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Editorial Report

Ming-Yu Cheng, M.D., M.P.M.
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Cosmetic enhancements are growing in popularity with about 6 million people becoming patients every year. As more doctors, salons and others get on board in providing these services, patients sometimes find themselves dissatisfied with their results and in need of additional enhancements. Breast augmentation, facial rejuvenation and liposuction are the most popular plastic surgeries in the United States today. Most of these procedures are relatively simple to perform, when conducted correctly, and they are becoming more affordable. People tend to spend more money on self-improvement because they are living longer, healthier lives and want their appearance to reflect how young they feel. Although the majority of the patients are still women, men also utilize cosmetic surgery to enhance their appearance for a multitude of reasons. One noted reason is to improve their work opportunities.

The American Society of Plastic Surgeons (ASPS) report that liposuction is the fastest growing procedure, which increased 34% in 1999. Breast augmentation was the second most popular surgery with 167,318 patients in 1999.

Corresponding with these increasing patterns of cosmetic surgery among a wide range of people including college students, the *Journal of the Health Resource Center*, a publication of California State University Long Beach, Student Health Services, reports the potential danger as well as its benefits through available evidence on clinical efficacies of plastic surgery procedures including laser skin treatment, rhinoplasty, breast augmentation and reduction and liposuction.

Cosmetic surgery has become increasingly popular among young people in our society. The prevalence of plastic surgeons and aestheticians who perform a variety of cosmetic procedures and treatments abound with many of those not being certified or licensed. The potential cosmetic surgery patient should screen the provider(s) to prevent possible negative results. Licensing organizations should also improve the protocol approval of facilities and practitioners. Future studies regarding cosmetic surgery are necessary to focus on the reconstructing licensing and screening process for patients to have more opportunities to choose their providers .



Laser Surgery for Cosmetics

Dannie Allen

Advances in the field of laser surgery for a variety of cosmetic purposes are making remarkable progress. Resurfacing of wrinkles, age spots, spider-leg veins, lesions, tattoo removal, and other types of skin “problems” can be remedied with the use of lasers by a trained and licensed surgeon. The carbon dioxide laser, the Palomar Q-YAG 5™, the Er:YAG, and the Nd:YAG lasers are available to plastic surgeons for use in cosmetic surgery. The precision of a laser can offer reduced scarring and healing time compared to other surgical procedures. Disadvantages of using the laser for cosmetic purposes also abound, including burning of the skin, leaving the area discolored for a long period of time, and multiple treatments.

We are experiencing wonderful advances in the medical world, and probing new depths in medical technology. One such advancement involves lasers. The word laser is actually an acronym for Light Amplification by the Stimulated Emission of Radiation. There are many different types of lasers, and they include the carbon dioxide laser, the YAG (yttrium aluminum garnet) laser, and the pulsed dye laser.¹ Due to better understandings of tissue and laser interaction and with the advancement of delivery systems, the range and usage for lasers has greatly expanded. Lasers were invented half a century ago, and by the 1970s some pioneers in the field were exploring the viability of the use of the laser in the medical field.^{2,3} In the past 10 to 15 years, doctors have started to consider lasers as a tool that they can use in private practice.³

According to a recent cosmetic dermatologist survey conducted by Coherent Medical Group in Santa Clara, California, more than 56% of cosmetic dermatologists own or rent multiple lasers.³ Consultants report that the

mainstreaming of lasers is a new trend. It is shaping the “practice of the future.”³ These days, the uses of the laser are broadening to such areas and purposes as treating wrinkled skin, removing tattoos, and treating unsightly veins on the body. Laser technology has proved to be safe and also reliable for a wide range of cosmetic treatments.⁴ Despite the growing popularity among patients and surgeons, it is still important to be aware that adverse effects exist and lasers pose a set of problems that are unique.⁵

CO₂ Laser

The use of lasers in the medical field usually entails removing diseased tissues or the treatment of bleeding blood vessels. This kind of treatment is successful due to the production of light from the laser. Patients seeking treatment with the CO₂ laser are usually having wrinkles and periorcular (around the eyes) wrinkles treated with laser surgery. Since the laser light is controlled, skin can be safely rejuvenated.⁶ A special light beam, which is the color of the laser, is focused and precisely controlled. There are

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different lasers that exist and each laser has specific uses and purposes. The color of the beam is related directly to the type of surgery and related to the color of the tissue that is treated. The light beam is a disciplined energy source that very efficiently has positive effects on the skin.

Some of the cosmetic aspects of the laser use include the removal of wrinkles, tattoos, and even birthmarks. Some laser procedures also rejuvenate the skin, reduce the appearance of wrinkles, and reduce the appearance of spider veins on the body, specifically the legs. One particular laser that is making remarkable progress and has become a popular cosmetic surgery tool is the carbon dioxide laser (CO₂ laser). The CO₂ laser has proved its effectiveness in eliminating and reducing the appearance of wrinkles because it has a short pulse and high-energy output.^{7,8} The new ultra-pulse CO₂ laser is able to vaporize tissue with a single "high energy" pulse and is an excellent method for the treatment of periocular wrinkles.⁹ In terms of a theoretical advantage, this laser has accuracy and also good penetration and depth control.⁸ Through the use of the CO₂ laser, a surgeon is also able to repair skin that is damaged from the sun, age, and acne.¹⁰ The entire process of using the CO₂ laser proves to compete with such techniques as dermabrasion and chemical peeling.

However, there are some negative aspects to the CO₂ laser. One issue is that with this laser, there exists the potential for thermal injury because this laser is a high-energy machine.⁸ Thermal injury can result in deep burns in the skin, as well as hypertrophic scarring. Even though there is a possibility of thermal injury, the CO₂ laser causes only minimal amounts if used properly.¹¹

Another factor, which is addressed by Dr. Spencer, Director of the Dermatologic Surgery

Division and associate professor of dermatology at The Mount Sinai New York University Health Care System, "CO₂ is terrific and it really works. The problem is that there is a price to pay. There is a long healing time and it makes the face pink for months, and for many patients it drives them crazy. It is also unsafe to use it anywhere else on the body."

The recent advances in laser treatment in terms of treating aging and wrinkled skin are becoming remarkable. In fact, according to Jeffrey S. Dover, M.D., recent advances in this laser surgery are "...so great that they may be best characterized as revolutionary."¹² Some of the more recent advances in technology have allowed dermatologists to treat textural changes (such as wrinkles) of aged skin with safety and more improved outcomes.¹² In the past, chemical peels such as trichloroacetic acid or phenol were used as an effective treatment for wrinkles; however, there is some limitation to them because of the associated risk of scarring, hypo-pigmentation, and the inability to accurately control the depth of the tissue injury.^{8,27} This led to intensified research in the area of laser systems for facial rejuvenation. With the CO₂ laser, there is a decrease in the risk of scarring and the laser also allows for very precise control of the vaporization of tissue. CO₂ laser resurfacing can also be used for the improvement of sun damage and dark circles under the eyes. When a patient has multiple cosmetic concerns, the CO₂ laser is an excellent option for the treatment of combination skin problems.

Palomar Q-YAG 5™, Nd: YAG, and Er:YAG Laser

NEW LASERS ARE ALSO BEING USED IN MEDICAL TECHNOLOGY AND THEY ARE COMMONLY REFERRED TO AS THE YAG LASERS. THE PALOMAR Q-YAG 5™ (Q-YAG) IS A HIGH POWERED LASER FOR

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TATTOO AND pigmented lesion removal. Both Nd: and Er: YAG lasers are used for facial skin care and resurfacing since the energy is much lower than the Q-YAG laser. The Nd: YAG laser wavelength works in the deeper skin structure while the Er: YAG laser wavelength is absorbed into the superficial layer of the skin. Compared to the CO₂ laser, the Q-YAG laser might be more appealing because of possible decreased healing time for the patients. One reason that accounts for why the laser has decreased healing time is because it seems to be absorbed 16 times more efficiently by water in the cells than the CO₂ laser.¹³

The Q-YAG laser is a laser system for tattoo and pigmented lesion removal.⁴ A pigmented lesion is an area of the skin that is discolored, such as age spots. It also is used in hair removal, pigmented skin and lesion removal, and skin resurfacing for treating wrinkles.¹⁴ One of the great benefits of this laser is that it is smaller and more affordable than any other system used for tattoo removal and pigmented lesion removal.¹⁵ However, despite the positive aspects of using the Q-YAG laser, it may possibly be limited to only treating mild facial wrinkles. There are some manufacturers that do claim that the Q-YAG laser is capable of providing similar results to those of the CO₂ laser in terms of treating facial skin; however, those results are not reflected to the body other than the face, such as the arms, neck or hands with the Q-YAG laser.

