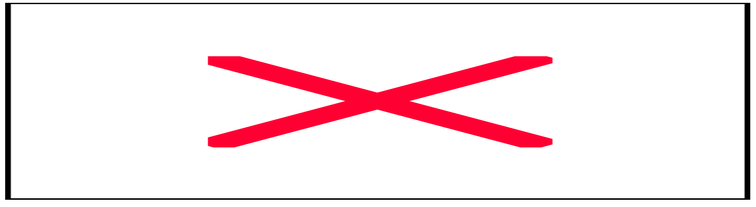


DIETARY GUIDELINES:

•Eat a variety of colors and foods (10, 11, 16)
•Include protein at every meal (16)
•Eat more frequent, smaller meals to keep energy up (11, 16)
•Aim to eat approximately 40% of calories from carbohydrates, 30% from protein, and 30% from fat (40-30-30) (16)
•Choose natural carbohydrates like fruits and high fiber vegetables (10, 16)
•Eat proteins which are low in fat (chicken, turkey, fish) instead of red meats and pork (10, 16)
•Soy based foods are good choices (7, 10, 16)
•Avoid refined flours (white bread, pastas) and potatoes (10)
•Eat red meat sparingly (10, 16)
•Use plant oils (olive oil, canola, sunflower) instead of butter (10)
•Eat leafy greens (10, 16, 20)



EXERCISE GUIDELINES:

While it is important to be physically active in preparation for surgery, a loss or gain of 10% of total body weight one month prior to surgery can be fatal (14). In preparation, it is best to maintain weight, while balancing exercise and healthy eating practices (1). Elevation to 60% of maximum heart rate is a good guideline, 20 minutes a day, 4 times a week (15)

HARMFUL SUPPLEMENTS:

Some herbal remedies may be very harmful to those undergoing surgery. Garlic and ginger in either pill form or in food in high amounts may cause profuse bleeding due to anti-coagulation. Kava, a common memory enhancer, may enhance the sedative effects of anesthesia. Echinacea, considered by many to be an immunity booster, may interfere with normal immune functioning after surgery. Danshen, Dong quai, feverfew, ginseng, and goldenseal all thin the blood and may cause excess bleeding. Licorice may increase blood pressure. St. John's Wort, an herbal antidepressant, can increase or decrease the effect of some drugs used during and after surgery. Valerian root, a herbal muscle relaxant, may interfere with the effects of anesthesia (16, 22).

DISCUSSION:
Much research has been done on nutrition after surgery, though not much attention has been devoted to foods consumed before surgery and their direct effect on the body and healing. Numerous studies point to a balanced varied diet as optimal. Very few studies suggested that supplements may play a role in rejuvenating the body after the trauma of surgery. An effort was made to locate general nutritional guidelines that were not biased by a food industry lobbying group. The food pyramid utilized capitalizes on sound nutritional information, and has been well received in the medical community. The majority of diet recommendations for food groups comes from Walter Willett (10).

A diet composed of 40% carbohydrates, 30% protein, and 30% fat is a proper balance in a good diet. This is considered to be optimal to serve the needs of those maintaining weight. Because of the demands placed on the body for surgery, proper nutrition prior to surgery is critical to healing, as it is the easiest way for patients to have a direct impact on their care. Lean proteins are healthier than fatty proteins. Studies show eating red meat and pork increase harmful LDL cholesterol, while fish lowers LDL cholesterol. Alternative forms of protein (beans and rice, soy, eggs) are healthier than meats(16).

While alcohol is a component of Willett's pyramid, abstaining from alcohol before surgery increases blood clotting properties. Alcohol acts as a vasodilator, opening blood vessels and lowering blood pressure. This may lead to unexpected variance in blood pressure or consistency of blood.

Smoking is a dangerous practice to engage in, especially before surgery. Smoking can result in inadequate oxygen supply to the heart during surgery or complicate anesthesia. Healing will be slowed considerably if the patient has been smoking before surgery.

Plant oils (olive, canola, sunflower, soybean) are good choices because they are high in poly- and monosaturated fats. These fats are more easily digestible by the body, and play a part in raising HDL cholesterol. Because fat is an important part in the balanced diet, plant oils are good choices because of their heart-healthy properties.

HELPFUL SUPPLEMENTS:

Additional supplements have been found to decrease healing time and help with inflammation, scarring, and tissue regeneration. Vitamin C promotes collagen synthesis and aids in healing (17). It is also a free radical scavenger (16, 17). It should be pure and free from additives or other bioflavanoids. Zinc helps in healing and acts as an immune booster (6, 13). Coenzyme Q-10 is an immune booster and anti-oxidant, It benefits the heart and promotes healing without no harmful side effects (18). L-Carnitine is essential to tissue recovery, especially in patients over 40 years. It is an immune booster and promotes healing (16). Alpha Lipoic Acid is a powerful antioxidant and may promote healing (19). Vitamin K aids in blood clotting and decreases bruising (20).

An example of the difficulty in this study is MSM (Methyl Sulfonyl Methane). It was found on a commercial web site. It claims to be a natural form of organic sulfur and an antioxidant that affects growth of hair, nails, and skin. It may improve skin elasticity and thickness. MSM may detoxify the body, increase blood circulation, and reduce inflammation. It is reported to soften scar tissue and inhibit pain impulses along nerve fibers, acting as an analgesic (16). The claims for MSM demonstrate why one must discuss any supplementation with a qualified health professional.

In an effort to create nutritional guidelines for those planning surgery, one must remember nutrition is an imperfect science. Because each individual does not operate identically biochemically, these guidelines are not appropriate for every person. A physician should be consulted for any major change in diet and before taking any supplements. These guidelines were compiled for a physically active, non-smoking young adult free of allergies or medications. The person was assumed to have no risk factors due to family history.