PAPERS AND ORIGINALS

How accurately can direct and indirect inguinal hernias be distinguished?

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Summary and conclusions

An inguinal hernia was clinically diagnosed as direct or indirect by paired surgeons on 134 occasions. When compared with the findings at operation the hernia was correctly diagnosed in 60 of 78 observations when it was indirect and in 33 of 56 when it was direct.

This level of accuracy does not warrant continuing the practice of attempting to distinguish one type of inguinal hernia from another.

Introduction

The features that are said to enable the clinician to distinguish a direct inguinal hernia from an indirect inguinal hernia are restated with each edition of the standard surgical textbooks[1-3] and are included in a more recent volume.[4] These features are generally accepted as being reliable guides that make the differentiation "usually straightforward."[5] None the less, the various techniques do not appear to have been objectively scrutinised, which was the purpose of this study.

Patients and methods

The study was confined to men aged over 30 with inguinal hernias. Each patient was examined independently by two experienced surgeons using the following commonly used methods to attempt to determine whether the hernia was direct or indirect.

Direction of cough impulse—A bulge projecting ventrally on coughing indicates a direct hernia, in contrast with an impulse passing along the line of the inguinal canal which indicates an indirect hernia.

Invagination of scrotal skin—The examining finger is passed along the inguinal canal with the patient supine to determine whether a cough impulse hits the fingertip (indirect hernia), or the dorsum of the finger (direct hernia). This is combined with the "sign of the pubic bone" as described by Hamilton Bailey[6]: when the pubic tubercle can be clearly defined this indicates a lax posterior wall to the canal and thus a direct hernia.

Inguinal occlusion test—The internal ring is occluded with finger pressure; if the cough impulse is controlled the hernia is indirect, but if it is still manifest, the hernia is direct.

The diagnosis and the grounds for making it were recorded. When the three signs conflicted the clinical diagnosis was made in accordance with the results of the two signs that agreed. This diagnosis was compared with the findings at operation.

The test of difference between two proportions[7] was used, where u is a standardised normal variable, and the χ^2 test was used as a test of frequencies.

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Results

One hundred and thirty-four observations were made on 67 groins and compared with the findings at operation, which indicated that 58% of the hernias were indirect and 42% direct. The table shows that the diagnosis was correct in 77% of the indirect hernias and in 59% of the direct hernias. Thus, even allowing for the higher incidence of indirect hernias in this series, there was a significant difference between the actual incidence of hernia and the proportion of correct diagnoses both in cases of direct hernia and in cases of indirect hernia. The diagnosis was significantly more accurate when the hernia proved indirect than when direct ($\chi^2=4\cdot35$, $p<0\cdot05$).

Clinical diagnosis related to operative findings in 134 observations on inguinal hernias

Inguinal hernia	Operative findings	Diagnosis	
		Correct	Incorrect
Indirect	78*	60*	18
Direct	56†	33†	23

*$u=3\cdot259$, $p<0\cdot002$. †$u=2\cdot519$, $p<0\cdot02$.

Clinically, therefore, a diagnosis of an indirect hernia was correct in 72% (60 out of 83) of cases and a diagnosis of a direct hernia was correct in 65% (33 out of 51) of cases. No sign of differentiation proved infallible and no one surgeon did significantly better than another. When the same clinical diagnosis was agreed between two surgeons, however, this proved more often correct than when it was in dispute (91% of the time compared with 45%).

Discussion

Many clinical signs are taught to successive generations of medical students, yet their importance and reliability have not been as carefully assessed as have more recent aids to diagnosis. The three principal methods used in this study to distinguish direct hernias from indirect hernias were chosen because they seemed to be the most likely to give an unambiguous result. Men below the age of 30 were excluded to prevent any observer bias towards a diagnosis of indirect inguinal hernias, which are well known to preponderate in that age group.

Our results indicated that although the methods enable correct prediction of the nature of the hernia to be made more often than by chance, even considering the relative incidence of the types of hernia, they do not enable a diagnosis to be made with complete accuracy. Two observers in agreement were much more accurate in their diagnosis than when in dispute, but since agreement occurred in just over half the cases the overall accuracy remained disappointing. Agreement was reached probably only when the signs were more evident.

