A routine for the conduct of the third stage of labour under normal conditions, and when haemorrhage occurs, is outlined.

The technique of manual removal of the placenta is described and illustrated.

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A REVIEW OF FEMORAL HERNIAE WITH SPECIAL REFERENCE TO THE RECURRENCE RATE OF THE LOW OPERATION

BY

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A great deal of attention has recently been centred on the various methods available for the repair of inguinal herniae and the advantages and disadvantages of the Bassini method; figures have been produced to indicate the appropriate recurrence rates of the various operative procedures at present in favour. Comparatively little, however, has been said of femoral herniae, and it was thought to be well worth while reviewing a series of consecutive cases with a view to ascertaining the recurrence rate of the so-called low operation.

In the years 1942 to 1946 inclusive 178 cases of femoral hernia were operated upon in one of the surgical units of the Royal Hospital, Sheffield: 72 were in men and 106 in women, thus giving a ratio of 1 to 1.5—a far higher incidence in men than is usually accepted. There were 45 strangulations, or 25% of the total.

During the same period there were 807 inguinal herniae, 751 occurring in men and 56 in women, with a total of 21 strangulations, or 2.7%; it will thus be seen that in this series inguinal herniae were 4.5 times more common than femoral, and men were affected 13.4 times more often than women. The statement that inguinal herniae are more common in women than femoral is not in accordance with these figures, for there were only 56 inguinal as compared with 106 femoral, making the latter almost twice as common. (It should be noted that no children under 6 years of age are included in this survey, as they are admitted to the Children's Hospital.)

Of the 178 femoral cases, 109 were on the right side and 69 on the left; thus there would appear to be a greater tendency to herniation on the right side. (This was also found to be the case with inguinal herniae, the right side being affected more often than the left—438 and 369 respectively.) There were only four bilateral cases, in contradistinction to inguinal herniae, where it is undoubtedly much more frequent. The average age was 50 for men and 53 for women, and in the whole series the youngest was 8 and the oldest 79. As already mentioned, there were 45 strangulations (25%)—13 in men and 32 in women. Thus there is a marked difference between the two sexes,

the tendency to strangulation in women being almost three times as great. The frequency of strangulated femoral herniae to inguinal is also striking (25% and 2.6% respectively), and in the case of inguinal strangulation 76% occurred in men. Of the total number of femoral strangulations 7 were of the Richter type. The average age of strangulation was 64 for women and 63 for men; the overall mortality rate was 6 deaths in 45 cases, or 13.3%.

Incidence of Recurrence

Of the total number of cases admitted in the period 1942–6, 120 were personally examined and closely questioned about any disabilities following operation. The technique used was the low method of herniorrhaphy, and a careful follow-up revealed no recurrence in the 54 male patients, though there were four such recurrences in the 66 females, thus making an over-all recurrence rate of 3.3%. The cases were not selected in any way, and included strangulated as well as list cases; as previously stated, the ages ranged from 8 to 79. One of the recurrences was first operated upon in 1920, and at the time of the second operation the tissues were in a generally weak condition; but this has been counted in the present series, as it is a definite recurrence. Five other recurrent cases were successfully operated upon, and routine examination has shown no recurrence after periods varying from 2 to 5 years. In each of these cases a very definite sac was presented, and in four out of the six it did not seem to have been adequately removed at the time of the first herniotomy—a finding borne out by the fact that recurrence had taken place a few months after operation. It is certainly true that the most fruitful source of recurrence lies in failure to remove the sac adequately, the commonest mistake being to transfix the sac too low down and to omit to clean the neck thoroughly (a most important step, if indeed not the most important step of the whole operation), so that after excision of the sac retraction through the femoral canal cannot adequately take place, thus leaving the stump of the sac in the crural ring, which invites a further pouch of peritoneum to form, with ultimately the development of another hernia.

There appeared to be no increased likelihood of recurrence taking place in the aged as compared with the young, nor in relation to heavy work, and strangulated cases were no more likely to recur than the non-strangulated. Chronic chest conditions, too, seemed to have no ill effects, and one patient who suffered much from a severe and persistent cough (as he put it, his cough was so bad it knocked him out of bed) was found to be completely sound, so far as his hernia was concerned, when examined 2½ years after operation, at the age of 72. This is in contrast to inguinal herniae, where there seems little doubt that recurrence is favoured by heavy work, chronic cough, and similar undue strain placed upon the abdominal wall and inguinal canal.

