CAPSULAR CONTRACTURE, IMPLANT RUPTURE AND BREAST LIFT FROM AUGMENTATION

CAPSULAR CONTRACTURE

When any kind of implant is put into a breast a new membrane of tissue is formed around the implant. This membrane is called the capsule. The characteristics of the capsule can be very different in different people and we don't really understand why this should be. It has been known for a long time that human beings, like other mammals, demonstrate what is called "the foreign body reaction." This is a defence mechanism to try and protect the body from outside invasion. It is seen most commonly when materials such as metal, wood, glass, etc, penetrate through the skin and come to rest somewhere underneath the surface of the body. The white cells in the blood recognise the presence of this foreign thing and try to destroy the thing, if it is possible, but failing that the white cells develop this membrane which walls off the foreign object.

The membrane or capsule which forms around a breast implant stays relatively thin, soft, flexible and stretchy in the vast majority of people and so when a person has an implant put underneath their breast the body seems to tolerate the presence of the implant without any problems for many months. The manufacturers of implants have recognised for a long time that the texture of the surface of the implant can have an enormous influence in the development of the capsule and may influence the way in which the body reacts to the presence of an implant. There are quite possibly many other factors which play a part which we don't really understand. A lot of Surgeons suspect that there is some very low grade infection going on within the breast and some Surgeons go to extraordinary lengths to reduce any possibility of contamination by organisms, particularly staph epidermidis. This is a very common organism found on the skin which normally doesn't cause any problems to the human being at all but which might be important in this matter of capsule formation.

The development of the capsule starts almost immediately the implant is put into the breast. Within days of the operation the membrane forms and has a measurable thickness if looked at under the microscope. What we don't know is what switches off the mechanism which promotes the development of the capsule in the first place. Some Surgeons believe that massage stretches the newly forming capsule and prevents the capsule from becoming tight around the implant whereas other Surgeons think entirely the opposite and believe that it is a very bad thing to massage the breast after an implant has been inserted and believe that this will cause the capsule to become much thicker and more robust. The surprising thing is that no-one has ever done a proper controlled trial and scientific analysis of whether massaging the breast after the operation has any good or bad influence on the final outcome.

Some Surgeons believe that it is vitally important to make the space for the implant a very snug fit whereas other Surgeons think that it is important that one should give the implant a little bit of space to move and adjust itself to take account of the effects of changes in the shape of the chest wall from breathing, movement, effects of gravity from sitting up as opposed to lying down, etc, etc.

Some Surgeons believe that it is vitally important to get rid of all traces of blood before insertion of an implant and after the implant has been inserted and for this reason insist upon the use of drains. There is some evidence to show that capsule problems are more likely to arise in patients who have developed a haematoma after their breast implant operation because there is

no doubt that blood clots seem to stimulate the formation of scar tissue and the capsule is basically a form of scar as it matures.

The capsule in the vast majority of people remains soft, flexible and thin and helps to keep the implant in the correct position and will prevent the implant from migrating or pushing its way from where it is meant to be. In many people the capsule is closely stuck to the surface of the implant as well as being stuck to the soft tissues of the breast or muscle around it. However, in other people there seems to be very little adherence between the capsule and the implant and the capsule seems to be stuck mainly to the soft tissues around the implant rather than to the implant itself. Sometimes there is a double membrane or double capsule with what seems like a lubricating layer of fluid between these layers. Thus, the implant seems to be coated with a very thin layer of membranous capsule and then a thicker form of capsule surrounds this. This only goes to illustrate how variable the way in which capsules form in different individuals can be. What ultimately matters, however, is whether the capsule tightens around the implant such that it distorts the shape of the implant if the implant happens to be very soft and whether the capsule becomes so strong and tightly adherent to all the soft tissues around it that it distorts the shape of the breast and the feel of the breast.

