

# Reconstructive Plastic Surgery<sup>®</sup>

PROCEDURES AT A GLANCE



*The Symbol of Excellence in Plastic Surgery<sup>®</sup>*

A public education service of the American Society of Plastic Surgeons<sup>®</sup>

*“We bring back, refashion and restore to wholeness the features that nature gave but chance destroyed, not that they may be an advantage to the living soul, not as a mean artifice but as an alleviation of illness, not as becomes charlatans but as becomes good physicians and followers of the great Hippocrates. For though the original beauty is indeed restored...the end for which the physician is working is that the features should fulfill their offices according to nature's decree.”*

*Gaspare Taliacozzi, 1597.*

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## PLASTIC SURGEONS PERFORM BOTH RECONSTRUCTIVE AND COSMETIC PROCEDURES.

Reconstructive surgery restores form or function to the parts of the face or body altered by birth defects, injury or disease. While reconstructive surgery can vastly improve conditions, it cannot fulfill unrealistic expectations. The most

favorable outcomes are those where patient and surgeon work together to obtain realistic goals.

This brochure presents an overview of reconstructive plastic surgery. The best way to learn how a specific procedure can help you fulfill your personal goals is a consultation with a plastic surgeon certified by The American Board of Plastic Surgery® or The Royal College of Physicians and Surgeons of Canada®.

### To be board-certified, a plastic surgeon must:

- Graduate from an accredited medical school
- Complete a minimum of five years of surgical training following medical school, including special training in an accredited plastic surgery residency program
- Pass comprehensive oral and written exams

A plastic surgeon must complete annual requirements in continuing medical education and uphold the ethical and professional standards of the specialty.

The American Society of Plastic Surgeons® is the largest plastic surgery organization in the world, representing surgeons certified by The American Board of Plastic Surgery® in the United States and its territories or The Royal College of Physicians and Surgeons of Canada®. ASPS is devoted to advancing quality care in plastic surgery by encouraging high standards in training, ethics, physician practice and research.

**RECONSTRUCTIVE PLASTIC SURGERY PROCEDURES** treat conditions to restore a more normal appearance or improve function. In some cases, the same procedures may have applications in reconstructive or cosmetic plastic surgery. In general, reconstructive plastic surgery procedures include:

- Breast reconstruction
- Breast reduction
- Eyelid surgery
- Nose surgery
- Ear surgery
- Cleft lip and palate repair
- Hand surgery
- Skin cancer treatment
- Scar revision

## Breast Reconstruction

Restores a breast lost or disfigured by mastectomy through one of several surgical techniques.

Formation of a natural breast shape using flap techniques. Flap donor sites may include the abdomen, back or buttocks. An alternative method uses a breast implant to create a new breast mound. Where healthy tissue is inadequate after mastectomy, tissue expansion aids in formation of additional necessary tissue to cover and support the breast implant. Nipple and areola reconstruction (pigmented skin surrounding the nipple) is achieved through additional grafting techniques and tattooing to provide areola color.



## Female Breast Reduction

Surgery to correct disproportionately large, often sagging breasts through removal of excess fat and tissue to create a smaller, better-positioned breast. Depending on the size and position of the breasts incision patterns may include a keyhole pattern, vertical pattern or circular pattern. Reduction in the size of an enlarged areola may also be performed.

## Male Breast Reduction

Corrects over-developed male breast tissue and, in some cases, asymmetry of the male breast creating a flatter or more symmetric contour of the male chest.

Where fatty tissue is the primary source of breast over-development, liposuction techniques remove fat and recontour the chest; incisions are commonly hidden at the areola, in the underarm area or in the breast crease. Excessive areola size or glandular tissue may be removed by excision through incisions at the junction of the areola and skin.

## Reconstructive Eyelid Surgery

Performed to improve excessive wrinkling and reduce extra skin in the upper eyelids that cause impaired vision.

An incision within the natural crease of the upper eyelid allows removal of excess skin and fatty tissue and tightening of the eyelids to improve vision and the appearance of the eyes. Elevation of the eyebrows may further improve a hooded brow or is an alternative to revision of the upper eyelids.

## Nose Surgery

Corrects the shape, appearance or other irregularities of the nose or associated structures that cause impaired airflow through the nose. Often associated with congenital abnormalities, nasal injury or medical problems. Nasal reconstruction may also restore appearance or airflow where structural components of the nose are lost due to disease or injury.

