BREAST RECONSTRUCTION SURGERY
AFTER CANCER ABLATION

Making a New Breast after mastectomy.........

A. Breast surgery After Cancer Ablation.
B. Breast Surgery for Burns Deformity.
C. Nipple And Areola Reconstruction Surgery.

Each year more than 65000 Indian women face the reality of breast cancer. The psychological and physical consequences following cancer breast surgery differs from person to person and society to society. The breast plays a dual role: it serves to express sexuality as well as to nurture offspring. Breasts are thus integral to a woman's self esteem. Many new facts are known regarding the understanding of disease of the breast and its treatment. Major advances are made in reconstructive plastic surgery as well; mean that the breast cancer patients of today have many new choices. Breast reconstruction after cancer surgery of the breast is an option that women must discuss with their physician. Almost any woman can have breast reconstruction, regardless of her age, the type of surgery performed initially, or the number of years following the treatment received. It is every woman's right to have the total rehabilitation after an ablative breast cancer surgery. The goal of rehabilitation may be

a) Restorative: Little or no disability/deformity which can be restored.

b) Supportive: permanent deformity needs moral/ psychological support.
c) Palliative: progressive or advanced disease, needs extensive palliative excision and reconstruction.

For total rehabilitation of women who have undergone an ablation of breast, a restoration of form is a must. This can be achieved either by an external breast prosthesis or as an alternative by a breast reconstruction for women who do not wish to wear an external form. Breast reconstruction is for those women who desire the freedom and sense of Physical wholeness. Today breast reconstruction is more feasible, more attractive and less expensive than in the past because of the trend towards early breast cancer detection, less radical breast surgery and advances in plastic surgery. It has been demonstrated that immediate reconstruction with skin sparing mastectomy does not increase the risk of local recurrence either in the short term or after 5 years. It is oncologically safe and does not mask tumour recurrences. It should be considered purely a rehabilitative surgery and not at all a cosmetic surgery. Immediate breast reconstruction (performed at the time of mastectomy) is becoming increasingly popular. Immediate reconstruction is preferable, from the patient’s point of view because it is more convenient and allow a quicker return to a normal life style than would be possible if the reconstruction done separately. It also tends to provide better aesthetic outcomes and may be safer as it avoids the second surgery.
c) Palliative: progressive or advanced disease, needs extensive palliative excision and reconstruction.

For total rehabilitation of women who have undergone an ablation of breast, a restoration of form is a must. This can be achieved either by an external breast prosthesis or as an alternative by a breast reconstruction for women who do not wish to wear an external form. Breast reconstruction is for those women who desire the freedom and sense of Physical wholeness. Today breast reconstruction is more feasible, more attractive and less expensive than in the past because of the trend towards early breast cancer detection, less radical breast surgery and advances in plastic surgery. It has been demonstrated that immediate reconstruction with skin sparing mastectomy does not increase the risk of local recurrence either in the short term or after 5 years. It is oncologically safe and does not mask tumour recurrences. It should be considered purely a rehabilitative surgery and not at all a cosmetic surgery. Immediate breast reconstruction (performed at the time of mastectomy) is becoming increasingly popular. Immediate reconstruction is preferable, from the patient’s point of view because it is more convenient and allow a quicker return to a normal life style than would be possible if the reconstruction done separately. It also tends to provide better aesthetic outcomes and may be safer as it avoids the second surgery.
Breast reconstruction has become more common in last few years, because the procedure is now safe and relatively simple. Breast implants are made of newer materials that the body does not reject easily, viz. the outer seamless covering made of silicone membrane filled with silicone gel, saline or both. Several new types of breast implants are made in shape and size to match exactly to the need of the patients depending upon her built and size. The most obvious, infraclavicular and axillary deformity following the mastectomy can be corrected with the advent of custom made implants and permanent tissue expanders cum breast implants, which serves the dual purpose of expanding the tissues in initially by injecting the required volume of saline in immediate post-operative period to match the opposite breast size and later on remains in tissues as permanent breast implants. Usage of these breast implants to reconstruct the breast do not cause any harmful effect besides the ordinary risks and complications of any surgery.
The whole process may need one or more operations. For women who have classical radical mastectomy, to achieve the cosmetically acceptable result is more difficult for the plastic surgeon. Women should discuss the risks and benefits of reconstruction with their surgeons and ask to see photographs of reconstructed breasts. Every woman’s body is unique. Hence it may be preferable not to depend on photographs, but end result should be discussed in their talks. The breast reconstruction is not a remedy for pre-existing psychological and personal problems. It does improve a woman’s body image and self-esteem. Breast cancer patients must be realistic about what to expect from reconstruction.

Who is the candidate for breast reconstruction?

Who can have breast reconstruction?

Virtually any woman who has had mastectomy for breast cancer can have reconstruction if she chooses. Radiation damage to the skin, grafted thin or tight skin; or the lack of the pectoral muscles are not any more contraindication for breast reconstruction. However, many women are still today unaware of the possibility of breast reconstruction after mastectomy. Restored senses of balance and feeling of well-being and wholeness with self esteem and self-confidence can be received with breast reconstruction itself is a source of comfort and strength to many women who must undergo mastectomy.
Almost every woman who has had a mastectomy - even if surgery was extensive or affected by x-ray, can be offered a breast mound (Breast reconstruction). At times, it may be necessary to build up the breast in several complex and expensive stages involving skin, fat and muscles can be a one day office procedure. On the other extreme, the extensive removal of skin and muscles as part of the mastectomy, requires more time consuming, complicated and costly reconstructive operations. Even though modern techniques of plastic surgery offers such breast reconstruction, many woman may not feel the procedure is worthwhile. The pros and cons of surgery should be discussed with the plastic surgeon and other woman who have had a multiple stage reconstruction. After considering all points of view, some woman decide that breast reconstruction is not for them.

**Why do woman want Breast Reconstruction ?**

It is individual, what she thinks is important and not what other people think. It is a personal choice and decision to have breast reconstruction. It is very important to consider the individual happiness of the patient while correcting the defects. Any physical deformity harmful to an individual’s well being and emotional health (body’s self image and psyche) requires to be corrected. Because an organ has been amputated, mastectomy patients have very good reasons to undergo corrective surgery.
Friends and relatives may think breast reconstruction is vain. Having teeth capped, wearing contact lenses and dying hair were also considered vain by some in the past, not today. Rebuilding a breast is important to one’s ‘Body image’ and sense of wholeness, the comments of others should not affect a decision. And there is no need to mention it to anyone. Surgery to reshape a breast is just as important to someone as the money she spends on her hair, make-ups and cloths for her self confidence and self esteem.