Dr. Spencer said regarding this news of the Q-YAG laser, “The Er: YAG laser came along with the promise it was kinder and gentler. The only problem is that it is too kind and gentle. It’s safe but I don’t think it gives you a lot of benefit.” In a study that Dr. Spencer conducted, there were 12 patients that were involved and they each had sun damage to the arms, hands, and neck. Seven of the twelve patients received two to three passes from the Er: YAG laser on the outer side of the hands and forearms. The same area unit of skin

was treated with the Er: YAG laser on the neck of the other five remaining patients. The healing time that took place was an average of three weeks, which is a much lengthier time than the one week that it often takes for the face to heal. There were also some adverse events that took place, including bacterial infections that arose during the healing process in two of the arm and hand patients. In the end, poor cosmetic improvement was noted in six of the seven hand and arm patients and in three of the five neck patients.¹⁶ There was one hand, arm, and neck patient that had fair results.⁵ According to Dr. Spencer, when small facial improvements are the goal, he prefers the Er: YAG laser, “for very fine lines or rough texture where you really don’t have to do a lot, I think the Er: YAG is great.” In terms of treating more severe wrinkles and scars that are on the face, Dr. Spencer prefers the CO₂ laser.¹⁶

The Nd: YAG laser has been in use for the last two decades and its primary purpose has been the removal of pigmented lesions.¹⁷ This particular laser has also recently been shown to be effective with the treatment of moderate and mild wrinkles, especially for those patients who do not have severe damage to their skin. According to Tina S. Alster, M.D., “This system is different because it emits at a slightly different wavelength than other Nd: YAG lasers. It delivers a very high amount of energy in a very short pulse at the same time that a cryogen or cooling spray is put onto the skin to provide epidermal cooling.”¹⁷ The Q-YAG laser is different from other lasers because the outer layer of skin is not removed.¹⁷ The epidermis is not injured and will remain intact without much change or variation in that layer other than some slight redness.¹²

Although there are numerous advantages with the Nd:YAG laser, there are inevitably disadvantages. One of the disadvantages is the

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necessity for several treatments.¹⁸ Elizabeth Faircloth Rostan, M.D., stated at the meeting of the American Society for Laser Medicine and Surgery, “The improvements with the nonablative laser are more gradual in onset and they are also typically less than what you would see with an ablative procedure. Another advantage of this procedure is that it is bloodless.”¹⁹

Telangiectasia is a disorder that involves long term dilation of the capillaries which causes red and dark blotches that are elevated on the skin. Treatment with lasers has proved difficult because of the vessels’ size, depth, color, and high pressure flow. However, the Nd:YAG laser has illumination that with contact cooling is effective and safer for the treatment of telangiectases and also small intricate and net-like veins that are on the legs.²⁰ Using lasers to treat the lower body for telangiectasia is not as successful as treating the face for telangiectasia. Possible advances in laser technology may improve telangiectasia treatment of the lower body.²¹

Combined Laser Treatments

There are some treatments for patients that involve the use of multiple lasers. Such treatments are usually for facial resurfacing and wrinkle removal. When a patient is treated with a combination of lasers there will be multiple passes over the skin. After two passes of the CO₂ laser, the Q-YAG laser is used, and according to Amy B. Lewis, M.D., this process, “...produces acceptable facial resurfacing with faster healing in both clinical experience and emerging clinical trials.” These two treatments used together offer the patient the benefits of the CO₂ laser without a long period of healing. Dr. Lewis has recently begun using combination therapy on patients and has witnessed promising results. Additionally, she predicted that the use of combination treatment would become common in clinics throughout the country as the result of clinical studies becoming

available. In fact, Dr. Lewis was involved in a recent study of 12 patients by Mitchell Goldman, M.D. and Richard Fitzpatrick, M.D., at the University of California, San Diego. Results from this study showed that erythema and pigmentation disappeared after two to three weeks on the skin when it was treated with the use of combination laser treatment. In comparison, skin that was treated with the CO₂ laser alone took eight weeks to achieve an appearance that was more ‘normal.’ Also, according to the researchers’ estimates, the Er:YAG treatment alone results in five to seven days of healing time that includes crusting, peeling, and erythema. There has also been some experimentation done by researchers with combinations of the CO₂ laser, Er: YAG laser, and the Q-Switched laser.²² It is important for physicians to be aware of adequate fluency with the delivery of the laser and also to optimize pulse duration and wavelength, while making sure to reduce skin trauma.⁵

Spider Veins and the Laser

Unsightly veins on the legs are sometimes referred to as spider veins because of the veins’ spider leg-like appearance. Spider veins are inner telangiectasias and considered a cosmetic issue.²³ These veins are caused by aging, pregnancy, and oral contraceptives.¹ Treatment of spider veins with lasers has produced inconsistent results.²⁴ Leg and facial veins absorb the laser light into the blood cells, and this then causes the blood to coagulate and the blood vessel walls are left unsupported, causing them to collapse. After the vein collapses it will begin its healing process and the blood vessel dissolves and is eliminated, which reduces or eliminates the unsightly vein on the body.²⁵ Sclerotherapy, which is a procedure that involves injecting a ‘sclero agent’ causing scarring in a varicose vein,

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had been the standard treatment for spider veins for years.

However, recent advances have shown that lasers (especially the Q-YAG laser) are to be inducted as a considerable and viable option for leg-vein treatment. This laser vein therapy is a cosmetic technique that uses laser technology to get rid of vascular and pigmented lesions in a non-invasive way. Usually small to mid-sized veins are treated by these lasers. In some cases, multiple treatments may be required. The number of treatments depends on the patient and what is being treated. If repeat treatments are required, they are usually done approximately every six weeks. After treatment, the area(s) may appear to be bruised and/or red. Some swelling or blistering at the treatment site may occur. Some patients experience lightening or darkening of the

skin. In most cases, the skin discoloration is temporary but it can be permanent.²⁵

In the past, sclerotherapy was the common course of action for treating leg veins. Even though this particular type of treatment might still be ideal, the Q-YAG laser is an alternative that provides effective and safe treatment for leg veins. Robert A. Weiss, M.D., said, “We have a vast knowledge of sclerotherapy. And we know it works extremely well for leg veins. Over the past six years or so companies have been trying to develop a laser that works as well as sclerotherapy.” According to Dr. Weiss, there have been recent improvements that have allowed the laser to become more successful in treating spider veins than sclerotherapy. The improvements that were implemented were to shift to a longer wavelength, use cooling devices to help protect the skin, and use longer pulse

Table 1. The advantages and Disadvantages of Laser Treatment by procedures

Procedure	Advantages	Disadvantages
Tattoo or pigmented skin lesion removal with Q-YAG 5 laser	Removal of unwanted markings client may consult with physician about the possible use of topical anesthetic to reduce pain.	Extended healing time, patient may have to come back for multiple treatments, skin discoloration, possible client dissatisfaction.
Removal of facial periocular wrinkles	Face can appear more rejuvenated, the scarring and healing time are not as extensive as cosmetic surgery.	Extended healing time, patient may require multiple laser treatments and wrinkles may remain.
Removal of spider leg veins.	Removal of unsightly leg veins.	Extended healing time, patient may require multiple laser treatments, skin discoloration and client's dissatisfaction are possible

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duration. Concerning the size of veins, Dr. Weiss said, “Now we realize that to treat larger vessels, it takes longer for them to heat up.” Better technology has made it possible to treat blood vessels that are up to three millimeters in diameter.²⁶

Laser Removal of Tattoos

Approximately 10 million people in the United States alone are experiencing “tattoo buyer’s remorse,” and would like to have their tattoos removed. In the past, if a person had a tattoo it was a lifelong problem. Now, due to advances in laser technology, there is an option to remove unwanted tattoos. In order to remove tattoos, the use of one type of laser is not sufficient. With the use of multiple lasers, the desired outcome is more attainable. According to Roy Geronemus, M.D., “High-energy, short-pulse lasers such as the Q-switched ruby, the double frequency Q-Switched Nd: YAG, and the alexandrite laser have made a significant impact on the physician’s ability to lighten and remove tattoos and pigmented lesions.”