It is of interest to note that 9 inguinal herniae (all in men) were discovered on routine follow-up examination on the side of the femoral herniotomy, and in every case no history could be obtained of an inguinal hernia having been present before operation. This is of considerable importance, first because patients often, and very naturally, assume that the femoral hernia has recurred—an assumption sometimes shared by their doctor; and secondly because it casts some doubt on the statement that Lotheissen's operation, by interfering with the posterior wall of the inguinal canal, predisposes to the subsequent development of a direct inguinal hernia. In the present series of cases no such interference took place, yet 7.5% when examined exhibited an inguinal hernia. Presumably a certain number must have been present initially and been

overlooked, the femoral hernia being the presenting finding, whilst others would appear to have developed subsequently: it seems reasonable to suppose that a patient who develops one form of hernia is more liable to develop another. From the practical point of view it is of importance to examine carefully the inguinal regions in every case of a femoral hernia before confining the operation to the femoral canal. It is also of importance to examine recurrent femoral herniae carefully before accepting the fact that recurrence has taken place, for in a number of instances the femoral herniorrhaphy will be found to be sound, the so-called recurrence being inguinal in nature.

Causation of Femoral Hernia

It is usually assumed that whereas indirect inguinal herniae are certainly congenital in origin, inasmuch as there is a pre-existing peritoneal sac, femoral, on the other hand, are probably acquired—that is to say, increased abdominal pressure at one time or another pushes out a peritoneal pouch through the patent femoral canal and so the hernia is produced. With regard, however, to the age limits of femoral hernia, the youngest case in this present series being 8 (though recently a strangulated Richter hernia was observed in a child of 3), such cases cannot be regarded as other than congenital in origin. If some are undoubtedly congenital the possibility of all being so has to be seriously considered—a point of view held by Hamilton Russell, who thought that a peritoneal diverticulum was present in the femoral canal by virtue of the developing limb-buds drawing down the peritoneal lining of the abdomen along the course of the femoral artery.

The fact that the result of operative cure is so satisfactory, especially in the elderly, would tend to support the congenital theory, for efficient closure of the crural ring is difficult to achieve, if indeed not impossible, and if the majority of femoral herniae were acquired it would seem likely that the recurrence rate would be greater, as is indeed the case with direct inguinal herniae when compared with indirect. On the other hand, the average age of development of a femoral hernia is 50 or over, and this is more in keeping with the acquired as opposed to the congenital theory; it therefore seems probable that, although some cases are undoubtedly congenital in origin, the majority are acquired. In this way the greater frequency of femoral herniae in the female sex can be accounted for, as the female pelvis is broader than the male and consequently the femoral canal is larger, with a greater tendency to the development of a hernia, though, as already stated, this has been found to be only one and a half times more common in the female.

Whatever the causation of a femoral hernia, be it congenital or acquired, there can be no doubt that operation should be advised in nearly every case, irrespective of age, and the operation strongly recommended is the low herniotomy repair. For some years now the high operation has not been performed; it was considered unnecessary, and the present follow-up figures of just over a 3% recurrence would appear to justify such a course. Other more complicated operative procedures sometimes recommended, such as Henry's abdominal extraperitoneal approach, would appear to have but very limited use.

Vital Points in the Low Operation

The vital steps in the procedure are undoubtedly the isolation of the neck of the sac at the highest possible level, the cleaning of the sac completely free from all extraperitoneal fat, and the separation of the bladder from

the upper part of the sac. In carrying out these procedures care must be taken on the one hand not to split the peritoneal sac, thus making it difficult to transfix securely, and on the other not to injure the bladder when freeing it from the neck of the sac. The teaching of the low femoral repair is to transfix the sac, the whole sac, and nothing but the sac, and that means no bladder and no extra-peritoneal fat.