Woman who are conscious of their feminine image, feel the feminine inadequacy and impaired body image after losing breast. Athletes, entertainers, models and other society woman may feel professional needs for breast reconstruction. The decision is a personal one that can be made by a woman, even without any special reason at all, after she consults her plastic surgeon. Only one who has lost only knows how losing a breast has affected her life.

**How will she look after breast reconstruction?**

There is no way for woman to know exactly how she will look after her breast is reconstructed. Each case is individual and different. Her breast will usually look somewhat rounded - it will not be tapered. Along with time a normal fall of breast will develop as tissues get stretched. Today’s reconstruction do look more natural than they did in the early years of the art. The result of reconstruction to be achieved is bilaterally symmetrically, aesthetically pleasing breast in relation to
her shoulders, rib cage, height, weight, and hips. In addition it should be soft to touch and moves with the patient as a part of her body. Breast reconstruction procedure is custom tailored and few specific details can apply to all women. The mastectomy scar cannot be eliminated, although its appearance may be improved.

**Is there any possibility to reconstruct a nipple?**

In few woman who have been told that they have breast cancer, but who have not yet had a mastectomy, it is possible to save the areola and the nipple especially in the tumour of lower quadrant which is away from the nipple. The procedure is called ‘Banking’. The pigmented tissues are grafted (Banked) onto the lower abdomen or groin. These tissues are eventually utilised to reconstruct the nipple in future. However, many surgeons do not consider banking procedure safe because there have been cases where the banked nipples contained cancer cells within the duct’s opening.

Women whose nipples were lost in mastectomies or whose disease makes ‘banking’ hazardous, may still have nipple reconstructed in several ways. However, these procedures may be delayed for several weeks or even months after the implant has been inserted to allow time for tissues to stretch and new breast to take shape. Darkened skin from the labia (lips around the vagina) or from the upper thigh can be grafted onto the reconstructed breast, or the areola of the opposite breast
can be divided and shared with the ‘new’ one. Women who want an erect nipple may have a small piece of cartilage transferred to the centre of the nipple to make it project. In some cases, a shade can be tattooed on the breast to give a simile of the nipple.

**Advantages and disadvantages of breast reconstruction**

Breast reconstruction can save thousands of woman’s lives. Modern techniques of breast reconstruction provide a physical and psychological transformation that was impossible in past. The knowledge of the fact that new breast can be built, before they have breast surgery will not delay and put off them seeing their doctors about early symptoms of cancer. Early detection leads to the adequate treatment of breast cancer and improves the cure rate. The satisfactory breast reconstruction improves the quality of life after mastectomy.

The main physical advantage of breast reconstruction is convenience. Soft and natural appearing breast can be built in one simple operative procedure. The implant (artificial breast) imbedded under the skin can not be seen and it can not be shifted by vigorous activities. Skin problems by contact with the material of external breast prosthesis worn above the skin are totally eliminated. Choosing fashions are easier. During intimate movement with husband or boy-friend, there is no need to keep the prosthesis hidden.
The mastectomy and insertion of implant can be combined in one operation. Or reconstruction can be done as soon as possible after the first operation wound has healed and overlying skin is pliable. Some surgeons await longer, believing that most women will not be able to appreciate the reconstructed breasts, unless they have nothing there for six months after their mastectomies. Capsular contracture is a common complication of breast reconstruction. A contracture is abnormal fibrous shell that forms around the implant. This shell is spherical and creates a ‘baseball’ appearance and occasionally causes pain.

Sometimes a contracture softens and disappears. Various techniques are tried out to avoid the development of contracture, frequently, it requires to be moved by hands to beak the fibrous capsules. Sometimes the capsule needs to be removed surgically. Then the implant can resume its normal size and shape. If early massage as directed by plastic surgeon is carried out by patient, capsular contracture is avoidable. If such, underlying tissue is lost during the mastectomy, the skin flap may get necrosed due to lack of vascularity. Techniques have been devised to avoid sloughing by substituting adequate tissues. Breast reconstruction can be done after suitable grafts replacing the skin and underlaying tissues.

**How is breast reconstruction performed?**

Breast reconstruction is very much individualized, hence its details should not be applied to every woman. In general, an incision is made in either the original scar or another location. The implant is inserted under
the existing skin and chest muscles or under the newly brought graft tissues in women whose muscles and skin were removed during their mastectomies. The remaining breast should be matched in size, shape and position. The success or the results depends on the location of the tumor and the size of the tumor, which determines the placement of the first incision and amount of tissue removed respectively. A result should be judged by its appearance in a brassiere or bathing suit. A normal looking breast ‘cleavage’ allowing to wear her normal clothes should be achieved at the end. When consulting a plastic surgeon for an opinion, a woman should discuss, what procedure will be done in her individual case and ask to see photographs of reconstructed breasts to have a better idea about her own situation.

**Methods of breast reconstruction**

Until 1970 tube pedicles were used for breast reconstruction. It is a multistage and very lengthy procedure. Use of silicon breast implants to restore the breast contour were first reported in 1961. However, woman whose mastectomy have removed extensively skin and muscle will require large area of skin and muscle called ‘flaps’ from donor site such as the back or abdomen to the chest. One such

*Fig. 1. Silicone-saline breast implant.*
procedure was described in 1906 by Iginio Tansini, which was rediscovered and redefined in late 1970.

Breast reconstruction is a custom tailored to suit the needs of an individual woman. The most critical factor is the type of mastectomy performed.

**Simple breast reconstruction**

Breast reconstruction has become more common in last few years because the procedure is now safe and relatively simple. Breast implants are made of newer materials that body does not reject easily, viz., an outer covering of silicone membranes, which contains silicone gel, saline or combination of these two. Several types of breast implant contours are used, but most have tear drop or round shape in various sizes to match the patients build. Infraclavicular and axillary deformities can be corrected with custom made implants and
Fig. 3
(a, b) Cystosarcoma - phylloides - before surgery.
(c, d, e, f) Modified radical mastectomy done with breast reconstruction.

composite flaps. Tissue expanders and tissue expanders
cum breast implants are double lumen silicone implants,
which can be matched to the certain range of sizes by
injecting the volume of saline immediate post-
operatively to match exactly with the size of opposite
breast. Usage of silicone breast implants to reconstruct breasts seems to cause no harmful effects aside from ordinary risks and complications of any surgery.