Figure 1. Typical CO2 laser

With the use of these multiple lasers, the treatments are quicker and offer the patient the desired result.¹⁷ In terms of the tattoo’s color removal, Dr. Geronemus said, “How much improvement will take place is based on the tattoo pigment itself. Black is the easiest to remove. Pink, white, and tan pigments present a real challenge to the physician.”²⁷ The process consists of an initial use of the CO₂ laser followed directly with the Q-Switched laser. There is almost always no difference in the lightening of the tattoo if only a CO₂ laser is used; however, if the CO₂ and Q-YAG lasers are used in combination there will be a greater difference in the outcome. According to Richard J. Ort, M.D., at the annual meeting of the American Society for Laser Medicine and Surgery, “While the Q-switched lasers have improved our ability to treat tattoos, the tattoos are still resistant to treatment—especially certain colors such as green.” This data was taken from a study conducted while Dr. Ort was a laser and cosmetic surgery fellow at Beth Israel Deaconess Medical Center and Wellman Laboratories of Photo Medicine, Harvard University, Boston. Dr. Ort also said, “Our goal was to see whether removing the epidermis with the CO₂ laser prior to treating with the Q-switched laser would lead to greater lightening while still maintaining an acceptable side-effect profile.” For this study, nine patients with mature and professional tattoos were enrolled. He also stated, “The rationale for our study was that by removing the epidermis we would eliminate epidermal absorption and scattering of the Q-switched laser beam, thereby achieving deeper penetration of the Q-Switched beam. We also hoped to see elimination of the pigment through the wound as it healed.” The tattoos on the patients in the study ranged from various color schemes to varied placement. On all nine patients there were a total of four tattoos on the upper arm, three on the forearm, one on the back and one on the ankle. After treatment with the lasers, five patients received antibiotics

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postoperatively after it was noted that two cases of infection occurred in the first four patients who did not receive antibiotics. The minimum follow-up period was two months, although most of the patients had follow up visits for six months. Based on the study's results, Dr. Ort said, "In the immediate postoperative phase, most patients reported significant edema and discomfort, especially if the tattoo was on an extremity, and the quadrant [of skin] that was treated with both the lasers was uniformly the last to re-epithelialize, in contrast to the quadrant that was treated with the CO₂ laser alone, which healed quite rapidly". However, even though the area of the skin that was treated with the CO₂ laser alone healed the most rapidly, "...there was no lightening after the CO₂ laser alone...the quadrant treated only with the CO₂ laser had very subtle textural change in only three patients".²⁸

Pain thresholds vary among patients during cosmetic surgery. Nevertheless, topical anesthesia can be used during the process. Successful anesthesia to pain stimuli that is laser-induced was demonstrated in a study using three different topical anesthetics. The three topical anesthetics included EMLA, ELA-Max 5, and Topicaine. According to Paul M. Friedman, M.D., the objective of this demonstration was done to determine anesthetic effectiveness. He stated, "With the emergence of new laser and surgical techniques, the need for effective and rapid topical anesthesia continues to increase". During the study, equal amounts of the three different anesthetics were applied as well as a control onto 24 forearms of adult volunteers. Results of the study indicate Topicaine and ELA-Max 5 proved superior to EMLA 30 minutes after application, and the level of highest efficacy was demonstrated by EMLA and Topicaine 30 minutes after their removal.¹⁹

The use of lasers in cosmetic surgery has advanced greatly in the last several years. There are many advantages for the consumer to use this treatment for removal of tattoos, periorcular wrinkles, and unsightly veins. Along with the advantages are disadvantages including extended healing time, discoloring of the skin, multiple treatments, and possible client dissatisfaction with the results. Cost of laser treatments are comparable to plastic surgery but the physical scarring and healing time are less extensive.

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Rhinoplasty

Nhordia Gonzalez

One of the most common cosmetic procedures is nose surgery, better known as rhinoplasty. Rhinoplasty is a surgery that increases or decreases the size of the nose. It is performed for both cosmetic reasons and to improve respiratory functions. Some clients need to rectify complications within the nasal airways in order to breathe better. People should clearly understand their purpose of the operation and consult with the surgeon to discuss the advantages and disadvantages of the surgery. Nose surgery can also cause major complications. There is a chance that the client may suffer from infections such as septal abscess. These complexities could also lead to more serious illnesses such as intracranial infections, Toxic Shock Syndrome, and fatality.

Everyone wants to look and feel great, but many people focus on their appearance these days to the point that they strive for perfection. Those who consider cosmetic surgery are, for the most part, looking to improve their appearance. Potential patients should look into the risks involved in cosmetic surgery. They need to ask themselves if it is necessary or if it is just for correcting or improving their form. Surgery may be performed to correct a particular problematic function, improve cosmetic form or a combination of these two types. Patients should keep in mind that any type of reconstructive surgery will only improve form rather than perfect it.

Nose surgery, or rhinoplasty, is known to be the most popular of all cosmetic surgical procedures.¹ Surgery of the nose can be done to improve its prime function or for cosmetic purposes.

Rhinoplasty and the Nose

The nose is a small outer organ important for containing receptors of sense and smell.² Due to the air passages, it marks the beginning of the respiratory system. The nose moistens and warms the air before entering the lungs. The hairs found in the nose are for trapping and sorting out foreign air particles.² Framework of the nose includes bone and cartilage attached to or next to the skin. The upper-third section of the snout is made up of bone, and the lower two-thirds is absolute cartilage.²

Rhinoplasty is the reshaping or repairing of the nose by reducing or increasing the size.² Other types of nose surgery include the removing of a hump, the change of angle in the nasal bridge, the change of breathing space between the nose and upper lips, and the narrowing of the nostrils.² Rhinoplasty is not just for improving features, but also for correcting birth defects or injuries.²

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These different styles of surgery are helpful in that they may relieve some initial breathing problems.

Brief History of Cosmetic Surgery

The history of rhinoplasty was found in the writings of Sushruta, which date back from 500 BC to the present.³ Over 200 years of a stagnant period went by before it was finally revitalized. It was during this time that a letter was published in the *Gentleman's Magazine of London* in 1789 regarding plastic surgery as an art.³ An article published from the German society journal called *Hals-Nasen-Ohrenkrake* states that an Indian method introduced the development of rhinoplasty (adjacent flap) as far back as 600 BC.⁴ The Italian version of rhinoplasty (distant flap), on the other hand, was founded in the 15th century. Both methods are still widely used in recent years. These methods were introduced due to nose destruction caused by infectious diseases, tumors, injuries, and other tragic circumstances rather than purely cosmetic reasons.⁴

According to the American Academy of Facial Plastic & Reconstructive Surgery, a Prussian-born surgeon by the name of Jacques Joseph was the first to perform a rhinoplasty on a 28-year old man in 1898. He became the father of what is modern facial plastic surgery.⁵

It is interesting to know how rhinoplasty became popular in the United States. Rhinoplasty was not common until World War I. During this time warfare caused an increase in necessity for reconstruction of facial wounds. Surgery was only proposed for the soldiers who were wounded and needed to return to society. As a man's appearance was important for earning a living, it became even more apparent that a woman's appearance was her currency used for marriage.⁶

After World War I, during the Great Depression, and before World War II, the American culture began to focus more on the importance of appearance. Following the second World War, cosmetic surgery evolved into the era of face lifting due to an increase in interest for reversing the aging process. Also, there was a tremendous increase in demand to reduce or diminish the physical features that were used to characterize different ethnic backgrounds.⁶ For example, Asian Americans desired to achieve "double eyelids," while "nose jobs" were requested by many Jewish and Italian individuals.⁶

Clients and Their Motivations for Accomplishing Rhinoplasty

There has been an increase in teenagers who are seeking plastic surgery. A survey completed by 15,000 teenagers was conducted in order to find out what their perception is of other teens who have cosmetic surgery.¹² The survey results indicated that 54% (7,622) of those surveyed felt that cosmetic surgery was acceptable depending on the circumstances.¹²

People who choose to have facial plastic surgery do so for mainly two reasons. One reason to have rhinoplasty is to correct an obstruction in their nasal airways, and another reason is to improve their appearances. The performance of rhinoplasty has greatly increased in recent years. Both men and women who are having reconstructive surgeries cite seeking youthful appearances as the number one reason of the surgery.¹ However, both men and women find different reasons to have cosmetic surgery. The general idea behind cosmetic nose surgery is for the clients to gain greater confidence and sense of worth for both sexes. Women try to improve their overall experience by looking less tired. On the other hand, men will improve their self-esteem

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by achieving a youthful, and beautiful appearance.