It is usually assumed that when a diverticulum of the bladder is found on operating for a recurrent femoral hernia the diverticulum is to be blamed for the recurrence, whereas it is more likely to be the opposite—that is to say, at the time of the first operation the sac was transfixed too low down and the bladder left adherent to the neck, with the inevitable result that recurrence took place, the bladder tending to pull down a further pouch of peritoneum, the mechanism being the same as for a sliding hernia.

From the low approach, either through a short vertical incision over the femoral canal or, better, through an incision just below and parallel to the inner half of the inguinal ligament (this gives a considerably nicer scar and an equally good exposure), it has been found that the neck of the sac can readily be cleaned and defined and freed from all surrounding structures with comparative ease, and when ligated and excised retracts well above the inguinal ligament. It cannot be too strongly emphasized or too often repeated how important is the clean dissection of the sac and its isolation to as high a level as possible, and when transfixed and excised the ligated end should disappear through the canal with perfect freedom; if the sac has not been sufficiently well defined this will not readily happen, as it will be found that the ligature has included other structures as well as the peritoneum of the sac, and recurrence is much more likely to take place subsequently.

It is probably sufficient in most instances merely to excise the sac, but it is a simple procedure to suture the inguinal ligament to the pectineus fascia, and it is as well to narrow the canal in this way. It has been found that the method whereby a flap of pectineus fascia is turned up and sutured to the inguinal ligament, thus obstructing the femoral canal, is of little practical use, as the fascia is too thin to be of much value and the canal is closed at its exit rather than at its entrance.

The criticisms sometimes levelled at the low operation, that the sac cannot be ligated high enough and that the femoral canal cannot be adequately closed from below, have not been found to be valid. The recurrence rate of this procedure has been stated to be as high as 20–30%, but the present series disproves such a statement, which, to say the least of it, is misleading to the inexperienced surgeon and tempts him to embark on one of the more complicated operative procedures, sometimes with anything but pleasing results.

The low repair is so simple, and can so easily be performed under local analgesia with such gratifying end-results and in non-strangulated cases with an almost negligible mortality (there were no deaths in the present series), that it would seem to be making surgery needlessly difficult to perform femoral herniotomy in any other way except under very special circumstances.

Comment

In the present series all the strangulated cases were operated on in this manner and no undue difficulties were encountered. The risk of injury to an abnormal obturator artery when operating from the low approach would appear to be very small, and in a far greater number of cases than are at present under review no such injury has occurred.

In cases requiring a resection for gangrenous bowel it has been found to be more satisfactory to open the abdomen through a separate paramedian incision rather than attempt resection from below, and the various methods whereby more room is obtained, such as division of the inguinal ligament, are not to be recommended. In the vast majority of cases resection is not required, and the operation can be most successfully completed from the low approach only.

Summary

A series of 120 cases of femoral hernia treated by the low operation have been carefully examined and the recurrence rate found to be 3.3%.

There was no recurrence in the 54 male cases. Heavy work, chronic cough, and the presence of strangulation did not especially predispose to recurrence. Of this series, six cases had previously been operated upon: one of these has since recurred; the other five have remained sound up to date.

Recurrence may take place at any time after operation—in the present investigation from three months to seventeen years—though it is much more likely to recur within the first year.

The clean dissection of the neck of the sac and its high transfixion are of prime importance, and only the sac itself must be included in the ligature. This clean dissection can be adequately performed from the low approach.

The low operation is suitable for almost every case, and gives most satisfactory results.

Even though the inguinal canal was not disturbed, 7% subsequently developed an inguinal hernia on the same side as the previous femoral repair.

Operation should be advised for nearly all cases of femoral hernia, as the results are so good and the low repair is so simple. Remarkably few patients are considered unfit for herniotomy, and the ever-present danger of strangulation is an indication for treating all cases by this surgical procedure.

The high incidence of a Richter hernia is to be noted.

Figures sometimes given stating that the low operation has a high recurrence rate would seem to be quite misleading.

The relationship of inguinal to femoral hernia has been found to differ in some respects from the accepted teaching, notably in the finding that femoral herniae are twice as common as inguinal in women, and that femoral herniae occur only one and a half times as often in women as in men.

In inguinal hernia the percentage of strangulations was only 2.6, whilst in femoral hernia the figure was as high as 25%. The presence of a femoral hernia is therefore potentially almost ten times as dangerous as an inguinal, and whilst a truss is sometimes advisable for the latter it is highly doubtful if it should ever be advised for the former.