A Surgeon called Baker in Florida produced a scale which became internationally recognised as a means of grading how bad the capsule was as measured by what one can feel the breast to be like. Grade 0 means that one can't feel the capsule at all and one wouldn't know that there was an implant inside the breast. Grade 1 means that the capsule is still very soft and not causing any problems but is beginning to hold the implant in position. Grade 2 means that one is aware that a capsule has formed around the implant because it feels firmer than is normally natural in a breast and one can feel the slight balloon like sense of this membrane around the implant and its elastic deformability.
Grade 3 indicates that the breast is being distorted as the pectoral muscle moves and so the breast is often stuck unnaturally firmly to the pectoral muscle and the breast may look slightly misshapen, even at rest. Grade 4 indicates significant distortion of the breast and the breast has become apparently rather hard and the breast with the Grade 4 capsule is almost certainly apparently higher on the chest wall than the other breast and moves upwards as the arm is raised. A Grade 4 encapsulation is very distressing for most women because it is quite apparent to other people that the breast is not normal looking.

Some women develop a capsule problem in only one breast but the majority of women develop it in both breasts, but it may be worse in one side than the other. If it develops in only one breast one has to ask the question "Why that particular breast and what was done differently about the operation in that breast which might have caused worse encapsulation?" The trouble is that we seldom know what it is that has caused the encapsulation on that particular side and so we are no nearer the truth in understanding the basic causes of encapsulation.

From the patient's point of view the distorting effects of a bad capsule are extremely worrying because of the probability that the problem won't be solved unless they have another operation which obviously has serious financial and logistical implications quite apart from the long-term cosmetic considerations. Since we don't really know why people develop bad capsules (except for the relatively rare cases of known injury to the breast from something like a car accident) we therefore don't know what is going to help to prevent the person developing a capsule subsequent to another operation.

Different Surgeons have different views about how to manage encapsulation. Some Surgeons encourage vigorous massage at the first sign that the person is developing a palpable capsule. Some Surgeons recommend the use of anti-inflammatory drugs such as Ibuprofen and I have little doubt that these may be helpful in some cases and that it is unlikely that anti-inflammatory drugs will do any harm apart from the side effects of the drug which are known such as tummy upsets, asthma in asthma prone individuals, etc.

It was noticed by women in America, who happened to be enthusiastic runners and who had had breast enlargement and who had developed capsules, that if they were taking one of the antileukotriene drugs such as Montelucast or Zafirlukast, which are good at reducing symptoms of asthma brought on by exercise, these people found that the capsules which they had developed around their implants became much softer and so this is indicative of the fact that capsules are definitely influenced by white cell activity. If one can reduce this white cell activity you may reduce the thickness and strength of the capsule.

Different types of operations have been developed to deal with capsular contracture problems. The simplest form of operation is to split the capsule and to release the tension in it. In the early stages of breast augmentation in the 1970's it was very commonplace to break the capsules by squeezing the breasts manually. A sudden sharp squeeze on the breast would be sufficient to break and split the capsule and suddenly the breast would become soft again. This, however, is not recommended because there is no doubt that there are a small number of patients in whom this manoeuvre will rupture the implant as well as the capsule and so this led onto the operation of capsulotomy which means simply dividing the capsule. The only problem about this operation is that, although it may make the breasts softer, it seldom lasts for very long because the capsule reforms and tightens again.
The other type of operation is known as a capsulectomy in which one removes the capsule and puts a new implant into the space where the previous one had been. Yet other variations exist on this theme depending upon the exact anatomy of the original surgery. Some Surgeons prefer to leave the old capsule behind and simply develop a new space next to but outside the old capsule so that one is putting the implant into a fresh tissue plane. Nobody knows what is the best thing to do in any individual patient.

There is enormous competition between manufacturers of implants and one manufacturer will frequently claim to have superior results with their implants as compared to those of their competitors. This is what one could expect and therefore it can be quite difficult to know what you can actually believe. There are only a limited number of studies in which there is true independent assessment of one implant versus another.