Complications with Rhinoplasty

Many people do not realize that cosmetic surgery has a possible hideous side. Some surgeons advertise that they are capable of performing cosmetic surgery but are not properly trained and licensed for the job. Other problems include lack of regulations, inadequate clinical settings, misleading information in ads and brochures, and dangerous procedures. This leads to a lack of knowledge about who these doctors are, where they work, and what exactly they are doing.

Nose surgery, even when conducted by a professional licensed cosmetic surgeon, can cause complications that may affect a person's life. With this type of surgery, the client takes the risk of developing possible infections, reacting to anesthesia medications, have trouble breathing, severe bleeding, and bruising. Other side effects include permanent small bursts of blood vessels, which may appear as small red spots on the skin's surface.² Other complications may include permanent scars and a feeling of numbness. A rare complication that a patient might have to deal with is a mucous cyst, a bluish transparent structure filled with mucous. Patients who have other medical conditions put themselves at a higher risk for complications. In addition to the risks involved from an operation, there are side effects such as swelling or soreness. There is almost always some pain or soreness with any surgery. There are numerous potential dangers when a person undergoes cosmetic nose surgery. Many infections can occur ranging from a septal abscess and dacryocystitis to the most serious types such as, septic shock, Toxic Shock Syndrome, and intracranial infections that could eventually lead to death.

A recent report showed that an infection was found in 2.8% and 1.7% of trials of 500 and 300 cosmetic rhinoplasties, respectively. The first Toxic Shock Syndrome case in relation to nose surgery occurred as early as 1982. This syndrome is caused by *Staphylococcus aureus*, a bacterial infection that enters the bloodstream and immediately produces endotoxins, which brings rise to fevers, rashes, and hypotension and could simultaneously involve multiple organs. Besides *Staphylococcus aureus* infections, there are a variety of other infections that can occur. The best way to treat such an infection is by prevention. Another potential complication following nose surgery may be intracranial infections. Such infections may include meningitis, cerebritis, or cavernous sinus thrombosis.¹¹ Of the above infections, cavernous sinus thrombosis, which is extremely rare, has a mortality rate of 20%.¹³ Any of the above infections may be spread through direct contact with a vein or septic emboli.¹¹

An uncommon nose procedure called endoscopic sinus surgery is sometimes performed simultaneously with rhinoplasty. With endoscopic sinus surgery performed alone, major complications include cerebral spinal fluid leakage, meningitis, vision loss, brain abscess, anosmia, and much more.¹¹

Making the Right Choice

Potential patients should keep in mind that all surgeries have risks and benefits. Surgery should only be done if the benefits far outweigh the risks. Individuals should ask themselves, as well as the surgeon, if the procedure is necessary. Questions such as, is the operation going to relieve or prevent pain, reduce a symptom or improve body function, should be answered by surgeons. It is recommended that the patient ask the specialized surgeon to explain the procedure.

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Surgeons may explain the procedure by drawing pictures, diagrams, or by just simply explaining the steps the operation may entail. The client should ask if the operation might require a more extensive operation following the first. Additionally, the client should ask if there is an alternative to surgery, such as medications or treatments that are nonsurgical.

Successful operations can surely put a smile on the client's face. Yet, since many plastic surgeries do not last for life, it is important for the client to ask how long the benefits will last. Usually clients expect perfection, and therefore they become disappointed once they see the actual results.

A second opinion from another specialized surgeon is a great way to double check to make sure if having the surgery is right for you. Asking the surgeon how much experience he or she may have will help reduce anxiety and increase the level of comfort regarding the procedure. Clients should also check to see that the plastic surgeons are professionally trained, licensed, and have obtained good status, which will guarantee professional service.

Finally, the client should ask about the kind of anesthesia that will be used for the surgery. There are three different types that may be used: local, regional, or general anesthesia. Local anesthesia numbs only a particular part of the body, regional anesthesia numbs a larger portion of the body, and lastly, general anesthesia numbs the entire body by putting the patient to sleep.⁷ For the most part, anesthesia is safe for patients, excluding those who have medical problems such as allergies and those who are taking any medications since it may alter the response of the anesthesia. It is important to know that the best decision can be made only once the client is given

all the benefits and risks regarding the surgical procedure.

Before Surgery

Before a patient decides whether or not he or she wants to go through with rhinoplasty, they must consider the advantages and disadvantages. The patient should make a consultation appointment with a qualified surgeon to determine if cosmetic surgery is right for him or her.²

After a decision is finally made, the patient should then consider viewing before-and-after pictures to assist him or her in choosing the treatment. Plastic surgeons are now using computers to organize digital photographs instead of using the old manual review of before-and-after photographs. This new system makes it possible for surgeons to analyze, store, and review photographs, which serve in helping them review the results of performed surgeries.⁸

Many considerations must be taken into account. For example, a surgeon must make sure the patient's nasal bone has completely grown to the fullest before even considering cosmetic surgery. The nasal bone will not complete growing until around the age of 14 or 15.¹

A plastic surgeon will first look at the client's nasal septum, which is the wall that divides the inside of the nose.⁹ After the examination, if the nasal septum is crooked, the surgeon will suggest to the client to have a septoplasty surgery. This type of procedure is done to patients who have an obstruction of the airflow through the nose. A patient with this problem may experience septal spur headaches that occur due to pressure of the nasal septum, nosebleeds, and inflammation of the sinuses.⁹ If a patient is found to not have enough cartilage in the septum, which is considered a weak nasal

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tissue, then the physician may decide to reconstruct the nose by adding a cartilage graft. A weak nasal septum affects nasal airways and may be aesthetically alarming.⁹

An evaluation will be important before the surgery. A certified surgeon will first examine the client's external part of the nose. The doctor will determine whether or not there is a balance of cartilage and bone.¹ The surgeon will also observe the client's chin to decide whether he or she has a weak chin. A weak chin is said to make the nose look larger.⁹ If the patient has a weak chin, then they will also need to have a chin implant to be able to achieve a balance between the nose and chin. This gives the patient hope of seeing good results. Finally, the physician will take photographs of different angles of the nose for analyzing purposes only.

Procedure of Surgery

Once the patient is prepared to undergo surgery, incisions are usually made inside the nostrils. The surgeon may need to shave any excess bone and/or cartilage to be able to decrease the size of a hump or add shape to the nasal area. Unfortunately, a doctor can mistakenly shave too much off the nose cavity. This may cause the nose to collapse, which will cause severe problems for the patient. Patients who wish to have the width of their nose narrowed, must have their nasal bone broken. This is done so that the surgeon is able to move bones internally. If necessary, a cartilage graft is used to correct a depression in the bridge of the nose and also to strengthen the nasal tip. Once the structure of the nose is corrected, the skin is re-draped. Finally, the incisions are closed with absorbable sutures.¹⁰

Following Surgery: Recovery

Following surgery, a metal or plastic piece (splint) is placed externally and internally to uphold the new bony shaped structure.² Soft

splints are placed within the nostrils to stabilize the septum, which is the wall that divides the air passages.

The face and especially the nose become swollen and uncomfortable immediately after surgery. Patients will notice an increase in bruising around the eyes for two to three days following the surgery. To reduce swelling, the patient can keep his or her head elevated while placing cold compresses to the eyes. The bruising and swelling will disappear slowly in two weeks.² A patient may also experience headaches. Patients who develop extreme discomfort may be given pain medications. Minor swelling of the nose will remain for several months. After three to five days have passed, the protective material that was placed in the nasal area is finally removed. The splint itself, along with stitches, are removed one or two weeks after surgery.²

Most patients need several weeks for a full recovery. Some patients are able to get up after a few days and return to school or work following surgery. Meanwhile, they must be extremely gentle with touching or washing their nose and learn to avoid hitting or rubbing their nose. For the first 8 weeks following surgery, patients must protect themselves from sun exposure.²



Advantages	Disadvantages
<ul style="list-style-type: none"> • Increase confidence • Youthful look • Correct obstruction in nasal area • Improve appearance • Reduce hump or lump to a more natural look • Complement other facial features 	<ul style="list-style-type: none"> • Misleading information • Dangerous • Unpleasant reaction to anesthesia • Bacterial infections such as meningitis and cerebritis • Toxic Shock Syndrome • Severe bleeding and bruising • Burst of blood vessels • Small red spots on skin's surface • Trouble breathing • Permanent scars • Untrained professionals performing surgery • Difficult finding a specialist • Second correction may be necessary • Take up to one year for final results • Expensive cost • Long recovery period

Table 1. Advantages and Disadvantages of Rhinoplasty

Patients are told to avoid strenuous activity such as jogging, swimming, or any other activity that increases blood pressure for as long as three weeks.² Those who wear glasses must tape them to their forehead for four to six weeks after the splint is removed and/or once their nose is completely healed. Finally, patients must keep in mind that all the above side effects or complications vary from person to person.

