THE MODERN MANAGEMENT OF INGUINAL AND FEMORAL HERNIA

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A patient suffering from these hernia may present with a simple and reducible hernia or the condition may be modified by complications, such as irreducibility, inflammation, obstruction or strangulation. Again, these herniae may be single or multiple or they may be associated with other groin abnormalities, such as a hydrocoele, varicocele, varicose veins or an imperfectly descended testicle. There may be aggravating factors, such as chronic bronchitis, bronchiectasis, prostatic enlargement or urethral stricture, constipation or other causes of strain or the general health or past history may show that the patient has suffered from cardiac, renal, malignant or other disease. Apart from these factors it will be appreciated that the age, sex, occupation and personal responsibilities and wishes of the patient will be of importance in the management of such cases.

When a diagnosis of hernia has been made, the method of presentation and any complications noted and a medical picture of the patient's general condition has been obtained, it is important to note that the treatment of hernia is mainly directed against the prevention of that dreaded and sometimes fatal complication strangulation.

In order to do this, it is first necessary to reduce the hernia—this being usual unless the above complications have occurred—and having done so, to ensure, firstly, that reduction is maintained immediately afterwards, and, secondly, that the hernia will not recur at a later date owing to failure of the posture, retentive apparatus or operative treatment used to maintain reduction. At the same time, any aggravating factor, such as coughing or straining, which is likely to cause a recurrence, must be treated.

Reduction

The patient lies on a couch or remains in bed if already so confined by illness, age or other circumstances. The head and shoulders are supported and the knee and hip joints and the spinal column rested in a flexed position supported by pillows or cushions as necessary.

Every effort should be made to assist him to relax both mentally and physically and other causes of pain alleviated wherever possible. In particular, the abdominal musculature must be relaxed, and this is encouraged by asking the patient to breathe with the mouth slightly open, but in a quieter and deeper way than usual.

This position and state of relaxation will usually by itself effect reduction. When it does not, it will be necessary in the first place to apply light pressure with a finger or two on the hernia, when the desired result will usually follow. If this fails, then the neck of the hernia should be steadied by a light finger and thumb pressure of one hand while a similar grip is obtained by the other hand on the fundus of the sac and the contents of the hernia. A light squeezing movement directing the prolapsed hernial contents towards the neck will usually be followed by reduction of the hernia. If this fails, force should on no account be used, but the same procedure may perhaps be repeated after an appropriate interval.

Irreducibility

When a hernia is irreducible, but not otherwise complicated, it is sometimes possible to bring about reduction by a light and fluid diet, together with an olive oil and later a soap and water enema. During this time the patient should be in a bed with the lower end elevated and sedatives may be prescribed. In young children and healthy adults irreducibility in itself is regarded as a priority indication for operative treatment, although this may not be regarded as an emergency.

In poor operative subjects, the probability of a later operation being necessary under adverse conditions and because of the risk of strangulation operative treatment should be considered.

Since the commonest occupant of an irreducible hernial sac is omentum, there is a possibility that no further trouble may result in such an irreducible hernia, since one might regard this as Nature's method of healing the hernia by stopping

it up with the safest material available. Unfortunately it is extremely difficult to guess the contents of any hernial sac with any degree of accuracy, so that this 'treatment' can, of course, rarely be advocated by the surgeon!

When operation is impossible an individual support may be made for a particular patient which will at least prevent the hernia from increasing in size. This is an irreducible hernia support. Such supports are most used in the scrotal type of indirect inguinal hernia in senile persons, but are unsuitable in femoral hernia. They may, under certain circumstances, be fitted with shoulder straps which help to take away some of the weight of the hernia from the groin.

As for direct inguinal hernia, this is nearly always reducible. When it is not so, and also when a femoral hernia is irreducible, the condition would be a further indication for operative intervention.

