Current Practice

Recurrent Inguinal and Femoral Hernia*

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From 1 January 1945 to 1 January 1967, about 50,000 repairs for primary inguinal and femoral hernia were performed at Shouldice Hospital. Recurrences developed in 364 (0.7%).

This article discusses and analyses these recurrences. As a result suggestions helpful to both family practitioner and surgeon are made regarding the management of primary inguinal and femoral hernia. This group of 364 recurrences is distinguished from another group of about 5,000 recurrences that occurred in patients who had undergone a primary repair elsewhere and who were subsequently admitted to this hospital for repair of a recurrent hernia. This latter group is the subject of another investigation and is not discussed further.

The relative uniformity of the conditions was thought to be a favourable feature of this review. The surgical management of the patients was standardized, since a similar technique was used by all the surgeons who performed the operations. A comprehensive and long-term follow-up plan existed throughout the period. All patients were followed for at least 10 years by one of three methods: (a) a routine annual examination in this hospital, (b) an annual examination and report by an outside physician, or (c) an annual reply from the patient to a standard questionnaire. Hence it was thought unlikely that many patients who had developed a recurrence remained unknown.

The recurrence rate for operations performed in any one year fell from 17% in 1945 to about 1% in 1950 and remained at or below that figure for each subsequent year (Fig. 1). After five years only 50% of the recurrences had appeared, and even after 10 years only 75% had shown up (Fig. 2). The need for a minimum 10-year follow-up plan is evident and recurrence rates evaluated over a shorter period are inaccurate unless extrapolated.

Recurrences before and after 1951

Period	Primary Repairs Performed	No. of Recurrences	Recurrence Rate
1945-50	5,000	192	3.8%
1951-67	45,000	172	0.4%

This series of 364 recurrences has been divided into two groups—those occurring before and after 1951 (see Table). The recurrence rates of 3.8% and 0.4% suggest in conjunction with Figs. 1 and 2, that the technique used initially was inadequate but that with increasing experience a pronounced improvement had occurred.

Of the 364 recurrences, 224 were inguinal, 137 were femoral, and 3 were combined (inguinal and femoral). Since inguinal repairs outnumbered femoral repairs by a ratio of about 50 to 1 in this series of 50,000 herniorrhaphies, this very different ratio of recurrent hernia types is of considerable interest and importance and is discussed more fully below.

In 136 cases a further operation was not performed because of advanced age, or because of the small size of the recurrence

or because the recurrence was asymptomatic. Clinically 84 of these 136 cases were recurrent inguinal herniae and 52 were recurrent femoral herniae.

The distribution of the types of recurrent herniae found in the 228 cases undergoing a further operation was indirect inguinal in 8, direct inguinal in 128, femoral in 87, and combined in 5. It naturally forms the substance of our understanding of these cases.

FIG. 1.—Recurrence rate after primary inguinal and femoral hernia repairs, 1945-67.

FIG. 2.—Primary inguinal and femoral herniae 1945-67. Interval before appearance of recurrence.

Recurrent Indirect Inguinal Hernia

There were only eight cases of recurrent indirect inguinal hernia, yet more than 30,000 primary indirect inguinal repairs were performed during the period reviewed. This low recurrence rate for primary indirect inguinal repair suggests that the technique now used is adequate, and, conversely, that if any series of recurrences contains a high percentage of recurrent indirect inguinal herniae, then the technique used should be reviewed. In this hospital the indirect hernial sac is routinely freed, not only from cord structures but also around the neck at the internal ring where it is adherent to transversalis fascia. This facet of technique is regarded as being just as important as high ligation of the indirect hernial sac.

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The same technique is also used in dealing with sliding inguinal hernia. No complex procedure is thought necessary even when the sliding inguinal hernia is very large. Such a hernia is carefully freed and then reduced within the abdomen, usually without any excision of the sac, sometimes without even opening it. More than 2,000 operations for repair of sliding inguinal hernia were performed during the period, with a recurrence rate of less than 1%, and only one of these recurrences was itself a sliding inguinal hernia.

Only three of these eight indirect inguinal recurrences had followed repair of a primary indirect inguinal hernia. In all eight the recurrence was unilateral. All occurred in men. An indirect inguinal recurrence after repair of a primary indirect inguinal hernia in this hospital is now regarded as a very rare type of recurrence. So far no further recurrence has developed in these eight patients.

Recurrent Direct Inguinal Hernia

Until 1951 recurrent direct inguinal hernia was easily the most common type of recurrence. Up to the end of 1950 there were 102 cases, while only 26 developed following a repair performed since then. Recurrent direct inguinal hernia has therefore also become rare here, though not so rare as recurrent indirect inguinal hernia.