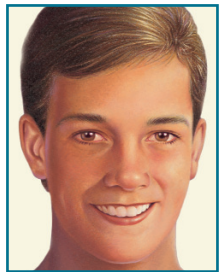
Incisions, usually hidden inside the nose, allow correction of the septum and other components of the nose to improve appearance and function. Flap surgery, grafting techniques and the use of prosthetics restore appearance when all or a portion of all of the nasal structure is lost due to disease or injury.

## Ear Surgery

Most commonly performed to correct the position of protruding ears on one or both sides, in varying degrees. Surgical techniques create or increase an underdeveloped antihelical fold or reduce enlarged conchal cartilage to create a more normal appearance.

Less common ear deformities that can affect one ear or both, and may or may not affect hearing ability include: the constricted ear (a lop or cup ear), Stahl's ear and cryptotia. An individualized surgical plan is required to define goals and achieve desired results.

Microtia is a complex congenital ear deformity where the outer ear is severely disfigured. Hearing is impaired in varying degrees. Reconstruction requires staged surgical procedures to create a more normal external ear and improve hearing.



## Cleft Lip and Palate Repair

A cleft lip is an incomplete upper lip formation present at birth that appears as a separation on one or both sides. An incomplete formation of either the hard or soft parts of the upper palate inside the mouth is a cleft palate, also present at birth. Only one cleft defect or both may be present causing impaired feeding, speech, dental development and hearing, and will require special treatment by a team of specialists.

Plastic surgery to correct a simple cleft (separation) is usually performed at 6-12 weeks of age to restore muscle function and create a near normal appearance.

Surgical correction of a small separation at the back of the palate (roof of the mouth) or one that extends front to back is generally performed at 6-12 months of age, rebuilding the center of the palate. The upper palate is essential to speech development and eating.

Correction of a cleft lip or palate usually requires multiple procedures during a child's growth and development. Intervention is recommended early because of other medical problems that can be associated with clefting, particularly ear infections.

## Hand Surgery

Plastic surgery to correct structural and functional irregularities, and in some cases to restore a more normal appearance, of the hand and fingers. Diseases treated by hand surgery include:

- Carpal tunnel syndrome
- Rheumatoid arthritis
- Dupuytren's contracture

Congenital abnormalities include:

- Polydactyly or a duplicated finger
- Syndactyly, webbing of the fingers
- Missing digits, short fingers, crooked fingers
- Immobile tendons
- Abnormal nerves or blood vessels

Trauma to the hand is varied in type and severity. Treatment includes wound closure and repair of injured tendons and nerves.



# Skin Cancer Treatment

A variety of techniques are used to remove and treat malignant lesions of the skin. Treatment of skin cancer with plastic surgery is designed to maximize cure rates and minimize any resulting disfigurement in appearance.

Simple excision of the cancer with a surrounding rim of normal skin and tissue treats small lesions leaving a small, localized scar. Microscopic examination of the lesion during surgery assures complete excision of the cancerous tissue.

Larger lesions and those affecting underlying tissue and structures require more advanced treatment. Reconstruction may use advanced flap techniques to repair the excision wound and restore a more normal appearance. Additional treatments to improve cure rates include radiation therapy, chemotherapy and immunotherapy.

## Scar Revision

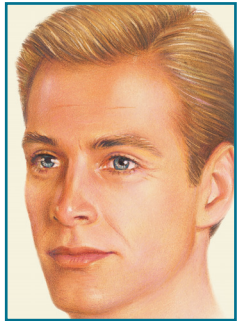
Plastic surgery to correct excessive scar formation, in some cases causing restricted movement. Common scar formations include keloids, hypertrophic scars and contracture.

Scar revision includes surface treatments such as dermabrasion or laser resurfacing to improve scar appearance and texture, and excision to remove, narrow or change direction of a scar.

More advanced techniques include Z-plasty to change direction or reposition a scar, or to create flexibility at the site of a

contracture. Large areas of excised scar tissue can be reconstructed using skin grafts or pharmaceutical tissue substances. Tissue expansion may be an alternative.

Topical silicone sheeting, compression, topical cortisone-like lotion, injected cortisone and radiation are all adjuncts to scar revision that may be recommended to aid healing.