Silicon implant is placed under the muscle of the chest to recreate the breast contour. ‘Simple’ breast reconstruction without a flap requires that the patient have a healthy chest muscle and a good quality adequate skin. Where this is not a case additional skin and muscle will have to be transferred from another body part to the mastectomy site to cover the implant. The implant is pocketed under the chest muscle or between skin and muscle instead. The operation is typically performed through an incision of approx. 5 cm. made along what will become the inframammary fold. The entire operation takes between 1 and 2 hours and is performed usually under general anesthesia.

After surgery the massage of the implant and exercises are advised to stretch the tissues and minimise the internal scar formation (contracture). After almost 2 to 3 weeks patient can usually return to normal activities.

With a flap from the back

(a) Latissimus dorsi composite flap raised. (b) Flap brought to front of chest. (c) Flap in place giving a bulk and normal breast contour.
Radical surgery removes the muscle and large amount of skin and leaves too little soft tissue to anchor and cover the silicone implant adequately. This women develop a characteristic hollowness under the clavicle and armpit due to loss of muscle and the implant itself is not sufficient to correct this deformity. Patients whose skin is too tight or have received radiation treatment or

Fig. 5
(a, b) Cancer of right breast with skin involvement. (c, d) Latissimus dorsi composite flap used for breast reconstruction, after cancer surgery of breast. (e) Post operative view.
grafts to replace missing skin will also require tissues from another donor sites for adequate cover of the implant.

The development of the “myocutaneous composite flap”, is a procedure in which skin, subcutaneous tissue and muscle are transferred to the recipient site from

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Fig. 6
(a, b) Pre operative cancer of right breast. (c, d) 3 weeks post operative. Latissimus dorsi muscle flap used for breast reconstruction. (e) Donor area without much deformity.

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Plastic Surgery of Breast
elsewhere to recreate the breast. The latissimus dorsi muscle located in the back, is the frequently used muscle. This muscle is the broad flat muscle covering the back below the shoulder blade. An island and skin of muscle is brought forward to the chest wall for the breast reconstruction on its musculo-vascular/vascular pedicle, after detaching it from the spine and pelvic bone. The incision leaves a linear scar on the back which can be hidden under the bra strap.

It is highly dependable procedure and almost always successful. In addition, it is similar to missing pectoral muscle and it produces a desire breast contour. The operation takes approx. 3 to 4 hours.

**With flap from the abdomen**

An alternative procedure currently popular, uses muscle skin and fat from the abdomen instead. If there is enough abdominal tissue, implant is not required. The “tummy tuck” is the bonus in addition. It reduces and tightens the abdominal area. This operation requires the removal of one of two vertical muscles that cover the abdomen. The overlying skin with fat and muscle is moved to the breast area and new breast shape is contoured.
Fig. 8
(a) Radical mastectomy done, with rectus myocutaneous flap marking. (b, c, d, e)
Reconstructed right breast, 3 weeks after operation.
Breast reconstruction after Mastectomy - When?

Required period between a mastectomy and reconstruction of the breast varies from zero hour to infinitive due to various reasons and disputes. Most surgeons are of the opinion that before rebuilding the breast first incision should well healed and the overlaying skin should be easily movable and elastic. Moreover, many breast cancer specialists would like their patients to wait at least 18 months to two years to make sure the cancer does not recur, some believe that woman should wait as long as five years after a mastectomy. On the other hand, due to improved techniques and methods, the breast reconstruction can be done at the same time the breast is removed. Should a cancer recur, necessary treatment could be given with the implant under a woman’s skin.

Reconstruction after extensive radiation therapy of the chest after mastectomy, require muscle/skin grafts from other body parts to provide healthy tissues. Reconstruction also can be done while patient is receiving adjuvant chemotherapy. The body’s general resistance weakens during anti-cancer drugs therapy and the risk of infections increases. Hence, breast reconstruction like any other surgical procedure, can be complicated by infection. To minimize this risk, it should be postponed until the chemotherapy is completed.
Would an implant hide any cancer recurrence?

There is little or no difficulty in detecting an early recurrence beneath or around the implant, using manual examination or mammography.

Balancing (Matching) the size of the breast

The amount of skin available after mastectomy limits the size of the implant, thus the size of the new breast. If the remaining, opposite breast is larger than the newly built breast, the remaining breast may require 'reduction mammoplasty' removal of some of the breast - to make both breasts equal in size and shape. In some cases newly created breast mound can gradually be enlarged with new type of tissue expanders cum breast implants. It is possible for those women who do not wish to reduce the size of their remaining breast and whose skin is elastic enough to permit such gradual expansion. If woman's skin can accommodate larger implant than her opposite breast due to excess skin, the
remaining breast can also be enlarged by inserting a smaller implant beneath the tissue of the remaining expansion. If woman’s skin can accommodate larger implant than her opposite breast due to excess skin, the remaining breast can also be enlarged by inserting a smaller implant beneath the tissue of the remaining breast to equalize the reconstructed breast. This breast to equalize the reconstructed breast. This procedure is called ‘augmentation mammoplasty’. Augmentation mammoplasty has been done since 1930. However, woman who have breast cancer of one side are at higher risk for developing malignancy in remaining breast. Hence the plastic surgeon would like to remove all of the breast tissue instead of merely inserting an implant. This is called subcutaneous mastectomy.

**Subcutaneous Mastectomy - is it Prophylactic ?**

**Subcutaneous Mastectomy prevents breast cancer ?**

Prophylactic subcutaneous mastectomy, a procedure where all healthy breast tissue is removed, but all skin, nipple areola complex and underlying muscles are left intact. This is to prevent a breast cancer from ever developing. A curved incision is made in the skin crease where breast meets the body. The skin flap (including nipple areola) is lifted and all breast tissue including axillary tail and fat are removed. Then an implant is inserted under the skin or subpectoral muscle and skin
is returned to its place. Subcutaneous mastectomy is offered as routine procedure for prevention of breast cancer where women are thought to be at high risk.

**Women who are considered to have such high risks are...**

1.) Women who have already breast cancer in one breast.