I wish to thank Mr. H. Blacow Yates, senior surgeon, the Royal Hospital Unit, Sheffield, under whose care all these cases have been admitted, for his criticism and help in preparation of this paper.

The first of the series of regional courses in health education which the Central Council for Health Education is providing for various professional groups in university centres throughout the country was held in Birmingham on Sept. 13 and 14 for public health nurses, of whom 117 attended as the nominees of 12 local authorities in Hereford, Leicestershire, Shropshire, Stafford, Warwick, and Worcestershire. The course was held in the extra-mural department of Birmingham University, and the six lectures were given by Dr. R. G. Record, Lecturer in Social Medicine ("Personal and Environmental Factors Affecting Health"), Dr. Jean Mackintosh, Reader in Paediatrics and Child Health ("Physical Care of the Child—the Modern Outlook, and Problems of Childhood"), Mr. E. C. Cull, B.Sc., Lecturer in Education and Psychology ("Learning and Teaching") of the staff of Birmingham University, Miss M. Slack, S.R.N., S.C.M., Tutor to the Health Visitors' Training Course, City of Birmingham ("Psychological Needs of the Child"), and Dr. Norman Parfit, Deputy Medical Adviser, the Central Council for Health Education ("Health Education—the Nurse's Part"). Dr. H. P. Newsholme, medical officer of health for the City of Birmingham, took the chair at the opening lecture. A similar course for sanitary inspectors in this area will be held in Birmingham on Nov. 15 and 16.

REPAIR OF FEMORAL HERNIA BY A "POSTAGE STAMP" FASCIAL GRAFT

BY

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The closure of the femoral canal presents a problem which has not yet been solved by the adoption of a standard technique, although numerous methods have been described and have their adherents. As the proportion of femoral to inguinal herniae is about 1 to 15 it is not easy for any individual surgeon to collect a large series and allow an adequate time to elapse before assessing the final results.

The method here described was first performed by me in May, 1938, and has since been employed in 53 cases (51 patients). The principle of the operation is to cut a rectangular section of external oblique aponeurosis, leaving the attachment to Poupart's ligament intact, and then swing it down so that the free margin can be sutured to the periosteum of the pubic ramus. The femoral canal is thus closed by a trap-door of living fascia. The operation can be performed under a regional block with 1% procaine solution, but a spinal or general anaesthetic is preferable.

Technique

1. The incision extends from the midline, outwards for 4 in. (10 cm.), parallel to Poupart's ligament and 1 in. (2.5 cm.) above this structure. It is carried down to the external oblique aponeurosis.
2. Haemostasis is secured and "tetra" cloths are clipped into position.
3. Poupart's ligament is defined and a 3-in. (7.5-cm.) incision made through the external oblique aponeurosis a full inch above the upper border of the ligament.
4. In the male the cord is retracted. The fibres of the conjoint tendon are then divided transversely for 1 in. at the level of the femoral canal.
5. The neck of the sac is defined, the peritoneum opened, the sac dissected out and amputated at its neck.
6. The neck of the sac is closed with fine proofed silk and the original opening in the peritoneum closed.
7. The upper edge of the wound is retracted by a Czerny retractor deeply placed and the lower edge pulled down by two Spencer Wells forceps applied to the lower cut edge of the external oblique. The upper end of the femoral canal is then clearly defined; the coverings of the sac are ligated and usually left *in situ* so as to fill up the canal.
8. A flap, as illustrated, is cut from the lower edge of the external oblique after delineating the points of section with Spencer Wells forceps. It should be a little over 1 in. square according to the size of the femoral canal.
9. The femoral vein is retracted laterally with the forefinger. A very small fully curved steel needle on a holder is made to take a good bite of the periosteum of the pubis at the point where the internal border of the femoral vein lay before it was retracted. The fine proofed-silk sutures are then threaded twice through the free edge of the graft (as in inserting a pin). The double bite prevents the tissue tearing, and a knot is tied in the ligature at this point.
10. Two similar sutures are passed and fixed, one in the middle of the canal and graft and the other at the internal end.