Obstruction

When this occurs the hernia is, as a rule, irreducible, but not necessarily strangulated. In the majority of subjects, it is an indication for operative treatment, but when this is difficult or impossible the patient is admitted to hospital, given a very light and largely fluid diet and treated by an olive oil and later a soap and water enema. The lower end of the bed is raised, sedatives are given and mental and physical rest is encouraged. It will occasionally be found that this treatment relieves the obstruction and that subsequently the hernia becomes reducible. When this has occurred, a temporary pad and bandage may be applied in order to maintain reduction. Failure of this treatment should be regarded as an indication for surgical intervention.

Inflammation

This condition may follow the wearing of an inefficient truss, particularly when the hernia is only partly reducible. It is a dangerous complication and may be associated with either irreducibility, obstruction or, at a later date, strangulation.

Preliminary treatment in bed, on the lines previously described for those conditions, with the application of local heat to the area and antibiotics may result in the conversion of the hernia to a simple and reducible one. During this time it may be possible to treat any aggravating cause of the condition such as chronic bronchitis or prostatic obstruction. When the patient's general condition allows, operative treatment will be necessary in this type of hernia.

Further Factors

Apart from the hernial complications described

above, there are a number of further factors which have a direct bearing upon the selection of treatment and the suitability of any individual patient for this.

Age. In children, inguinal hernia is the more common problem. Fortunately strangulation is rare. Operative treatment of this essentially congenital condition is therefore undertaken normally when the child is some six or more months old, provided that it is otherwise healthy. The interval period is covered by the wearing, following reduction, of either a solid rubber horseshoe-shaped double inguinal truss or a rubber-covered inguinal spring truss. The former is the more popular and its application and the method of reduction of the hernia will readily be learnt by the child's mother. *Age per se* in older patients does not necessarily point either to operative or supportive treatment. This will depend upon the other factors to be mentioned, but it will, of course, weigh on the side of non-operative treatment.

In direct inguinal hernia in old persons, those with hernia-en-glissade or a large and long-standing indirect inguinal hernia with a wide neck, a truss can frequently be advised. Even in an old person a femoral hernia will require operative treatment.

High ligation and excision of an indirect inguinal hernial sac together with orchidectomy and a herniorrhaphy rather than a hernioplasty will be indicated in older patients, particularly when unilateral. Elastic trusses, renewed as necessary, will be found to be more comfortable and a better fit in some older patients and their disadvantage of gradual loss of elasticity will be counteracted by the fact that such older patients have very limited activities.

Sometimes in the very old an emergency kelo-tomy or simple cutting of a hernial band may be necessary as a life-saving measure in strangulated hernia. The reduction will have to be maintained temporarily with a pad and bandage and either a truss or operative treatment subsequently arranged.

In older patients the investigation and treatment of associated chronic bronchitis, cardiac disease and prostatic obstruction, will be found to be of particular importance.

Sex. This tends to have little bearing on hernia management. On the whole, trusses are not a popular form of treatment in females and the presence of a weak, fat and dependent abdominal wall will make the wearing of an abdominal corset necessary in addition. Obesity tends to weigh against truss treatment as do intertrigo and varicose veins. On the other hand, these same patients are frequently poor operative subjects as well.

Inguinal complications. The presence of an un-

descended testicle or of a large hydrocoele or varicocele is generally an indication for operative treatment. Multiple herniae, varicose veins, eczematous conditions of the groin, inguinal scars and chronic skin disease of many kinds make the wearing of a truss difficult or impossible.

Skeletal deformity. Limb amputation, a stiff, painful or ankylosed hip joint, low back pain or sciatica and similar lesions again weigh against truss treatment. Very thin persons and very fat ones make difficult truss-fitting subjects.

Pregnancy. Whenever possible, a hernia should be treated early in pregnancy. When seen after three or four months the question of a truss, together with a surgical abdominal maternity corset, may be considered. The controlling factor is the suitability for anaesthesia.