Implant manufacturers bring out new statistics frequently which purport to show that their implant is as good or better than any of their competitors and so it can be very difficult for the Surgeon to know whom to believe. The common statistics which are available today suggest that there is a risk of about 5% to 10% of serious encapsulation problems within 10 years of the patient having their implant operation. In a few unlucky patients the capsule problem occurs within months of the initial surgery, in other patients it can be anything up to 3 or 4 years before there is any sign of any problem and in a very large number of women the capsule develops to about a Grade 2 level without causing any major problem and doesn't seem to get worse for many years. Thus, there is a somewhere between a 1 in 10 and 1 in 20 chance that women having breast implants will develop sufficiently bad

capsule distortion to need some kind of operation within 10 years of their original surgery.

One may question whether or not it would be safe to put the same implant back in again having inserted it into a new plane of tissue and hope that the same kind of capsular contracture will not occur again. Most Surgeons believe that this is not sensible and that a new implant has to be used.

The question then is whether it should be the same brand of implant, the same size of implant or the same shape of implant. These are things which need to be discussed because ideas about this are changing all the time.

One of the most recent trends with commonplace acceptance by Surgeons in this field is the use of implants which have a polyurethane foam surface. The advantage of this type of implant is that it develops a totally different type of bonding with the tissues and there is a fine matrix of polyurethane which links the implant with the tissues and forms a totally different type of capsule around the implant as compared to the standard silicone gel implant. These implants, unfortunately, have the disadvantage however of having a very definite shape which may not match the exact shape that the breast had been originally when the skin was stretched. One of the common features of patients who have serious capsular contracture is that they end up with a globular shape of breast so the skin is stretched to form this shape and becomes accustomed to it and then doesn't naturally conform to a different shape of an implant placed underneath it. It largely depends upon how elastic the skin remains. If it has aged a lot and lost most of its elasticity then it may not adapt to the new shape determined by the implant immediately.

Another dilemma can be the question of whether one has to operate only on the side that has the capsular contracture or whether you need to operate on both sides. If one is going to be changing the shape of the implant in order than one may change the type of the implant and if one has a new implant which is much firmer or softer than the previous one then it may be necessary to operate on both breasts even though one of the breasts is apparently completely satisfactory. This in itself can be risky because the process of removing an implant on one side which doesn't have capsule problems and inserting a new implant may, in fact, seemingly set off the process of encapsulation on that side and so one has effectively created a new problem by trying to correct the problem in the other breast.

Thus, one can summarise the situation by saying that it is usually a very unsatisfactory position to be in and that whatever method of correction is decided upon it is bound to be a compromise of some kind. The risk of disappointment is significantly higher than it would have been from the initial operation.

The question arises, therefore, as to whether there is anything one can do in the initial operation which is likely to reduce the risk of encapsulation problems occurring to the absolute minimum.

My own personal view, at the moment and I have to emphasise that this is my own view and is not universally accepted, is that the use of the polyurethane foam covered implants is likely to lead to the lowest percentage risk of serious encapsulation problems which would result in the need for surgery as compared to all the other types of implant regardless of their brand name. At the moment the figures for the polyurethane foam surfaced implants suggests a 1% to 2% serious

encapsulation rate in contrast to other companies which are naming a 5% risk.

The main disadvantage of the polyurethane foam implants is that they have a slightly more limited range of sizes and shapes as compared to other manufacturers and when one is confronted with the problem of trying to balance up breasts which are slightly different in their natural size there is not quite the same level of flexibility that one can have with other brands in which one can chose implants of different sizes and shapes in quite a narrow range in order to get optimal symmetry. This situation, however, may change and the company manufacturing these polyurethane foamed implants is undoubtedly expanding its range of sizes and shapes and it may be possible to overcome this particular problem within the near future. This is obviously something which has to be discussed carefully with your Surgeon.