There are many types of complications that can occur following surgery. The most common complication is postoperative bleeding.¹¹ For this reason, the patient is not allowed to blow their nose, pick their nose, or insert foreign objects in order to heal without interruption. Other complications include hematoma, prolonged edema and ecchymosis, septal perforation, and skin alterations.²

While the patient is recovering from surgery he or she may feel depressed if the healing process is slow. Patients must be aware that the tip of the nose may be swollen or numb for months at a time although this varies from

patient to patient. Most importantly, the patient must be aware that final results of rhinoplasty may not be obvious for up to a year.

Insurance

Health insurance coverage may vary among procedures. If an insurance company does not fully cover the cost of plastic nose surgery, then the patient will have to pay for the difference. Rhinoplasty surgical fees are costly, and may include post-operative visits, medications, hospital billing for inpatient or outpatient care, anesthesiologists, and any other health care provider involved in the procedure.⁷ Insurance companies usually will not pay for cosmetic procedures, but clients must investigate this for themselves. Required rhinoplasty for medical reasons may be covered by insurance. A call to the insurance company can verify whether or not full coverage is possible.^{7,15}

Final Thoughts

Everyone who considers improving or correcting his or her appearance should remember to research the risks involved in the surgery of the choice. It is up to the individual to decide

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whether or not he or she wants to actually go through with any form of cosmetic surgery. They will need to ask themselves if surgery is truly necessary. Also, patients need to keep in mind that any reconstructive surgery, including rhinoplasty, will only improve form rather than perfect it. Everyone has the right to feel and look great, but many people obsessively focus on their appearance rather than concentrating on the finer things that life has to offer. Elizabeth Haiken, the historian and author of the book entitled, *Venus Envy: A History of Cosmetic Surgery*, once stated “that cosmetic surgery is always an individual solution to a societal problem.”¹⁴ This statement is an interesting commentary about our society’s obsession with being young, skinny and beautiful. Perhaps if the people of our society found beauty within themselves there would be no need for the constant pressure to be or look like someone we are not.

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Breast Augmentation and Reduction

Michelle Biba

In 2001, almost 250,000 women in the United States participated in one of the fastest growing industries in cosmetic surgery: breast augmentation. This form of cosmetic surgery allows patients to increase their breast size and to also replace a breast after a mastectomy. The reasons for breast augmentation are many and varied, all usually dealing with body image and self-esteem issues. Saline implants are the most common and possibly the safest available on the U.S. market. This type of surgery has been quite controversial due to the severe side effects. These complications are most commonly due to silicone and gel-filled implants. Two of the most important items to keep in mind when deciding if this is a viable cosmetic surgery option are choosing an experienced, certified, and fully licensed surgeon and that implants will only last about 10 years, hence requiring another surgery.

INTRODUCTION

The number one reason that most women get a breast enlargement is to fulfill their need to feel sexier and to meet the standards of society's perception of a beautiful woman. The purpose of the breast enlargement is purely cosmetic and carries over to no such regard that it would be considered mandatory to have breasts enlarged for purely "medical reasons." However, another interesting surgery that exists is breast reduction surgery, which is becoming more popular with women who have large breasts yet find them inhibiting in their daily movements.

The breast reduction surgery can be an empowerment tool for some women who wish to reduce large breasts that inhibit their personalities, career opportunities, and also create severe pain. In addition to the actual reduction of the breast, there have been some new developments where liposuction is used to remove breast tissue.

Another new development for breast enlargements is a bra that has been FDA approved

to allow breast tissue to grow up to a full cup size larger! This new development in increasing breast cup sizes can now be prescribed by some trained physicians. The bra is of equivalent cost to the actual breast enlargement surgery minus the costs of post-operative and follow-up appointments after the surgery. Positive aspects of the bra are the lack of medical complications and there is no long healing period.

Included in this article are the procedures of each surgery, the potential dangers and also the side effects that may occur after each operation. Additional surgery may be needed if the result is undesirable. There is no scientific evidence that entirely supports that breast augmentations and reductions are safe.

The psychology behind breast augmentation

Last year, almost a quarter million women nationwide opted for breast augmentation, far surpassing the second most popular cosmetic surgery, liposuction, which was performed on 180,000 patients.¹ The psychology behind

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enlarging breasts is linked to the idea that women do not feel happy with themselves. Young girls are brought up with the media's ideal woman who has large breasts so that they feel their own appearance is never quite good enough. They simply, "cannot trust their own bodies and that, in fact, their bodies are not truly their own."² They resort to plastic surgery, which in turn has become the most common way for women to spend money to improve their self-esteem. "Over 750,00 women a year in the United States undergo some sort of cosmetic surgery, resulting in a \$450 million per year business."² The average surgical fee for breast augmentation is \$3,077.

TYPES OF IMPLANTS

Saline Implants

Since the banning of silicone implants in 1992, saline implants are the most commonly used implants. Saline implants are also not connected to connective tissue disease or other autoimmune diseases.⁵ This breast implant also provides the vitality and extra lift that the client may be seeking. Additionally, the saline breast implant has no known history of a leakage problem. The FDA has approved saline implants for a clinical study to be conducted. The Iamed Corporation, a breast implant producer, was allowed to use the saline implants in its study. Ron Ehmsen of the Iamed Corporation stated that his goal is to "work closely with the FDA and other regulatory agencies around the world to conduct clinical studies and other post-approval studies to improve the understanding of the safety and the performance of our breast implant studies."⁴

Silicone Implants

Over the next 30 years, silicone implants will undergo many transformations, which include silicone gel implants that are encapsulated by a thin layer of polyurethane foam and double-lumen implants that compromise a central

chamber inflated with saline and an outer layer filled with silicone gel.⁵ A breast implant could consist of the material being made out of a silicone shell and then filled with a saltwater-based solution known as saline. The FDA reports that silicone gel-filled implants are under evaluation. Plastic surgeon, Dr. Steven Herman, says, "Silicone implants produce the cosmetic result and most natural feeling breasts."¹ In 1991, the FDA had halted the use of silicone implants since there may have been a connection to autoimmune disease and breast cancer. The company Silime Corporation began its clinical investigation for the silicone implants this past summer with the approval of the FDA to begin such clinical trials.¹

Although silicone-based products, which are prohibited in the United States, for breast implants are commonly used in other countries, a few American surgeons have illegally attempted to use these breast implants. In one case, a doctor from Oklahoma was jailed for six months after he had been caught using unapproved silicone gel-filled implants from foreign manufacturing companies.⁶ In 1992, the FDA held a three-month moratorium where only silicone gel-filled implants could be used for clinical trials, and then mainly for those who had reconstruction after breast cancer surgery and certain other medical conditions.⁶ Since then there have been about 20,000 lawsuits that were filed within the first two years of the ban against Dow Corning, the major manufacturer of breast implants.⁷

Hydro-gel Implants

The hydro-gel is composed of water, sugar and salt.⁸ Hydrogel[®] breast implants are manufactured by Poly Implant Prosthesis (PIP) in France and supplied in the UK by Clover Leaf Products. They have a silicone elastomer shell and are filled with hydroxypropyl cellulose

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hydro-gel, a polysaccharide. They were first introduced in 1994.⁹ This hydrogel implant has been banned due to a few effects. The reasons why these implants were determined unsafe are not known; however, there are reports that they lose or gain volume over time.⁸ Another type of implant that will be used for breasts is a U.S. process known as polyvinyl pyrrolidone (PVP). It consists of a hydro-gel formulation that has been tested in the U.S. and in Europe.¹⁰

Stacked Implants

Stacked implants are another option for reconstructing a sagging breast. These stacked breasts are accomplished by two smooth-surfaced, silicone gel-filled prostheses. The smaller prosthesis is the anterior part of the implant, which represents 20% of the total volume. The larger prosthesis represents 80% of the volume in the implants. See Figure 1 for a visual aide.¹¹ This is known as having double breast implants.

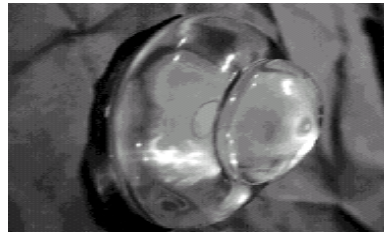
HOW LONG CAN THEY LAST?