Chronic respiratory strain. Patients with chronic bronchitis, bronchiectasis, tuberculosis and similar diseases are unsuitable for operation in winter time. The chronic bronchitic will require a preliminary course of treatment by breathing exercises and perhaps postural drainage and other medical treatment before the operation. During this time of waiting a truss may be worn.

Urinary obstruction. Simple prostatic enlargement and urethral stricture should be treated before any operation for hernia is considered. In an ambulant case a truss will be prescribed.

Chronic constipation. Repeated straining due either to simple constipation or to a simple or malignant stricture will certainly increase the chance of recurrence following the operative treatment of hernia. These conditions require preliminary treatment, therefore, and if this is not successful, a truss ordered.

General health. This is of particular importance. Hernia, being a common condition, is frequently found in unhealthy as well as healthy persons of every type. Apart from the conditions previously mentioned, incurable constitutional disease of any kind, whether it be due to tuberculous, malignant, renal, cardiac or the many other causes, will favour supportive rather than operative treatment. When a hernia is found during the course of some treatable constitutional disease, such as diabetes, or anaemia, it may be possible, after an appropriate interval for treatment, to reconsider the treatment of the hernia. The same problem will arise in infectious diseases and in patients who have suffered from multiple injuries.

Treatment by pad and bandage. When a hernia develops during the course of some severe and acute illness it should be reduced and this reduction maintained by a pad applied over the site of the hernia. This pad is held in place by adhesive strapping over which wool and a firm spica type of bandage is applied.

Treatment by Truss

Taken generally, the prescribing of femoral trusses is rare. Indirect inguinal hernia tends on more occasions to be suitable for truss treatment and direct inguinal hernia to be the most common form of groin hernia for which a truss is likely to be prescribed. Measurement is the same for all types of truss and consists of obtaining the distance, as read off a tape measure, from one pubic spine right round the pelvis to that of the opposite side. The level of this passes one thumb's breadth below the anterior superior iliac spine on either side and above the upper part of the buttocks posteriorly. The fitter decides upon the type and size of the pad required and estimates the strength of the truss spring and its shape from examination of the patient at the time of this measurement.

Spring trusses. Whenever possible, in inguinal or femoral hernia, a tempered spring truss, with an adequate, firm and fixed inguinal pad, should be prescribed. The fitting of this should be undertaken by a qualified truss fitter. The Institute of British Surgical Technicians, with the guidance and the assistance of the Royal College of Surgeons, has compiled a register of such fitters whose knowledge of anatomy and practical truss fitting experience has been tested both by apprenticeship and examination. The spring of the truss is between half and three-quarters of an inch in width, being made to conform with the shape of the patient's pelvis and curved in such a manner that the front is lower than the back. It is padded with strips of blanket, flannel or felt, and covered with soft leather, preferably undyed and of natural colour. Rubber-covered and celluloid-covered trusses are also available, these being popular because they are not affected by immersion in water.

The truss pad is somewhat pear-shaped and is fixed to the spring by rivets. It consists of a flat plate covered by cork and padded and its shape will vary with the patient's anatomy and the position of the hernial outlet. A femoral truss has its pad bent at a greater angle and is more elongated than that of an inguinal truss in order to reach the lower-placed femoral opening. Trusses with mobile or adjustable heads have no advantages and certain disadvantages when compared with the simple and standard spring truss described.

Elastic trusses. These consist of a pad, which is placed over the hernial exit, together with a pelvic band of elastic material. On the whole, elastic trusses are less reliable and efficient under conditions of strain than the spring variety, but to the uninitiated they often appear to be more comfortable, lighter and less cumbersome than a spring truss. This opinion sometimes results

Spring-type scrotal truss with notched pad.

from the wearing of a badly-fitted spring truss but, in the hands of a good fitter, a patient usually prefers his properly-fitted spring truss to an elastic one.