When you are deciding what type of implant you want to have, you will need to discuss it carefully with your Surgeon who hopefully will be able to give you good advice and a wide choice. You may be influenced by price because some of the American implants are much more expensive than the British or French. There is a serious question mark hanging over the reliability of the PIP implants and I would never chose to use this type for any of my own patients because there have been too many reports of spontaneous rupture of these implants within 3 to 5 years of their insertion.

My own personal experience of the Nagor implants is that these are reliable but my impression of using them myself has been that I have been seeing a 5% encapsulation rate within 5 years and at least a 10% encapsulation rate within 10 years. This has not altered very much over the last 20 years.

A lot of patients, if they have a decent amount of breast tissue covering the implants, are not too bothered by having very stiff implants inside them but if they have very little breast cover then tight capsules make a tremendous difference to the look and the feel of the breasts.

It is quite difficult to guess precisely what the true serious encapsulation rate is because not all patients come back to see one and long-term reviews are extremely difficult to organise. Therefore, these figures that I am quoting are not completely reliable. I can certainly confirm that I never saw a capsular contracture in any of the patients that I treated in the 1980's with polyurethane foam covered implants. The type of implant that I was able to obtain in the 1980's, however, is different from the polyurethane foamed implants that are available now and so one may not be comparing like with like.

Ultimately, it comes down to whether you are prepared to take a risk of being the 1 in 10 or 1 in 20 person who ends up having to pay for a new operation somewhere between 5 and 10 years after your first operation. Are you able to afford the current £5,000 for a redo operation? If not, then I strongly recommend using the polyurethane foam implants. If it is not a financial problem for you then use one of the conventional textured silicone implants which will almost certainly give you a nice soft breast with maximum flexibility.

NB: The polyurethane foam implant tends to be very firm for the first 3 months and then softens but still remains firmer than the equivalent standard textured silicone implant.

RUPTURE OF IMPLANTS

If you have read my other information sheets on breast augmentation, you will realise that I haven't emphasised the potential risk of spontaneous rupture of the implants. This is largely because in my own experience it is relatively uncommon.
In America one sees articles which describe a 5% rupture rate but this is largely due to the fact that the commonest kind of implant used in America is saline filled as opposed to silicone gel filled. Wrinkling of the shell of the implant is much easier if it is filled with saline than if it is filled with silicone gel and I think this accounts for the relatively higher rate of acknowledged implant ruptures that one gets in America than in Europe. Nevertheless, there is a definite incidence of rupture of implants. The rupture of an implant is not dangerous in itself but it certainly can be a tremendous nuisance because once it has been recognised one feels obliged to remove the ruptured implant and replace it with a new one. This, of course, is expensive.

There are 2 common scenarios which I have come to recognise as being the likely causes of rupture of an implant. The first is injury to the chest wall, the commonest incidence being a road traffic accident in which the passenger or the driver receives a crush injury from the seatbelt thus either displacing or rupturing the implant inside their breast. It will be the left side in a passenger and the right side in a driver according to whether the seatbelt is crossing from right to left or left to right. Another common possibility is in the older woman who has had her implants for a long time and who then is required to have a mammogram. If the breasts have been soft for a very long time with hardly any development of a capsule the squeezing of the breasts tightly to have a mammogram is, in my opinion, sufficiently forceful to break a soft implant whose shell has probably weakened with the passage of time. A mammogram in a woman who has recently had a new implant or who has a very tight capsule around the implant is very unlikely to suffer rupture because in the first case a new implant is extremely strong and in the second instance the capsule is also extremely strong and will resist deformation.

Therefore, it is the woman who has had her implants 10 to 15 years ago but they stayed very soft and who has only a relatively thin capsule and probably weaker shell who tends to get a rupture. I have seen at least 5 such cases in the last few years although surprisingly the Radiologists in charge of the Mammography Units deny that their mammography has caused harm.