2.) Daughters and younger sisters of these women.

3.) Women who have chronic benign breast problems;- lumps, cysts,fibroadenomas etc.- and have had several biopsies.

4.) 'Breast cancer phobia' patients for psychological reasons.

There is no doubt that woman with known breast cancer in one breast has a higher probability of developing cancer in the other breast. However, it is equally true that about half of this spots of malignancy never grow large enough to become a threat to life. For this reason, many doctors do not offer surgery of this kind unless something is actually seen or felt in the second breast. Moreover prophylactic mastectomies may result in false sense of security. It is not 100 percent guarantee against developing breast cancer. Finally, this procedure has all possibilities of developing complications of reconstruction in addition to those of any surgery. It
should be decided with consultation of plastic surgeon and should not be undertaken without careful and serious consideration.

**How long will be the hospital stay?**

This of course depends on the amount of surgery required. A simple procedure requiring only breast implant without any complication can be done in less then one hour and requires an overnight or two days hospital stay. Many stage reconstruction may need series of short hospitalization, totaling from 10 days to 2 weeks of hospital stay. Unless there are unexpected complications, even complex procedure can be performed with short hospitalization. The individual requirements could be predicted by her plastic surgeon.

**What complication can develop after breast reconstruction?**

Number one complication is infection, that can occur after any surgery, but antibiotics given routinely prevent it. Blood may accumulate (hematoma) under and around the implant, but a good drainage system usually guards against the problem. Skin necrosis and capsular contracture are other complications specific to breast reconstruction. The incidence of capsular contracture when silicone implants are used is less than 10 percent. The early post-operative exercises and massage in two direction reduces the capsular contracture. Use of newly available expander cum breast implants totally obviate the capsular contracture.
Necrosis of skin can be anticipated because the problem occurs due to shortage of enough skin after mastectomy. This problem can be prevented by plastic surgery technique available for substituting the skin and soft tissues before inserting the implants. All implants can withstand the bumps and blows of day to day life. Silicone has been safely used over three decades to replace heart valves, small bones, joints etc. without any ill effects.

**why do women want breast reconstruction inspite of many problems?**

Some women, who are self-conscious of their feminine image, feel the feminine inadequacy and impaired body image after losing the breast. Athletes, entertainers, models and other high society women may feel need for breast reconstruction. It is a personal decision to have breast reconstruction after losing a breast, even without any special reason at all, after she consult her doctor. Only one who has lost only know how losing a breast has affected her life.
Considerable distortion of the breast can be caused by the burns of the anterior chest in the children and adolescents. Thermal injury to breast buds can lead to subsequent loss of breast development. The hypertrophic scar and contracture lead to the breast shape deformity.

Abnormal breast development in these women is due to the regional scar formation and lead to the abnormal breast contour and location of nipple areola complex. Expansion of developing breast wound is restricted by the pressured developed due to the hypertrophic scar tissues.

In these women surgical treatment is the only mode of treatment available. Contracted Breast need to be released and allowed to develop before nipple areolar reconstruction is begun. After complete freeing of the breast tissue from hypertrophic scar, the skin defect is required to be covered by moderate to thick skin graft.

A hypoplastic breast mound of long standing had to be corrected by breast reconstructive techniques, either by tissue expanders or by bringing in by full thickness skin flaps and composite tissue flaps. Nipple areolar reconstruction is usually delayed and performed after several months.
NIPPLE AND AREOLA RECONSTRUCTION SURGERY

The pigmented nipple-areola complex projecting on the breast mound provides a female breast an aesthetic and sexual look. To get rid of the stigma attached to cancer breast surgery, nipple-areola complex reconstruction is also equally important, so as to provide cancer breast patients to have reassured image of normal looking bosoms in mirror. The procedure of nipple and areola complex reconstruction carries virtually no morbidity. There is no scarring of specialised tissue sites that were necessary in past for the production of graft for nipple and areola. Wide spread adoption of medical tattooing for nipple-areola coloration has helped to match the finer aspects of pigmentation. Overall patient satisfaction can be achieved with nipple areola reconstruction followed by breast mound reconstruction.

Nipple can be reconstructed with help of sharing technique or the tissues from medial aspect of upper thigh or labium minus at the introitus. (a lip around the vagina opening). Tissues harvested from the medial aspects of thigh and labium minus, in colour and texture is very near to the areola and nipple tissues. In sharing technique tissues from opposite nipple areola complex are shared for new nipple areola reconstruction. Hence, two equal and smaller nipple areola are made available for the patient.
Nipple and areola reconstruction is usually carried out after 6 to 9 months from making a new breast. The site of new nipple areola is chosen after examination of patient. Proper positioning of nipple and areola complex is the most important topic to be discussed with the patient and decided prior to operation. Each nipple should be centric in relation to its own breast and symmetric to the opposite nipple as it appears through

![Fig. 10](image)

Areola reconstruction - sharing techniques.
clothing. The symmetry of both breast mounds is important and should be achieved before nipple and areola construction. This position of nipple can be compromised in asymmetrical breasts. The ultimate goal of surgery should be to achieve symmetric shape, size and color tone of areola complex along with projection of the nipple. Patient is temporarily given an artificial silicone rubber made nipple to wear for few days. This helps her to decide precisely about the new position of nipple and areola complex. Usually, an areola complex is reconstructed first followed by a central elevation of nipple. Nipple elevation can be reconstructed by various methods. These methods use either a fibro-fatty tissues, cartilage, free dermis, triangular buried dermal flaps, or artificial implant material with purse string suture to maintain the central elevation.