Various pads are available and their supportive powers are similar, but it is clear that the direction of pressure cannot be compared with the backwards, upwards and outwards controlled power of the spring inguinal truss. Such pads may be pneumatic or their resilience may be exerted by some kind of rubber or other composition material. In any case, the materials of which these elastic trusses are made are likely to decrease in strength owing to perishing and stretching and this may, under an unexpected strain, allow the hernia to become irreducible.

An elastic truss is more suitable in very thin patients, in those who are suffering from direct inguinal hernia, particularly if it is bilateral and occurring in an old person and in those whose occupation is of a light or retired nature.

A femoral elastic truss carries a thigh-encircling strap of elastic material as well as the pelvic-encircling band. This enables the pad of the truss to move with the movements of the thigh and thus increases the retentive power of the spring. As stated previously, femoral trusses are rarely prescribed, but when they are, fair consideration should be given to the elastic rather than the spring truss in certain patients, because, under any circumstances and however fitted, these femoral trusses are uncomfortable.

Irreducible hernia support. These are indicated when operative treatment is impossible or as a temporary measure. A bag is made to fit the hernia with the patient in a lying position and this tends to prevent further enlargement. It is of no value in the prevention of strangulation,

obstruction or other complications in the hernia, but there is no doubt that such supports are better than the wearing of no support at all in these often old persons. They are most frequently prescribed for the scrotal type of indirect hernia in old men.

Application and testing. All trusses should be applied following reduction and with the patient lying down. The straps are buckled in a comfortable way and the patient is instructed to stand up. He should then move about the room in such a way as to practice the normal straining movements which he is likely to have to carry out. This should include full flexion of the hip and knee joints in the crouching position, together with coughing and straining movements.

Instructions to patient. A truss should always be worn when the patient is ambulant. When a chronic cough or other source of strain is present it is necessary to wear the truss at night. Sometimes an elastic truss may be worn at night, owing to its better suitability for this purpose. Rubber-covered and celluloid trusses may be worn either for swimming or in the bath and in all cases the patient will require instruction as to the thorough drying and powdering of the skin of the areas concerned. For purposes of hygiene, the truss may be washed with soap and water and it is usually advisable to have two made, in order to allow a change to be effected as necessary.

The Operative Treatment of Inguinal Hernia

An inguinal incision is made and the inguinal canal exposed. The sac is then identified and excised at the internal ring. The transfixated and ligated sac stump may be left free or the two ends of the ligature may be passed through the trans-

versus and internal oblique muscles and tied on the surface. In children and young adults, no further treatment other than removal of the sac is undertaken. In direct hernia, it is not always possible to remove the sac, although purse string suture or plication may be performed. There is sometimes bladder within the wall of the sac, and, in hernia-en-glissade, there may be either colon or bladder in the sac wall which cannot be dissected from the sac itself without causing serious damage. In the latter case, a further gridiron type of incision is made above the level of the internal ring and the peritoneum opened. The hernia-en-glissade is then turned 'inside out' and reduced, the peritoneum repaired and a herniorrhaphy or hernioplasty performed.

The posterior inguinal wall may be strengthened by tightening the internal abdominal ring in the transversalis fascia, by plication of the transversalis fascia or by drawing it taut against the inguinal ligament. When the fascia is not regarded as being of sufficient strength in itself materially to alter the stability of the repair, in moderately large and in long-standing indirect inguinal hernia, and commonly in direct inguinal hernia, it will be necessary in addition, or as an alternative, to perform a herniorrhaphy or hernioplasty. In the former, the edges of the hernial defect are drawn together by various means, whereas, in the latter, some autogenous or exogenous substance is added to the tissues of the posterior inguinal wall to reinforce it.

In herniorrhaphy, either the inguinal ligament or the iliopectineal or Cooper's ligament are used as 'mainstay' and either the conjoined tendon or rectus sheath drawn towards them. With Bassini's operation the inguinal ligament and conjoined tendon are sutured behind the spermatic cord and the external oblique is repaired superficial to this, while in Halstead's operation the external oblique aponeurosis is in addition separately sutured also behind the cord—thus making the external ring lie almost anterior to the internal abdominal ring.