In a FDA study, it has been cited that almost one-quarter of cosmetic, or saline-filled, breast implants will need to be followed by another operation within the next five years, and that few implants can be expected to last more than 10 years.¹² Sometimes a breast may have to be reconstructed. In one study a doctor surveyed 174 women about their satisfaction with the breast implants. Reportedly, 43% of the 174 women said that they would use silicone again and were completely satisfied with them. However, 34% of the women surveyed were disappointed with the breast implants and said that they would like to use other means to reconstruct their breasts.¹³

SIDE EFFECTS/RISKS FROM BREASTS IMPLANTS

More than 80,000 breast reconstruction procedures and 210,000 breast augmentation

procedures were performed in 2000; however, the American Society of Plastic Surgeons reports of 78,832 breast reconstruction procedures and 187,755 breast augmentation procedures in 2000.⁴ Based on this large increase in these procedures, it seems appropriate that clinical studies should be conducted to prove the safety of the implants. At the Sixth World Biomaterials Congress on May 18, 2000, there was a study that was presented



regarding the rupturing of gel-filled implants. The study included 907 women

Figure 1: Oblique view of the prosthesis.

who had undergone an MRI to determine whether or not the breast was indeed ruptured. In the study, it was found that one-third of the women had to undergo a second surgery in order to repair the rupture. Wound complications can occur when a breast is reconstructed.¹⁴ Problems like hematoma, infection, seroma, skin necrosis, and wound dehiscence can occur.¹⁵ All of these complications occur when a breast has had some kind of implant. Along with these potential problems, the implant could fall into one of two categories: implant failure and capsular contracture. Implant failure would mean that there is a rupture or leakage in the breast; whereas, capsular contracture would mean that there is a deformation of the implant surrounding the scar tissue.¹⁵ The long term rates of failure of inflatable implants are still being defined; however, they currently range from 1% to 5% over a 5-year period.¹⁵ This capsular contraction is a problem due to the squeezing of the soft implant. With any surgical operation there is a potential of

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bleeding and swelling, which should return to normal after a period of time.¹⁶ In addition to the swelling, there is the potential for an infection of the breast, which may be treated with antibiotics after the surgery.

Since the FDA has not proved that capsular contractures link with breast implants, further studies will be important to determine the significance between the two. One of the largest studies to date included the performance of a meta-analysis of the relation between silicone breast implants and the risk of connective-tissue diseases. In two of the individual studies, researchers found that there were a sufficient amount of data to analyze the rate of incidence of connective tissue disease after 10 or more years following implantation.¹⁷ It was found that the specific amount of time was not a predictor of the risk of connective tissue disease.

In the Nurse's Health Study, results indicate that there is only an increase of 1% to 2% of actually contracting the disease.⁷ Additionally, there is no correlation that connective tissue disease and breast implants will occur as a widespread condition.

There is also no correlation that silicone breast implants are connected with breast cancer.¹⁸ Another interesting fact that studies have indicated is that breast cancer can be correlated with dense breasts that have a large amount of glandular tissue. The amount of dense breast tissue can be seen be a common risk factor for breast cancer.¹⁹

Breast implants can cause the surrounding fibrous tissue to contract, generating considerable amount of pain; they can rupture; and infections have been documented.²⁰ It is uncommon but a loss of sensation has been reported by some women. It is also estimated that

a loss of areolar sensation occurs in approximately 15% of breast augmentation patients.⁵

CHOOSING YOUR SURGEON

Before choosing a surgeon, it is recommended that the patient research the surgeon's qualifications, experience, and familiarity with the cosmetic operations performed in the past. Do not hesitate to inquire about the surgeon's credentials or to request before-and-after pictures of previous operations the surgeon has conducted. Some surgeons will even provide patient references. Initial certification can be accounted for by one of the member boards of the American Board of Medical Specialties (ABMS) or by the American Board of General and Cosmetic Surgery.²¹ Researching the surgeon's qualifications is one of the most important parts of the process due to the increase in physicians who are not qualified to conduct breast augmentations.

THE BREAST AUGMENTATION PROCEDURE

During the consultation period the surgeon will have the patient wear a bra that is padded and weighted. This bra is the actual shape and size of the breast that allows the woman to test the breast size that they want after the surgery has been complete. The plastic surgeon will also examine the breasts to find the area where the incisions will be made and whether the implant will be placed in between the chest muscle and breast or behind the breast. Another location for the incision would be the lower edge of the areola.

The day before the surgery the patient is asked to refrain from smoking. Usually the surgery is performed on an outpatient basis. The patient will be given local anesthesia and in some cases will undergo intravenous sedation. Breasts will be wrapped in gauze or a surgical bra. This bra must be worn for several days and afterwards

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Type of Implant	Description	Benefits	Risks
<p>Silicone gel</p>	<p>Filled with a soft or firm silicone substance.</p> <p>Soft filled implants contain a semi-liquid silicone gel. Firm filled implants, or cohesive implants, contain a firmer gel which does not spill if the shell ruptures.</p> <p>Cohesive gel is used in more recent implants.</p>	<p>Long history of use.</p> <p>The soft silicone filler is the softest implant available. It is less prone to wrinkling and feels more natural than some other implants. Available in either round or anatomical (breast shaped) designs.</p> <p>The 1998 IRG found no evidence that silicone implants pose a danger to women's health.</p>	<p>Insertion of firm cohesive gel may result in a slightly larger scar than surgery using an implant with a soft silicone filler.</p>
<p>Saline</p>	<p>Filled with a salt and water solution of similar concentration to that found in body tissue.</p> <p>May be pre-filled or filled through a valve at the time of surgery.</p>	<p>Long history of use.</p> <p>Available in either round or anatomical (breast shaped) designs.</p> <p>Filled with a solution which can be absorbed and excreted by the body.</p>	<p>May be more prone to rupture or deflation at an earlier stage than other implants. Prone to wrinkling, may feel and look less natural than other implants and may lose volume over a period of time. Less satisfactory in women with little breast tissue.</p>
<p>Hydro-gel</p>	<p>Filled with a gel made of water, sugar, and salt.</p>	<p>Filled with a solution that can be absorbed and excreted by the body.</p>	<p>There are some reports about these implants losing or gaining volume over time. These are recently developed implants so information on long term performance is not available. Prone to wrinkling and may feel less natural than other implants.</p>

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the patient will be asked to wear a support bra. Residual swelling should be reduced after approximately one month.¹⁶

Another kind of procedure that can be performed is the Breast Lift. The breast lift consists of the surgeon removing excess breast skin so that the nipple and areola are shifted to a higher position. The areola in the sagging breast could be stretched or even reduced in terms of size.²² Before this surgery takes place there will be a baseline mammogram performed so that there will be clear evidence of a change in breast tissue.

BREAST REDUCTION

Breast reduction surgery was the fifth most commonly performed reconstructive plastic surgery procedure in 2001.²³ Breast reduction is also known as reduction mammoplasty. This enormous amount of weight strains the lower back and causes back pain for many women who suffer from having too large breasts.²⁴ In one study of 363 women, 176 had a breast size that was of a median DD cup size. Those who took part in the breast reduction were still found to have back, shoulder, neck, and lower back pain.²⁵ Unfortunately, there is no weight loss or medication that will help the sufferer of this pain except for the surgery itself. According to American Society of Plastic Surgeons, 99,428 women had breast reduction surgery in 2001.