**Areola complex reconstruction**

a.) In areola complex reconstruction with sharing techniques, part of the opposite normal areola complex is utilised to reconstruct the affected side areola complex. There are various methods of forming the areola from opposite normal areola. 1) Whorls of circular areolar skin stripes can be harvested from the normal side as a free graft. This stripe of areola skin graft is re-arranged in round shape and free grafted to the affected side after creating a raw dermal surface of
same equal size. 2) Hemi-circle of areolar skin from opposite normal areola is harvested and used as a free graft after reshaping it into a smaller circle. Thus creating two equal but smaller size of areola complex.

b.) Reconstruction of areola from medial thigh pigmented skin can be achieved very easily without sacrificing the normal areolar tissue. Either full thickness or thick partial thickness skin graft is harvested from the medial aspect of the thigh. This hyperpigmented skin circular graft is grafted to the affected side after creating a raw dermal surface, of same size as opposite normal areola complex.

c.) Reconstruction of areola complex from tissue of labium minus at vaginal introitus gives the exact color and tissue match for areola reconstruction. In this method, part of the labium minus tissue is used. Semicircular fold of this tissue in a required size of areola complex is harvested as a free graft. Donor area is primarily closed without giving any functional or cosmetic deformity. The harvested tissue is unfolded and grafted as a circular full thickness skin graft to the affected side after creating a raw dermal surface, of same size as opposite normal areola complex.

d.) Normal skin graft or skin flap can be converted into a normal looking areola complex by tattooing it with matching medical grade pigments. The Montgomery tubercles of the areola complex can be created by multiple matching stab marks and allow them to heal without suturing. These camouflage as a normal looking areola complex.
Nipple reconstruction

a.) Opposite normal nipple can be shared with for affected side nipple reconstruction. After transacting it horizontally, it can be grafted as a free graft after creating a raw dermal surface on newly formed breast mound.
b.) Once areola complex has been formed, a nipple is reconstructed from cartilage or fibrofatty tissue graft implanted under the dermis at the centre of the areola complex.

c.) Dermal flaps are raised and implanted in continuity under the newly formed areola complex to form the elevation of the nipple in the centre. There are different techniques used by different surgeons. Clover shaped three flap technique where three small dermal flaps raised and used to form the nipple projection. In two flap method only two dermal flaps are raised. One is used to form the cylindrical projection and the second is used to cover this as its lid.

**Artificial silicone nipple-areola**

Recently there is an artificial nipple available. This is made of high grade silicone rubber. It has the same texture and color as of the normal nipple. It is used by gluing it to its location either by medical grade silicone glue or simply by its negative suction. This helps in planning the nipple position prior to definite nipple reconstruction. It can be used under the garment permanently.

Fig. 12. Nipple areola tattooing: (a) before, (b) after
COSMETIC OR AESTHETIC
BREAST SURGERY

A. Augmentation mammoplasty.
B. Reduction mammoplasty
C. Nipple and areola surgery
D. Masto-pexy (breast lift)

Cosmetic mammoplasty is the term used for the surgery of breasts where the breast size is increased or decreased to suit height, weight, body frame, rib cage and hips of the woman. The shape and size of the breast is changing with the age, marital status and parentage of the woman. Every woman wishes to remain young and wants to have her body to be projected as young. This can be achieved by cosmetic breast surgery, where augmentation / reduction or / and breast lift can make them look younger than their real age. Every woman wishes to wear deep neck dresses and to have attractive breast cleavage to project her image in the society at different stages. The sensation and pleasure from the breast as secondary sex organ depends on both intimate partners, i. e. a woman and her husband or / and boy-friend as well. Many often a suggestion or liking of opposite partner makes woman to go for augmentation mammoplasty or / and breast lift operation. Most of the time augmentation mammoplasty is seek for the status, or professional status by the entertainer, model, or society woman. The decision to undergo for operation to increase the bust line or reduction mammoplasty along with the breast lift should be every
woman’s own decision after consulting her plastic surgeon and discussing the pros and cons of the surgery. Every woman figure is unique. The ultimate aim of the augmentation or reduction mammoplasty or breast lift operation is to have the aesthetic looking breasts suitable to the height, weight body frame and hips of the woman. Also it should be soft to touch with maintenance of the same sensation and pleasure out of the newly reshaped breasts. The visible breast occupies anatomic, functional, social, emotional and sexual niches in our culture. Today with advances in the surgical techniques, it is possible to achieve this aim by every routine and simple operative procedure.
AUGMENTATION MAMMOPLASTY

The usual augmentation mammoplasty involves enlargement of the breast size, better contouring and reshaping the breast. The present state of art of the breast augmentation is represented by the silicone rubber implants. Many of the women had feelings of inadequacy because of their small breasts; increased sexual satisfaction presumably results from the release of sexual inhibitions caused by this. Autogenous tissue transplantation and injections of various materials were tried out in past for reshaping the breast. In recent years, because of improvements in breast implants and safe surgery, breast enlargement is one of the most requested cosmetic operations.

Who needs breast enlargement performed?

The importance placed on the female breasts in our society had motivated the surgeons to tackle the problem of reshaping the breast and contour restoration. Unilateral or bilateral breast enlargement requires to correct various congenital anomalies such as amastia (absence of breast), hypomastia (small size or underdeveloped breast) or for mere cosmetic purpose. The other important group of patients are those with post-partum involution of breasts that were adequate before pregnancy. Size enlargement and contour restoration of the breast also requires for the women following a subcutaneous mastectomy for benign disease or for correction of defects following mastectomy.
An aesthetically pleasing breast in our society is one that looks balanced in relation to the shoulders, hips, rib cage, height and weight. In addition it has a softness to the touch, sensation to feel and it moves with the woman as a part of her body. The breast is an organ which continuously changing in its consistency, size and shape throughout the woman’s life span. Surgery to reshape it, is just as important to someone; especially professionals, models, stage actresses and society women; as the money they spend on their hair, make-up and clothes for their self esteem and self confidence. Psychological indications are as important as any physical deficiency of the breast tissue. Women who
have little of this asset are bound to develop an inferiority complex and severe depression. Till today, garments and attires have helped such women to wear padded bras and clothes as solution. But it is of no use during intimate moments with husband or boy friend. Today a breast enlargement is perfected to the optimum and is very easily, routinely performed, with the advent of hi-tech silicone breast implants and advanced techniques of plastic surgery.

In a time when increasing emphasis is placed on the female breasts in fashion, movies, advertisements and personal affairs, it is not surprising that many women are unhappy with their small or flabby breasts and become interested in augmentation. The development of silicone gel prosthesis (Cronin 1962) and improved surgical techniques have caused breast augmentation one of the common plastic surgery operation.

The best candidate for augmentation mammoplasty is small breasted woman with an adequate distance between the nipple and infra-mammary line (more than 4 cm) or woman with involuted, atrophic breasts that overhang the infra-mammary crease by not more than 2 cm.