At the start of this study the opinion of the participating surgeons was that the inguinal occlusion test was the most helpful method of distinguishing between the types of hernia. This did not prove so in practice. Two reasons for this were encountered during the study. Firstly, the internal ring may be so distended by a large hernia sac that the occluding finger fails to control the ring, and the hernia is adjudged as direct. Secondly, a laterally placed funicular direct hernia may be controlled by a finger slightly displaced medially, leading to a diagnosis of an indirect hernia sac.

These findings may be of little clinical importance where the policy is to operate on all inguinal hernias. Occasionally, however, it has been implied that it is acceptable to treat direct hernias conservatively because they seldom strangulate.[5 8] Here a policy of management has been constructed on flimsy grounds because our study shows that the diagnosis of direct hernias is suspect.

While we advocate medical judgment based on skill and experience, where the possibility of assessing these arts objectively arises we suggest that a disservice is done to clinical science by not heeding the results of such a study. At a time when there are great pressures on the student curriculum any exercise that can be shown to be of little relevance or of poor reliability, however hallowed by usage, is best disregarded. We therefore believe that there is no further merit in attempting to distinguish between indirect and direct inguinal hernias.

References

1 Rains AJH, Ritchie HD, eds. *Bailey and Love's short practice of surgery*. 17th ed. London: Lewis, 1977.
2 Ellis H, Calne RY. *Lecture notes on general surgery*. 5th ed. Oxford: Blackwell, 1977.
3 Macfarlane DA, Thomas LP. *Textbook of surgery*. 4th ed. Edinburgh: Churchill Livingstone, 1977.
4 Browse N. *An introduction to the symptoms and signs of surgical disease*. London: Arnold, 1978.
5 Ellis H. Inguinal hernia. *Br J Hosp Med* 1970;**4**:9-14.
6 Clain A, ed. *Hamilton Bailey's physical signs in clinical surgery*. 15th ed. Bristol: Wright, 1973.
7 Moore PG, Shirely EA, Edwards DE. *Standard statistical calculations*. 2nd ed. London: Pitman, 1972.
8 Kettlewell MGW. Lumps in the groin and scrotum. *Br J Hosp Med* 1973; **9**:724-30.

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Management of acute stroke in the elderly: preliminary results of a controlled trial

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Summary and conclusions

A randomised controlled trial compared the management of elderly patients with acute stroke in a stroke unit and medical units. A significantly higher proportion of patients discharged from the stroke unit (78 of the 155 admitted) were assessed as independent compared with patients discharged from medical units (49 of the 152 admitted). The intensive use of treatment that might have been implied by creating a stroke unit did not occur, although almost all the patients admitted to the unit received occupational therapy while only 47% of the patients admitted to medical units received occupational therapy. The delay before starting treatment was significantly shorter in the stroke unit.

Results of this trial show that the stroke unit improved the natural history of stroke by increasing the proportion of patients who were returned to functional independence.

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Introduction

Stroke is a major burden on the community[1] and will remain so while stroke prevention is in its infancy.[2] The indications for therapeutic or surgical intervention after stroke remain few,[3] and efforts to improve prognosis in the period immediately after onset by providing intensive care facilities have been unsuccessful.[4] Attention should therefore be shifted to establishing the most effective means of rehabilitating patients with stroke.

While general agreement exists on the principles of rehabilitation that should be adopted, little or none exists on how to organise the staff and facilities for stroke rehabilitation.[5] This was recognised by a report of the Royal College of Physicians, which recommended setting up a few stroke units based on existing departments of geriatric medicine, neurology, or rehabilitation, to act as focal points for developing facilities and organising services.[6] The report emphasised that any scheme designed to establish stroke units must include a method of assessing their value. We report the preliminary findings of such an assessment, which was undertaken to test the hypothesis that a higher proportion of patients may be returned to independence