A group of 363 patients from the Mayo Clinic were seen consecutively from 1986 to 1993. About 94.2% said that their breast reduction procedure was successful and they were completely satisfied with their surgery.²⁶ For some patients several of the symptoms that occur prior to the breast reduction surgery usually include an uncomfortable feeling about their body. There is pain in the bra-strap groove (92.4%), shoulder pain (86.0%), neck pain (70.7%), upper back pain

(79.0%), lower back pain (64.0%), and a rash under breast (61.0%).²⁶

The procedure in and of itself is similar to the procedure that entails breast reconstructive surgery; however, the difference between the two is that in reduction, breast tissue is being removed. The procedure removes breast tissue, and skin from breasts, making them smaller and firmer.²³ The procedure provides some scarring that does not allow for the blood to flow to the areola.²⁴

THE SURGERY

Before the procedure begins, there is consultation with the physician about what will occur during the surgery. The surgery takes about 2 to 4 hours and is done on an outpatient basis. General anesthesia is used during the procedure. There are several possible methods for the procedure to be completed. First, an anchor-shaped incision that circles the areola then extends downwards and follows the natural curve of the crease beneath the breast could be used. The surgeon then removes the excess glandular tissue, fat, and skin and moves the nipple and areola into their new position. Liposuction may be used to remove the excess fat around the armpit.²⁴ In most cases, the vessels and nerves will remain attached to the nipples; however, there is a possibility that they may be removed and then placed into a higher position. After surgery the breasts will be bandaged and the patient is asked to refrain from sex for at least a week since breasts tend to swell.²⁴

BRAVA BRA

The Brava System is designed to have gradual and lasting breast tissue growth without surgery or the use of medications. The Brava System is composed of tension-induced tissue growth that activates the production of new breast tissue by the body. The Brava System is a high-tech sports bra that comes with a microprocessor

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that regulates and records the action and performance of the bra.²⁷ The bra is supposed to be worn for about 10 hours a day for 10 weeks. Two domes in the bra allow for the breasts to gain suction and thus expand the breasts. This bra is a safe way to increase breast cup size by at least one cup size. For an instant “pick-me-up” the Brava Bra can be worn at different time intervals after the initial 10 weeks have been completed. The Brava Bra provides the public with an opportunity to seek alternative breast enlargement without the price or risk of going through a surgery.

The long-term effects of the Brava Bra have not been studied. Some patients have reported a skin allergy to the material of the bra. For those skeptical towards surgery, this bra still provides the same benefits of having breast implants minus the risk and complications of a surgery.

CONCLUSION

Since body image plays a large factor in deciding whether women will get a breast reduction or augmentation, we present the issue of intimacy. It is unknown if the female patients are complaining that the intimacy is what is causing them to feel poorly about their breasts or if the actual size of the breasts is what makes them feel flawed about their sexuality. If someone feels terribly insecure about their breast size they can resort to the augmentation or reduction of the breast.²⁸ There is no kind of surgery that can promise the results that would satisfy everyone and there is always the possibility of side effects. As most surgeries, a doctor will consult with a patient about the various procedures and side effects. As David Feigal, M.D., director of FDA’s Center for Devices and Radiological Health says, “Women should understand that implants do not last a lifetime. And they should be aware that women who choose not to replace their implants

after removal may have cosmetically unacceptable dimpling and puckering.”²⁹

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Liposuction

Yumi Lee

In the past 20 years since its introduction, liposuction surgery, including suction-assisted lipectomy, lipoplasty, lipolysis, and liposculpture, has become the most frequent, major aesthetic surgery performed in the United States. Liposuction is a surgical procedure that sculpts the body by removing unwanted subcutaneous fat by means of aspiration cannulas. Through the years, liposuction surgery has made vast improvements in technique, anesthesia, instrumentation, and patient management. The fat cells that are removed by liposuction will not grow back and the body will gain a new contour. However, if a person gains weight, untreated areas will be the sites of new fat deposits. It is recommended that liposuction be performed with only healthy patients who are in need of this surgery. There are a variety of serious complications that can occur with liposuction and even fatalities have been documented. Researching the surgeon's experience, credentials, and status are some of the most important items to include in your initial venture into cosmetic surgery. If someone is looking for total fat reduction, caloric control and exercise is the best way to lose fat.

Cosmetic plastic surgery is very popular among people of all ages. Liposuction surgery, which includes suction-assisted lipectomy, lipoplasty, lipolysis, and liposculpture, has become the most frequently performed major aesthetic surgery in the United States¹ since its introduction 20 years ago. The American Society of Plastic Surgeons (ASPS) announced that 7.4 million people had such a procedure in 2001.² More than half of these patients were between the ages of 19 and 50 years old, and 13% were male.³ However, many people do not know the facts about cosmetic surgery, particularly the college population. Cosmetic surgery is defined as reshaping normal structures of the body in order to improve the patient's appearance and self-esteem. Liposuction is one of the ways to improve one's appearance to satisfy his or her ideal body image. Massive advertisement encourages our society to pursue this surgery as the best way to lose weight. Nevertheless, there are many dangerous results from liposuction surgery, along with some benefits. The National Safety Council reported that medical and surgical

complications from such misadventures as liposuction caused 3,228 deaths during 1998 in the United States.⁴

We would like to introduce the following in this article to improve awareness of liposuction among college students: 1.) what is liposuction; 2.) history of liposuction; 3.) safety and technique of liposuction; 4.) benefits of liposuction; 5.) common complications of liposuction; and 6.) alternative ways of losing fat.

1.) WHAT IS LIPOSUCTION?

Liposuction is a surgical procedure that sculpts the body by removing unwanted subcutaneous fat by means of aspiration cannulas, which is surgical vacuuming. Small skin incisions are made in specific areas, including the abdomen, hips, buttocks, thighs, knees, upper arms, chin, cheeks, and neck. The cannula is attached to a flexible tube that is attached to a suction machine, and the fat is vacuumed out. Cannulas range in size from 5 millimeters (mm) to less than 1 mm in diameter. There are various kinds of liposuction currently available in the field of plastic surgery

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to minimize complications and provide more precise results. However, the ASPS stated that liposuction is not a substitute for traditional weight-loss programs, such as good nutrition and regular exercise. It can only assist in the removal of fat in certain areas.⁵

2.) HISTORY OF LIPOSUCTION

The idea of removing excess fat from certain areas of the body is not new.⁶ An early attempt at fat removal by Charles Dujariier, using a uterine curette in 1921, tragically led to an injury of the patient's femoral artery.⁷ According to Schrudde, who had attempted liposuction through a small incision with a curette in 1964, hematomas and seromas were the negative results.⁸ Since large cannulas were employed for liposuction, damage to the neurovascular bundle has often been reported. The quest to improve liposuction techniques in order to minimize those tragic incidents has led to various new technological developments. Modern liposuction began in 1970 with the technique and instruments developed by Arpad and Giorgio Fisher in Paris.^{9,10} The development of the new equipment contains the hollow cannula with suction. This invention dramatically reduced such complications as hematomas and seromas. Pierre Fournier was an initial advocate of the "dry technique" of liposuction. He became a world leader in liposuction and fat transplantation after modifying Fisher's technique so that no fluid application was required for the patient prior to liposuction.¹¹ Illouz was interested in Fisher's work in Paris and developed his own "wet technique." Illouz felt that the solution would reduce trauma and bleeding during liposuction, and he became famous for writing articles about this technique.¹² In 1977, Lawrence Field, a dermatological surgeon in California, visited France and brought back the new field of liposuction to the United States.¹² In 1982, several physicians and specialists in the United States

received instruction from Illouz and Fournier to begin their own practices. The American Society of Plastic and Reconstructive Surgeons visited Europe and investigated this new procedure around the same time. They tried to monopolize this technique, yet this attempt failed since Fournier refused to sign the contract.¹³

The course of liposuction has been available since 1982 to the American public. The first live workshop was held in Hollywood, California, in 1983, under the direction of the American Society of Cosmetic Surgeons and the American Society of Liposuction Surgery.¹⁴ Julius Newman, an oncologist and cosmetic surgeon, first used the term "Lipo Suction" and established the American Society of Liposuction Surgery.^{15,16} The dramatic innovation of a tumescent technique developed by Jeffery Klein allowed almost bloodless liposuction with local anesthesia.¹⁷ The common complication of hematoma and seroma formation became uncommon after the development of this technique. Although some specialists continued to perform liposuction in a hospital-based setting, dermatologic surgeons have clearly shown that tumescent liposuction is safe as an office-based, outpatient surgical procedure.¹⁸

The American Academy of Dermatology (ADD), the American Society for Dermatologic Surgery (ASDA), and the International Society of Dermatologic Surgery (ISDS) sponsored the annual meeting featuring extensive educational curricula on liposuction in 1984.¹² The guidelines for liposuction were approved by the American Academy of Dermatology in 1989 and published in 1991.¹⁹ Numerous postgraduate classes helped to instruct dermatologists and the continuing expansion of interest in the field of liposuction increased the number of courses available in the United States. A variety of smaller equipment has been developed by dermatologists.²⁰⁻²² Recent

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cannulas range in size from 5 mm to less than 1 mm in diameter. A smaller sized cannula decreases injury to blood vessels and reduces consequent bleeding.

3.) SAFETY AND TECHNIQUES

The technique of liposuction has improved over the years, minimizing complications or accidental death due to general anesthesia. The safety of liposuction has been reported and documented carefully.^{23,24} Suction-assisted lipectomy is considered an extremely safe procedure and is the most common cosmetic surgery.