The improvement occurring since 1951 is thought to correspond to a changing attitude to two features of the operation. Firstly, at about that time routine excision of the cremasteric muscle became a standard feature of the repair. This removal allows an excellent, almost anatomical, view of the posterior wall of the inguinal canal. Secondly, and coincidental with excision of the cremaster, a growing experience developed with adequate assessment and repair of the posterior wall of the inguinal canal. An unexpected direct inguinal hernia or a weakness of the posterior wall was often revealed, either by direct inspection or through the routine testing of the strength of the posterior wall by inserting a finger at the internal ring and passing it extraperitoneally, medially, and deep to the transversalis plane. In the presence of a direct inguinal hernia, or of a weakness in this region, the transversalis plane was divided to the pubic bone in the line of the inguinal canal. A direct inguinal hernia can usually be dealt with by simple freeing and reduction, but occasionally by excision or invagination. An overlapping type of repair of the posterior wall is then performed using four continuous lines of No. 34 gauge stainless-steel wire sutures inserted firmly but without tension. It is noteworthy that continuous, not interrupted, lines of sutures are used.

The typical site of a recurrent direct inguinal hernia was far medially near the pubic bone. These recurrences were usually small, usually consisted of extraperitoneal fat, and in this series occurred only in men. They were probably most often due to inadequate technique with the medial part of the repair. Both primary and recurrent direct inguinal herniae are rare in women. Perhaps when this type of recurrence occurs in women it is as often the result of an unnecessary repair as of an inadequate repair.

Recurrent Femoral Hernia

Fourteen cases of recurrent femoral hernia occurred after both types of primary repairs performed before the end of 1950, while 73 occurred after repairs performed since then. Since 1951 75% of all recurrences were femoral and only 25% inguinal. These 87 cases can be divided into three subgroups: (a) recurrent femoral hernia after inguinal herniorrhaphy, (b) recurrent femoral hernia after femoral herniorrhaphy, and (c) recurrent femoral hernia after inguinofemoral herniorrhaphy. Some surgeons would classify the herniae in subgroup (a) as pseudorecurrences and those in subgroups (b) and (c) as true recurrences. In this review all are recorded as recurrences.

After Primary Inguinal Hernia

Since 1951 this has become the most frequent type of recurrence (67 cases), constituting four-fifths of all femoral recurrences recorded. Only 2 of these occurred in women. Hence any significant improvement in the overall figures can only follow a reduction in the recurrence rate in men who have undergone repair of a primary inguinal hernia.

These recurrences were carefully reviewed for possible aetiological factors. Undoubtedly a few were missed herniae, but since examination of the femoral area has been routine for almost 18 years, this number is probably small. The majority were therefore either new herniae or herniae created by the original repair, or they were a combination of both. They may have been the result of an undue upward pull on the transversalis and on the inguinal ligament, because too much tension had been used in the inguinal repair, with corresponding weakening of the femoral region. The overall recurrence rate (0.5%) is very low, however, and there seems little justification for radical changes. Nevertheless, particular attention to technique may be indicated in men aged 55 or more who have bilateral primary direct inguinal herniae, and who are of poor or slight physique, because the recurrence rate in this group is somewhat higher. If the element of tension in such cases seems greater than normal and especially if a femoral hernia is also present it may be wise to stage the two repairs several months apart.

After Primary Femoral Hernia

During the period reviewed about 625 primary femoral hernia repairs were performed in cases where no ipsilateral inguinal hernia existed. The men only slightly outnumbered the women. Eight recurrent femoral herniae developed, four in each sex, giving an overall recurrence rate of 1.3%.

In this hospital repair of femoral hernia is usually performed with a subinguinal technique. In men the inguinal region is nearly always also opened before the femoral repair is done, because in about 50% an ipsilateral inguinal hernia is also present. The association of these two primary hernial types is much less frequent in women and therefore the indications for opening the inguinal region in a woman with a primary femoral hernia are fewer.

After Primary Combined Herniae

About 350 repairs were performed for primary combined ipsilateral inguinal and femoral herniae. Of these about 300 occurred in men and 50 in women. Eight recurrent femoral hernia developed, a recurrence rate of 2.3%. All were in men. In two the inguinal component was indirect, in five it was direct, and in one it was a combination of both.

In this type of hernia it is possible that the conflicting tensions necessary for adequate simultaneous repair of the two primary hernial types, inguinal and femoral, on the one side is the reason for this higher recurrence rate.

Conclusion

This review showed that as experience with primary herniorrhaphy increased the overall recurrence rate fell; the proportion of recurrent inguinal herniae in the series fell, so that eventually recurrent direct inguinal hernia became rare and recurrent indirect inguinal hernia became very rare; and recurrent femoral hernia constituted an ever-increasing proportion of the total number of recurrences.

FURTHER READING

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