Augmentation is not recommended for flabby, moderately ptotic breasts that would require simultaneous nipple elevation or skin reduction. When the patient is counseled, it should be emphasised that the implant will be placed within a natural space.
between the chest muscles and mammary gland, so that lactation will be unaffected and the glandular tissue will still be accessible for manual examination and radiography. The operation does not increase the risk of breast cancer, nor will it mask the presence of incipient cancer for the experienced examiner. Indeed, the implant so flatten the overlying breast tissue that the patient herself can palpate and detect even the smallest nodule.

**How is breast enlargement performed?**

Every woman figure is unique. The procedure used need not be same for all. Although general principles of the operation remain same. Under general anaesthesia, through a 5 cm. incision either in the axilla or where the breast meets the body (submammary incision), a space is created under the existing breast or under the pectoralis muscles and a suitable sized and typed silicone implant is inserted. The wound is stitched with fine stitches. Incision scar is incospicuous and in few days merges with the surroundings.

**Varieties of Implants Available**

![Image](image.png)

(a) Gell filled implant. (b) Double lumen microtexturised implant.

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All types of breast implants available in the market have silastic (silicone rubber) as the outer material that will be in contact with tissues. It is a seamless bag of low permeable silastic membrane containing silicone gel or saline or / and silicone gel core floating in saline. Bilumen implants are available since 1975. Their great advantages are negligible bleeding and ability to add diffusible agents such as cortisone or antibiotics. Since 1988 silicone implants with micro textured surface have been introduced. These textured implants are said to have less than 20% incidence of capsular contracture. These implants (Biocell by McGhan, Siltex by Mentor, Misti by Bioplasty and Silastic MSI by Dow Corning) may well replace implants with smooth surface. Siltex has a pore size 30-50 μm, Misti, a particle size of 80-400 μm, Biocell a pore size of 300-800 μm and Silastic MSI - interstices of 200-300 μm between cones 750 μm in length. Saline filled implants are inflated in the operating room or afterwards to achieve the matching size. These implants feel like a natural breast and are sized according to standard measurements. There are tissue expanders cum breast implants available which can be inflated through a small valve later on at occasions to match the size of the breast. Each type of implants has advantages and disadvantages for different women, and a choice should be made in consultation with her plastic surgeon.

It is estimated that 90,000 to 100,000 synthetic implants are being inserted per year worldwide. Augmentation mammoplasty probably accounts for the bulk of these;
however, breast implants are also used in reconstructive procedures as well as in congenital or developmental defects. There is no such thing as perfect mammary implant.

**Advantages and Disadvantages of Breast Enlargement**

Modern techniques of breast enlargement provide a physical and psychological transformation that was impossible in past. The main physical advantages of breast enlargement is convenience. Soft and natural appearing breast can be reshaped in one simple operative procedure. The implant (artificial breast) imbedded under the skin can not be seen or found during the intimate moments with a husband or boy friend. It can not be shifted by vigorous activities.

Choosing fashions are easier. The breast lift and enlargement by insertion of the implant can be combined in one operation. Capsular contracture is a common complication of breast reconstruction. A contracture is abnormal fibrous shell that forms around the implant. This shell is spherical and creates a ‘baseball’ appearance and occasionally causes pain. Sometimes a contracture softens and disappears. Various techniques are tried out to avoid the development of contracture. Frequently, it requires to be moved by hands to break the fibrous capsule. Sometimes the capsule needs to be removed surgically. Then the implant can resume its normal size and shape. If early massage as directed by plastic surgeon is carried out by patient, capsular contracture is avoidable.
How Long will be the Hospital Stay?

This of course depends on the amount of surgery required. A simple procedure requiring only breast implant without any complication can be done in less then one hour and requires an overnight or two days hospital stay. Combine procedure may need short hospitalization, totaling, from 10 days to 2 weeks of hospital stay. Unless there are unexpected complications, even complex procedures can be performed with short hospitalization the individual requirements could be predicted by her plastic surgeon.

Home Care

The patient should go to bed upon arrival at her destination. Patient should lie down in a semi reclining decubitus for 24 to 36 hours post-operative. Aspirin and aspirin containing compounds should be prohibited beginning 2 weeks prior to operation. The patient is directed to rest for first 48 hours; she should limit the use of her arms restricted to routine acts such as eating and brushing teeth. She should strictly avoid vigorous arm motions to push or pull. The elastic brassiers following surgery should not be removed. The proper massage of the breasts is taught and encouraged from the third day post-op. The breast is massaged in a rotary fashion, squeezing and flattening it with the hand. It should be executed as often as possible in the early post-op. period and at least daily thereafter. She should wear a brassiere night and day, but she may sleep without it after 4 days. The second week she may go braless if
she wishes; however she is cautioned about the development of ptosis. Unlimited activities may resume 20 days post-operative. The patient is followed up by surgeon at the 3rd, 6th and 12th months thereafter.

**Baker’s Classification and Clinical Grading**  
(mammary implants)

- **Grade IA (ideal)**  
  Soft and normal, only scar and patient’s chart reveal presence of implant.

- **Grade IB (good)**  
  Edges and implant palpable, no patient complaints, no distortion.

- **Grade II (satisfactory)**  
  Edges palpable, capsule obvious but not firm, no patient complaints, no distortion.

- **Grade III (inferior)**  
  Capsule firm minimal distortion, patient complaints range from inability to sleep on stomach to abnormal appearance.

- **Grade IV (poor)**  
  Capsule firm to hard, implants look and feel abnormal, patient complaints range from pain at rest to regrets at having the surgery to request for removal or some intervention.
REDUCTION MAMMOPLASTY

The usual reduction mammoplasty includes repositioning of the nipple areola complex, reduction of the areolar diameter, partial excision of breast tissue and excision of excess skin. Modern day reduction mammoplasty is featured by deepithelialised segment of skin somewhere for vascular protection of nipple. The reduction of the excessive skin envelope is the part of mammoplasty in which artistry is required.

Who Needs Breast Reduction Performed?