When the implant ruptures the gel may be contained within the capsule around the implant in which case the person is going to be none the wiser and the breast will remain just the same in its appearance and feel. If, however, the capsule allows some of the silicone to pass through it and it escapes outside the capsule then the breast may well feel very different and it may feel softer or harder or lumpier and very occasionally silicone gel migrates towards the armpit and ends up in lymph glands in the armpit.

I would guess, but I don't have proper figures to confirm this estimate, that about 1% to 2% of people with implants suffer rupture. It sometimes presents as a capsular contracture problem but it sometimes shows itself as a sudden change in the feel of the breast 10 to 20 years after the original operation. The best way to investigate it is to have scans of the breast which usually means an ultrasound scan and/or MRI or CT scan. Sometimes the Radiologist finds it quite difficult to make a definite diagnosis because the implant can sometimes crease, wrinkle or fold which can produce a strange appearance on the x-ray image or scan image. It is quite possible to have false positive and false negative diagnoses from scans. For example, one might suspect a rupture and an x-ray or scan may confirm this but when it

comes to the actual operation you find that the implant is still intact and was simply distorted in shape.

An alternative scenario is that a person may complain of increasing hardness in one breast and one diagnoses Grade 4 capsular contracture and then when it comes to doing the capsulectomy one finds that the shell of the implant has disintegrated at one or more points and that there is a free silicone inside the capsule. Thus, in a certain percentage of cases rupture and capsular contracture are intimately linked but net effect is the same in that the person has to have an operation to remove the implant and exchange it for a new one.

Very occasionally patients may find that their breasts have in some way altered, either softer or harder but they are still relatively comfortable and further investigation shows that on the balance of probabilities they have a rupture of the implant but there is no evidence of the silicone escaping outside the breast and so they simply chose to live with it and do nothing about it unless they notice further changes. This only goes to emphasise there are no absolute do's and don'ts. There are quite a lot of maybe's.

positioning of the implant (submammary, subpectoral and dual plane)

In the other information sheets a clear distinction is made between placing the implant in front of or behind the pectoral muscle. One can make a list of all the possible advantages and disadvantages of the 2 options. In the past 5 to 10 years the concept of a dual plane positioning of implant has been popularised. The idea of the dual plane is to try and gain the benefits of having the implant subpectoral in its upper part but submammary in its lower part.

The essential feature about a dual plane resection is that one divides the lower part of the pectoralis major up to the level of the line in which you would join the muscle and the sternum in a horizontal line and thus release the tension on the lower edge of the pectoralis major muscle but allow the upper part of the implant to come behind the muscle.
This then gives a more natural appearance to the upper part of the breast rather than having the distinctive rounded clear cut edge to the upper part of the breast from the edge of the circular implant showing through the overlying soft tissues.

I use a mixture of these different styles of submammary, subpectoral and dual plane depending upon the particular type of implant that I am using.

judging the amount of breast lift that you can expect from breast enlargement

If you want to know how much lift you are likely to get to the nipple and areola by inserting an implant into your breast, one of the best ways of assessing this is to stand in front of a full length mirror with your arms by your side and then check to see where the nipple and areola lie relative to the fold underneath the breast. You then raise your arms above your head so that they are at about a 45 degree angle above the horizontal and then check to see where the nipple and areola lie. If they lie well above the line of the fold below the breast (inframammary fold) then you can expect that a moderate to worthwhile enlargement will achieve this kind of lift but if the nipple and areola still lie at a level at or below the fold then you can reckon that an implant alone is not going to give your breasts a decent lift and you are going to have to have an operation to adjust the shape of the

breast which will mean having a scar around the nipple and areola and one running down from the areola into the groove underneath the breast.

This simple test will determine whether you need a simple operation or a complicated one.

If it seems that you are going to benefit from simply enlargement then it is almost certain that you will need a type of implant which has a definite shape to it with the majority of the volume of the implant being in its lower part, a so-called lower pole fullness. If you only want a very small amount of lift, however, then a round implant without the extra lower pole fullness is probably all you need.

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