There have been recent advances in technique, anesthesia, instrumentation, and patient management. The number of new techniques provides patients with more precise results. Ultrasound-assisted liposuction, which emulsifies fat, has been introduced for use in areas of fibrotic fat. When ultrasonic liposuction became available, surgeons hoped to increase the amount of fat removed without increasing the risk of complications, yet the result did not live up to the initial expectation.²⁵ This technique requires the use of a special cannula that produces ultrasonic energy. As it passes through the area of fat, the energy explodes the wall of the fat cells, liquefying the fat. The fat is then removed with the traditional liposuction technique. There are also some points to consider with the newer techniques. For example, in UAL, the heat from the ultrasound device used to liquefy the fat cells may cause injury to the skin or deeper tissues. Also, the long-term effects on the body with this technique are not yet known; although, UAL has been performed successfully on several thousands of people worldwide.²

The number of lawsuits dramatically decreased when liposuction was performed using the tumescent technique in an outpatient facility

by a dermatologic surgeon. Hospital-based liposuction, which usually involves general anesthesia, results in 3.5 times as many malpractice claims.¹⁸ Liposuction has been practiced by a variety of specialists, including dermatologic surgeons, plastic surgeons, gynecologists, and cosmetic surgeons. Several states have introduced legislation to limit the physical location where liposuction can be performed. According to "Guideline of care for liposuction," published by the American Academy of Dermatology, the physician performing liposuction should complete at least five years of surgical residency training, be recognized by the American Board of Medical Specialties, and should have experience at the surgical table with appropriate supervision.²⁶ However, any licensed physician, even one with no formal surgical training, can legally perform liposuction.²⁷

It is important for you to verify your surgeon's certification status. You can find information by visiting the American Board of Plastic Surgery at www.abplsurg.org, or the American Board of Medical Specialties at www.abms.org.² All liposuction should be performed under the care of trained staff in case of acute cardiac emergencies. Liposuction is not recommended for patients who are currently in the hospital with severe cardiovascular disease, coagulation disorder, pregnancy, bleeding diathesis, emboli, thrombophlebitis, infectious diseases, poor wound healing, or diabetes mellitus. The American Society of Plastic Surgeons and the American Society for Aesthetic Plastic Surgery require from their members that all plastic surgery must be performed in a surgical facility that is accredited by a national- or state-recognized agency or organization, such as the American Association for Accreditation of Ambulatory Surgery Facilities (AAAASF), the Accreditation Association for Ambulatory Health Care (AAAHC), or the Joint Commission on Accreditation of Healthcare Organizations

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(JCAHO). Facilities must be certified to participate in the Medicine program under Title XVIII and licensed by the state in which the facility is located.

To ensure the accreditation status of a facility, contact the AAAASF at (888) 545-5222 or www.aaasf.org; the AAAHC at (847) 853-6060 or www.aaahc.org; and the JCAHO at (630) 792-5005 or www.jcaho.org.²

Ideal candidates for surgery should be healthy individuals with firm elastic skin, who are in good physical condition, and have focal areas of lipodystrophy that are resistant to usual efforts of exercise and diet.²⁸ The guidelines from the American Academy of Dermatology (1991), American Society of Anesthesiologists (1989), and the American Society of Dermatologic Surgery (1997) recommend that only healthy patients receive liposuction procedures.²⁹⁻³² The best results are typically found in a healthy patient, who is not obese, with good skin tightness, and localized deposits of fat. The patient's satisfaction after the surgery is dependent on how realistic the patient is. The effectiveness of the procedure depends on the skin being elastic enough to contract after the underlying fat has been removed. Also, liposuction has not been shown to permanently improve the dimpled skin such as cellulite.

Liposuction can be performed under systematic anesthesia with supplemental local anesthesia or with local anesthesia when using the tumescent technique. The wet technique, or tumescent technique, which is using diluted lidocaine and epinephrine in a crystalloid solution, is infiltrated into the subcutaneous fat to provide local regional anesthesia, analgesia, and hemostasis while producing hydrodissection of the subcutaneous fat. In this method, it reduces blood loss, allows a greater volume to be

aspirated, and makes it possible to safely treat older patients and additional body regions.³³⁻³⁶ The typical aspiration of liposuction contains 55% to 90% of fat, 20% to 40% infusate, and 0% to 41% blood.³⁷

Quality patient care, safety, and successful surgical outcomes are the result of the patient, the surgeon, and the surgical staff working together. The ASPS has supported this concept by establishing task forces on liposuction.²

4.) BENEFITS OF LIPOSUCTION

The improvement of a patient's quality of life will be the main issue when considering plastic surgery. However, a very limited number of outcome studies evaluating liposuction have been performed.³⁸ According to Goyen's study, a large proportion of patients experience positive lifestyle outcomes from the procedure: 80.5% were more confident, 74.8% answered an increase in self-esteem, and 87% noted that they were more comfortable with their clothes.³⁹

There may be additional metabolic benefits of liposuction on cardiovascular disease,⁴⁰ diabetes,⁴¹ lipid profile,⁴² and obesity in large volume of fat removal;⁴³ however, it could attribute additional risk to the patient. Further research is necessary on this issue.

5.) COMMON COMPLICATIONS OF LIPOSUCTION

Cosmetic liposuction or suction-assisted lipoplasty is practiced worldwide for the control of obesity and for cosmetic purposes. Severe complications resulting from this operation have been only rarely reported.⁴⁴ Nevertheless, the most common complications in a national survey of plastic surgeons were contour irregularities (0.17%), unplanned hospital admissions (0.11%), and prolonged edema (0.9%).⁴⁵ Another study has shown that even though complication rates were low, ranging between 0.1% to 2%, overall re-operative rates were 5% to 15%.⁴⁶ Also, the rate

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of serious or fatal complications were in the range of 0.02% to 0.3%.^{45,47} Some severe complications, including excessive bleeding, fat embolism and necrotizing fasciitis, as well as some deaths⁴⁸⁻⁵¹ have been infrequently reported. Prolonged procedure and a large volume of aspiration seem to be associated with higher complication rates. Limiting the volume of aspiration and use of local anesthesia rather than general may reduce serious complications such as embolism and death.⁴⁶ The blood loss that accompanies liposuction has been a concern as well. The tumescent technique seems to minimize intraoperative blood loss. Secondary treatment will be required when a patient is dissatisfied with the result; however, infection, skin burn, and contour irregularities may occur with excessive and substantial liposuction. Although the number of adverse effects of liposuction were limited, the following were reported: pulmonary embolus, pulmonary edema, fluid overload, lidocaine toxicity, toxic shock syndrome, and death.^{46,47} Most mortalities have been attributed mainly to pulmonary embolus, abdominal/viscous perforation, anesthesia, and fat embolus.^{47,52}

Fat cells that are removed by liposuction do not grow back. As long as the patient does not gain an excessive amount of weight, the more pleasing silhouette is permanent. If a patient gains weight, the areas originally treated by liposuction will maintain their new desirable appearance, whereas areas not treated by liposuction will be the sites of new deposit of fat. Although some attempted to improve poor skin tone, there is no evidence that liposuction has any effect on aging skin.⁵³

Because subcutaneous adipose tissue has nutritional and thermodynamic functions, some have suggested that its removal might also be detrimental.^{54,55} Also, when adipose tissue is selectively removed, the proportion of total fat

increases, thereby unpredictable fat deposits could appear and possibly worsen cardiovascular factors.⁵⁶⁻⁵⁸ However, the metabolic effect of the selective removal of subcutaneous adipose tissue by large-volume liposuction remains unknown.⁵⁹

State guidelines have been implemented after several reports of complications. The length, location of procedure, maximum fat aspiration volume, the type of anesthesia, and the length of postoperative stay have been addressed by state legislatures in California, New York, and Florida.⁶⁰

6.) ALTERNATIVE WAYS OF LOSING FAT

Current lifestyle and dietary excesses associated with factors such as genetic determination, pregnancy, and the aging process contribute to alteration of body contour that can result in the loss of the individual's self-esteem. This reduced self-esteem may motivate one's desire to have plastic surgery, such as liposuction, to improve appearance. It is important to have high self-esteem to have a positive quality of life, yet apart from the psychological impact that obesity has on people, the biological implications can be severe. Having plastic surgery should not be the only solution for those who desire better appearances. Although liposuction will provide an immediate solution for partial contouring, if someone is looking for total fat reduction, caloric control is the best way to cut one's fat. The use of surgery should be limited to the people who definitely need medical attention only.

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