The importance placed on the female breasts in our society had motivated the surgeons to tackle the problem of reshaping the breast and contour restoration. Unilateral or bilateral breast reduction requires to correct various macromastia anomalies such as endocrine hypertrophy, involutional hypertrophy, and gravid or postgravid hypertrophy of breasts that were adequate before pregnancy. The principle indication for reduction mammoplasty is the alleviation of breast weight symptoms such as postural defects and myogelosis in the area of the upper thoracic and cervical spine, shoulder pain and furrowing from brassiere straps, and intertrigo eczema of the infra-mammary creases; and complaints related to wearing clothing normally. Erosion of self confidence, social isolation and deterioration of self image are some of the early psychological effects linked with this deformity. The patient may be handicapped in her ability to engage in sports and other recreational activities, leading to problem in the social adjustments and personal relations leading sometimes to neurotic postural attitudes.
In extreme hypertrophy of puberty, virginal hypertrophy of breasts, early breast reduction will spare the patient considerable anguish. Second reduction mammoplasty may be considered, at the age of 18 in case of further growth. Ideal breast size varies to a degree among contemporary cultures from time to time. Changing cloth styles have influenced women’s concept of the ideal breast size. Surgeon should know what size the patient would like to be, in terms of general dimensions. The patient’s desire should be followed. Size reduction and contour restoration of the breast also requires for the women following correction of defects following mastectomy to match the opposite breast.

An aesthetically pleasing breast in our society is one that looks balanced in relation to the shoulders, hips,
rib, cage, height and weight. In addition it has a softness to the touch, sensation to feel and it moves with the women as a part of her body. The breast is an organ which continuously changing in its consistency, size and shape throughout the woman's life span. Surgery to reshape breast is just as important to someone; especially professionals, models, stage actresses and society women; as the money they spend on their hair, make-up and clothes for their self esteem and self confidence. Till today, garments and attires have helped such women to wear tight corset and brassieres to hide. But it is of no use during intimate moments with husband or boy friend. Today a breast reduction is perfected to the optimum and is very easily, routinely performed.

How is breast reduction performed?

The female breast is not only an organ of appearance and function but potential one of carcinogenesis. The patient may have or could develop a carcinoma and its presence should be ruled out before reduction mammoplasty. Thorough local examination and mammograms are mandatory. A detailed history and careful general examination are essential.

Patients with large breasts are often been sufferers from more than a cosmetic deformity. The signs and symptoms may include breast pain, backache, lower neck pain because of the arthritis of cervical vertebrae, kyphosis and compensatory lordosis, groving and irritation of the shoulders due from brassiere strape

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pressure due to heavy breasts, submammary intertrigo, mental distress, reduced sensation of nipple, decrease in sensation in medial aspect of hand due to ulnar nerve radiculitis and even restricted adduction.

Drugs to be avoided before this surgery are, aspirin or its derivatives to reduce hazards of bleeding from the anticoagulating effect, reserpine and certain oral contraceptives to avoid breast engorgement. Pre and post operative photographs should be obtained to compare the result. Complications that could occur in a reduction mammoplasty should be discussed with the patient and the informed consent should be obtained.

**Operative Technique**

Every woman figure is unique. The procedure used need not be same for all. Although general principles of the operation remain same. Usual medical and physical assessment for general anaesthesia fitness is necessary. Ten days prior to the operation patient starts a multivitamin with iron and is asked to stop tobacco, alcohol and aspirin. Patients should be off the weight reducing drugs. Three days before surgery, patient begins using and antibacterial soap.

Morning of the operation or prior to surgery patient is made to stand so that the skin to be resected are outlined with a marking pen. Topographical breast meridians and nipple positions are also marked out in erect posture. After freeing the nipple, the wedge excision of the
marked out skin and gland is carried out. The nipple kept attached to the gland through a wide dermo-glandular pedicle so as to avoid the nipple necrosis by maintaining a good blood supply. Same time areola is reduced as needed. The breast are dressed with wrap-around dressing, crisscrossing the breast and around the neck to provide support but not compression. The drains are removed after first 48 hours. Hematoma and impending vascular complications should be apparent after 4-6 hours. This is the time when surgeon should reexamine his patient, removing all dressings to allow proper inspection and palpation of the breasts so that the treatment without fear of irreversible damage can still be possible. The post operative skin scar will be depend on the technique used by plastic surgeon. Usually the “T” shaped fine scar or lazy “S” shaped lateral scar will result. The scar will merges with the surrounding in 3 to 6 weeks.

**Advantages and disadvantages of breast reduction**

Modern techniques of breast reduction provide a physical and psychological transformation. Soft and natural appearing breast can be reshaped in one simple operative procedure. The scar after operation can not be seen or found during the intimate moments with a husband or boy friend. Choosing fashions are easier. The breast lift and reduction can be combined in one operation.
Complications

Post-operative complications can be classified as early (necrosis, hematoma, infection and wound gapping) and late (abnormal scarring, permanent sensory changes, loss of shape, recurrent hypertrophy and disturbed lactation).

How long will be the hospital stay?

This of course depends on the amount of surgery required. A simple procedure without any complication can be done in less than one hour and requires an overnight or two days hospital stay. Many stage reduction may need series of short hospitalization, totaling from 10 days to 2 weeks of hospital stay. Unless there are unexpected complications, even complex procedure can be performed with short hospitalization. The individual requirements could be predicted by her plastic surgeon.

Home care

The patient should go to bed upon arrival at her destination. Patient should lie down in a semi reclining decubitus for 24 to 36 hours post-operative. Aspirin and aspirin containing compounds should be prohibited beginning 2 weeks prior to operation. The patient is directed to rest for first 48 hours; she should limit the use of her arms restricted to routine acts such as eating and brushing teeth. She should strictly avoid vigorous arm motions to push or pull. The elastic brassier
following surgery should not be removed. She should wear a brassiere night and day, but she may sleep without it after 10 days. The sixth week she may go braless if she wishes; however she is cautioned about the development of ptosis. Unlimited activities may resume 20 days post-operative. The patient is followed up by surgeon at the 3rd, 6th and 12th months thereafter.
Nipple and Areola Surgery

Nipple and areola problems are usually related to congenital defects of breasts. Absence of nipple areola, a rare condition; nipple-areola asymmetries; and specific problems such as nipple discharge, nipple inversion and nipple hypertrophy can be treated with help of various operative procedures. Congenital aplasia of breast hypertrophy can be treated first as done in breast reconstruction (chapter 1) and wait to reconstruct nipple-areolar complex at a later date. Nipple inversion is mainly due to the inadequate length of the breast ducts and fibrosis developed due to some reasons in the tissues underneath the nipple breast tumors should be excluded prior to any surgery of inverted nipple. An operative procedure consisting of dividing the fibrosis and bringing out the nipple-areola and supporting suture usually rectifies this deformity without compromising the nipple-areola vascularity.