In Bloodgood's operation a flap of anterior rectus sheath is turned over downwards and sutured behind the cord, to the inguinal ligament.

The more recent operations of Tanner, in which a tension relieving curved vertical incision is made in the lower part of the internal oblique and transversalis part of the anterior rectus sheath in order to allow the Bassini operation to be performed under less tension, and that of McVay, in which a similar tension-relieving incision is undertaken, but in which the conjoined tendon is joined to the iliopectineal ligament, are both in frequent use today.

Because long-term study of the results of herniorrhaphy operations have been shown in the

past to be followed by a recurrence rate varying between ten and twenty-five per cent., there are many surgeons who have ceased to perform this type of operation. They advise that either a simple sac removal should be done, perhaps with repair of the internal ring, or a hernioplasty. The posterior inguinal wall may be reinforced by a darn of fascia lata from the thigh (Gallie) or from the external oblique (McArthur), or floss suture (Maingot) may be used for the same purpose. No tension is placed on the darn and no attempt is made to draw the edges of the hernial defect together.

Tantalum gauze, steel wire filigree, a whole skin graft or polythene may all be used for the same purpose. These operations are particularly indicated in recurrent hernia and in the presence of tissue deficiency.

When strangulation is present, it will be necessary in the first place to cut or stretch the constricting band and to reduce the hernia. Apart from this, and the treatment of associated dehydration and intestinal obstruction by gastric aspiration and intravenous saline, operative treatment is as for other herniae.

Operative Treatment of Femoral Hernia

The surgical approach is as for inguinal hernia. The cord is exposed and retracted upwards and a transverse incision is made into the transversalis fascia. This exposes the neck of the femoral sac as it passes beneath the inguinal ligament. By drawing the lower skin edge downwards, the femoral sac is then exposed and dissected out as it lies below the inguinal ligament. The sac is opened and the hernia reduced. The empty sac is then turned inside out and brought up behind the inguinal ligament and into the inguinal area when it is ligated and excised. The repair is effected by drawing the conjoined tendon down to the iliopectineal ligament. A similar tension relieving incision may be made as for Tanner's slide operation in inguinal hernia.

The alternative approach, from below the inguinal ligament, is less popular nowadays. In this operation the sac is excised at the exit of the femoral canal and a repair performed by joining the margins of the fascial ring at this level.

Summary

The methods of treatment for inguinal and femoral hernia in common use today and the indications for these have been described. Hernia being a common condition, emphasis has been laid upon the fact that success will depend in any individual patient upon the correct choice of either operative or non-operative treatment.

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women, provided they are re-examined at six-monthly intervals. The majority of pre-menopausal women, however, relapse after the cessation of iron therapy, and the poor results after these patients have been discharged from the hospital out-patient department emphasizes the importance of keeping them under continued surveillance. As these patients are so often indifferent about their health, and most unreliable about taking their treatment, the importance of continuing to take the prescribed dose of iron should be emphasized to them. After the cessation of iron therapy it is so important to follow-up the patients that every effort should be made to contact those patients who do not keep their appointments.

Summary

An investigation of the prognosis of 110 patients with hypochromic anaemia is described.

The prognosis as regards the anaemia is good in male patients and relapse does not occur after stopping iron therapy.

The prognosis as regards the anaemia is poor in female patients. This is because relapse of the anaemia usually occurs in pre-menopausal women after stopping iron treatment, and few women continue to take iron in adequate dosage. Very occasionally relapse occurs in post-menopausal women without any evidence of haemorrhage, and relapse is not completely invariable in

women with menorrhagia after stopping iron therapy.

Emphasis is laid on the importance of keeping pre-menopausal women under continued surveillance in order to obtain a good prognosis.

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