**RECONSTRUCTIVE PLASTIC SURGERY TECHNIQUES** may be performed alone, or as a special function of a plastic surgery procedure. In general, reconstructive techniques include the use of:

- Lasers
- Microsurgery
- Flap techniques
- Grafts
- Tissue expansion
- Advanced closure
- Vacuum-assisted closure

## Lasers

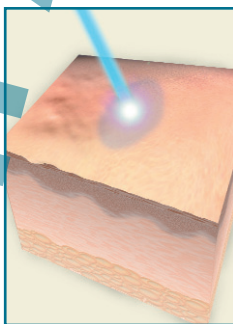
Specific forms of variable wavelength light-based technology corrects soft tissue defects. An alternative to more traditional surgical procedures, in some cases, lasers are less invasive and easier to apply. Laser wavelengths are referred to by the color or type of laser light being applied to a specific problem.

A yellow pulsed dye laser is absorbed by hemoglobin or blood to treat pink or red birthmarks including port-wine stains requiring several treatments over time. An argon laser also absorbs red, treating surface vessel

abnormalities including blood blisters, spider vessels, strawberry birthmarks, hemangioma, and vascular tumors (those composed of abnormal vessels).

The Q-switch ruby (red), YAG or alexandrite laser attacks dark pigment, ranging from black to blue, including dark brown. These remove pigmented lesions and traumatic tattoos (where injury forces dark-particle materials under the skin).

A carbon dioxide laser presents an invisible light beam to vaporize tissue and seal blood vessels simultaneously, commonly treating skin growths and wrinkled skin.



## Microsurgery

A reconstructive technique using a surgical microscope to repair nerves, blood vessels and other small structures essential to some flap and grafting techniques. It is also used in cases of trauma to repair severed nerves, blood supply and tendons and to reattach a traumatically amputated structure of the body.



# Flaps

Flap techniques are used to transplant tissue from one area of the body to another and keep the original blood supply intact by making microsurgical connections at the new location.

**LOCAL FLAPS** are adjacent to the reconstruction site, remain attached to the site of origin and are rotated or advanced to close an area of missing tissue. Regional island flaps are attached only by a main vessel to the site of origin, but are otherwise completely detached and rotated into an area that is missing tissue.

**MICROSURGICAL FREE FLAPS** are areas of living tissue moved from one area of the body to another and provide an independent blood supply. Microsurgical connection restores blood supply at the reconstruction site. This technique restores vital form and function with skin, fat, muscle, and other soft tissues.

# Grafts

Grafts move tissue such as skin, cartilage, tendon and bone from one area of the body to a new location, but do not contain an independent blood supply and do not involve microsurgical connections. Grafts are used to create a more natural appearance, improve function or replace structures lost by disease or injury.

Grafts may also be fashioned from non-living donor structures or from medically-engineered or pharmaceutically-processed synthetic or natural materials compatible with human tissue and bone.



## Advanced Closure

**LAYERED CLOSURE** is used where a wound extends to tissue below the skin surface or in areas with a high degree of movement. The first step, or layer, requires sub-dermal closure (below the skin surface) with absorbable or non-removable sutures. Layers of closure continue to build, concluding with closure of the remaining surface wound.

**COMPLEX FLAP CLOSURE** is used to create a scar that is less conspicuous or to improve flexibility. Z-plasty is a common complex flap closure technique that creates a "Z" pattern incision with multiple angles for flexibility and movement.

## Vacuum-assisted Closure

A special dressing and vacuum remove drainage and encourage rapid healing of areas where tissue is missing. It may be used to eliminate infection and prepare areas of missing tissue for flaps or grafts.

## Tissue Expansion

Surgical placement of a temporary inflatable balloon under the skin surface that enables healthy skin to stretch, so that it may be used for repair of adjacent defects and deformities. Over time the balloon is slowly filled with sterile saline solution and as it expands, overlying skin also expands, thereby creating new skin. Once ample new skin exists for reconstruction, the inflated balloon is removed. Advantages include a near perfect match in skin color, sensation and texture, and less risk of tissue loss.



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This educational brochure is designed to supplement a personal consultation with a plastic surgeon certified by The American Board of Plastic Surgery<sup>®</sup> or by The Royal College of Physicians and Surgeons of Canada<sup>®</sup>. Plastic surgeons with this certification have completed extensive surgical training and rigorous examinations in plastic surgery; this uniquely qualifies them to perform cosmetic and reconstructive procedures of the face and entire body.

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