Nipple hypertrophy is corrected by a simple transection to reduce the end of the nipple. The transected end of the nipple re-epithelised with reconstituted duct openings at the surface. In second method a sleeve resection of the nipple can be done with preservation of the opening surface, where ducts open.
Site of the nipple-areola complex can be shifted, aesthetically as per the wish of the patients to various sites depending upon the size and type of the breast. This will help into improve the cosmetic look of the breast, including the projection, as well. The size of the areola can be reduced or augmented with help of simple surgical techniques as described previously. (chapter 1).
Ptosis can be defined as suspension of structure at lower than its optimal level for normal appearance and/or function. The usual reduction mammoplasty includes reposition of the nipple areola complex, reduction of the areolar diameter, partial excision of breast tissue and excision of excess skin. Where as the treatment for ptotic breast follows the same general principles except the excision of the breast tissues. The volume need not be reduced, since the problem is not one of hypertrophy but of a breast that has collapsed to a flattened discoid shape and must be restored to a firm conical form. Whatever the mechanism, breast ptosis is manifest as an excess of skin allowing the contained gland to assume a lower and altered shape.

**Degrees of breast ptosis and type of operation**

**Micromastia**... where the volume of the contained mass is less than optimal and the skin envelope can accommodate an increased volume, the appropriate surgical correction is a simple augmentation mammoplasty.

**Micromastia with ptosis**... where the breast volume may not be adequate but the skin envelop is excessive, the skin must be reduced to contain the existing breast tissues. If, during the operation it becomes apparent to use the implant, it can be placed at the same time or the implant placement may be deferred until later if patient desires.
**Pure ptosis...** Where the breast volume is adequate but displaced because of an excessive skin envelope, the skin must be reduced to contain the restored shape and position of the breast tissues.

**Mammary hypertrophy with breast ptosis...** where the breast volume and associated skin covering are excessive, a reduction mammoplasty is must.

**How is breast lift/ suspension performed?**

Thorough local examination and mammograms are mandatory. A detailed history and careful general examination are essential. Patients with ptotic breasts are often been suffers from more than a cosmetic deformity. The signs and symptoms may include, if hypertrophy is associated with breast ptosis; breast pain, backache, lower neck pain because of the arthritis of cervical vertebrae, kyphosis and compensatory lordosis, grooving and irritation of the shoulders from brassiere strap pressure due to heavy breasts, submammary intertrigo, mental distress, reduced sensation of nipple, decrease in sensation in medical aspect of hand due to ulnar radiculitis and even restricted adduction.

Drugs to be avoided before this surgery are, aspirin or its derivatives to reduce hazards of bleeding from the anticoagulating effect, reserpine and certain oral contraceptives to avoid breast engorgement. Pre and post operative photographs should be obtained to compare the result. Complications that could occur in a breast lift operation should be discussed with the patient and the informed consent should be obtained.
Operative technique

Every woman figure is unique. The procedure used need not be same. Operations for ptosis are of two general types of their combination: (1) efforts to suspend the breast either by undermining and direct suturing at a higher level; (2) to elevate and reshape the breast by removal of the skin and underlying breast tissues. If the breast volume is acceptable, the underlying breast tissues need not be removed. Usual medical and physical assessment for general anaesthesia fitness is necessary. Ten days prior to the operation patient starts a multivitamin with iron and is asked to stop tobacco, alcohol and aspirin. Patient should be off the weight reducing drugs. Three days before surgery, patient begins the use of an antibacterial soap.

Morning of the operation or prior to surgery patient is made to stand so that the skin to be resected are outlined with a marking pen. Topographical breast meridians and nipple positions are also marked out in erect posture. After freeing the nipple, the wedge excision of the marked out skin only carried out. The nipple kept attached to the gland through a wide dermo-glandular pedicle so as to avoid the nipple, necrosis by maintaining a good blood supply. Same time areola is reduced as needed. The breasts are dressed with wraparound dressings, crisscrossing the breasts and around the neck to provide support but not compression. The drains are removed after first 48 hours. Hematoma and impending vascular complications should be apparent after 4-6 hours. This
is the time when surgeon should re-examine his patient, removing all dressings to allow proper inspection and palpation of the breasts so that the treatment without fear of irreversible damage can still be possible. The post-operative skin scar will depend on the technique used by plastic surgeon. Usually the “T” shaped fine scar or lazy “S” shaped lateral scar will result. The scar will merges with the surroundings in 3 to 6 weeks.

**Advantages and disadvantages of breast lift**

Modern Techniques of the breast lift/suspension provide a physical and psychological transformation. The main physical advantages of breast lift is convenience. Soft and natural appearing breast can be reshaped in one simple operative procedure. The scar after operation can not be seen or found during the intimate moments with a husband or boy friend. Choosing fashions are easier. The breast lift and reduction or augmentation can be combined in one operation.

**Complications**

Post-operative complications can be classified as early (necrosis, hematoma, infection and wound gapping) and late (abnormal scarring, permanent sensory changes, Loss of shape, recurrent hypertrophy and disturbed lactation).
BREAST SELF-EXAMINATION

(a) Stand before a mirror. Inspect both breasts for anything unusual, such as any discharge from the nipples, puckering, dimpling, or scaliness of the skin.

The next two steps are designed to emphasize any change in the shape or contour of your breasts. As you do them you should be able to feel chest muscle tightness.

(b) Watching closely in the mirror, clasp hands behind your head and press hands forward.

(c) Next press hands firmly on hips and bow slightly toward your mirror as you pull your shoulders and elbows forward.

Some women do the next part of the exam in the shower. Fingers glide over soapy skin, making it easy to concentrate on the texture underneath.

(d) Raise your left arm. Use three or four fingers of your right hand to explore your left breast firmly, carefully and thoroughly. Beginning at the outer edge, press the flat part of your fingers in small circles slowly around the breast. Gradually work toward the nipple. Be sure to cover the entire breast. Pay special attention to the area between the breast and the armpit, including the armpit itself. Feel for any unusual lump or mass under the skin.

(e) Gently squeeze the nipple and look for a discharge. Repeat the exam on your right breast.

(f) Steps d and e should be repeated lying down. Lie flat on your back, left arm over your head and a pillow or folded towel under your left shoulder. This position flattens the breast and makes it easier to examine. Use the same circular motion described earlier. Repeat on your right breast.

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