

# Clinical factors influencing return to work after ambulatory inguinal herniorrhaphy in Hong Kong

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## Abstract

Ambulatory inguinal hernia repair is the commonest day case general surgery operation. The present study was conducted to evaluate factors influencing the contemporary pattern of convalescence following ambulatory inguinal hernia repair in Hong Kong. A total of 271 consecutive ambulatory inguinal hernia repairs were performed at a day surgery centre from December 1995 to December 1998. The convalescent period prior to resuming work was analysed by multi-variate analysis with respect to significant clinical variables. A sick leave of 3 weeks was adequate for most patients following uncomplicated ambulatory inguinal hernia repairs. Factors associated with early return to work included age  $\leq 50$  years, indirect inguinal hernia and sedentary occupation. Occupation was the only independent factor affecting the duration of time off work on multi-variate analysis. © 2001 Elsevier Science B.V. All rights reserved.

*Keywords:* Day case; Survey; Convalescence; Inguinal hernia; Chinese

## 1. Introduction

Ambulatory inguinal hernia repair is the commonest day case operation [1]. Day surgery has been regarded as a cost-effective and patient-centred quality service [2–4]. In contrast to Western surgical centres, where day surgery has been in practice for more than 20 years, ambulatory surgery was introduced in most Asian countries in the last decade. The convalescence pattern following ambulatory inguinal hernia repair has not been reported in Asians. We conducted a survey to identify significant factors influencing the convalescence period after ambulatory inguinal hernia repairs and recommend an appropriate duration of sick leave for future patients.

## 2. Subjects and methods

From December 1995 to December 1998, 271 ambulatory inguinal hernia repairs in 259 consecutive patients were performed at our Day Surgery Centre, Tung Wah Hospital, The University of Hong Kong Medical Centre.

There were 240 men and 19 women. A telephone survey was conducted in 1999. The occupations of the patients were documented and classified into sedentary (clerical), light duty, heavy duty and retired. Heavy-duty workers refer to manual workers who need to lift heavy objects. Subjects were asked the duration of their post-operative convalescence period prior to the resumption of their jobs and normal activities. All the respondents' hospital records were then reviewed. The operative records, including the operation technique and hernia anatomy, were documented. Post-operative morbidity rate was recorded.

### 2.1. Statistical analysis

Statistical comparisons of the duration of time off work and time to resume normal activities were analyzed by Student's *t*-test or one-way analysis of variance (ANOVA) with respect to five clinical variables, including age, sex, occupation, hernia anatomy and operative repair method. Significant variables were then chosen for multiple regression analysis to identify independent factors influencing the time off work. Differences were considered significant if the *P*-value was less than 0.05. Values are expressed as means  $\pm$  S.E.M.

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### 3. Results

#### 3.1. Demographic features and clinical outcomes

A total of 149 patients completed the telephone survey, leading to a response rate of 57.5%. There were 134 men and 15 women. The mean age of the study population was  $49 \pm 15.7$  (S.D.) years. The occupations of the patients were sedentary ( $n = 48$ ), light duty ( $n = 58$ ), heavy duty ( $n = 15$ ) and retired ( $n = 28$ ). Operative methods included nylon darn ( $n = 98$ ), Bassini repair ( $n = 29$ ) and Prolene mesh hernioplasty ( $n = 22$ ). The operative findings were indirect inguinal hernia ( $n = 92$ ), direct inguinal hernia ( $n = 46$ ), pantaloon inguinal hernia ( $n = 6$ ), sliding hernia ( $n = 3$ ) and recurrent direct inguinal hernia ( $n = 2$ ).

Of these 149 patients, 146 (98%) were discharged on the day of operation. Three patients were admitted to hospital after operation because of dizziness ( $n = 1$ ), hyperglycaemia ( $n = 1$ ) and haemoptysis ( $n = 1$ ). All patients were followed up at our clinic 1–2 weeks after operation. One patient was readmitted because of fever and was later diagnosed to have pulmonary tuberculosis. Two patients had post-operative complications, including scrotal swelling ( $n = 1$ ) and wound haematoma ( $n = 1$ ), which resolved spontaneously. All other patients ( $n = 143$ ) had uneventful recovery.

#### 3.2. Time away from work

The overall mean duration of time off work ( $n = 121$ ) was  $2.8 \pm 0.29$  (S.E.M.) weeks. Table 1 compares the time off work among different clinical variables. Young patients ( $\leq 50$  years) who had a sedentary job and an indirect inguinal hernia returned to work significantly earlier. Occupation was the only independent factor affecting the duration of time off work on multiple regression analysis.

#### 3.3. Time to resumption of normal activities

The overall mean convalescent period prior to resuming normal activities ( $n = 149$ ) was  $4.1 \pm 0.27$  (S.E.M.) weeks. Table 2 compares the time to return to normal activity among different clinical variables. Only the type of occupation influenced the duration of recovery prior to resumption of normal activities.

### 4. Discussion

Inguinal hernia repair is one of the commonest operations in the world. More than 500 000 repairs are performed in USA per annum [5]. The total number of days off work in patients with hernia repairs has significant implications for the economy. In the 1970s and

1980s, patients often took 2–3 months off work after inguinal hernia repair [6–9]. In the past 2 decades the reported convalescence period following inguinal hernia repair has been decreasing [10,11]. In the present study most of our patients returned to work in 3 weeks, which was comparable with recent reports in the UK [10,11].

Increased risk of hernia recurrence is a main concern of patients with respect to early return to work [12]. Lichtenstein et al. [13] showed that sutured wound maintained a 70% strength of the intact tissue during the first two months following hernia repair. In the light of this observation, normal physical exertion is permitted following hernia surgery. Immediate resumption of normal activities is recommended as long as the patient can carry out the activity comfortably [14]. Normal activity has not been shown to increase the risk of hernia recurrence or jeopardize wound healing [15,16]. A hernia recurrence rate of less than 1% was reported in over 2000 patients who resumed normal activity immediately after operation [17].

Consistent with previous findings, heavy duty workers returned to work significantly later than sedentary workers [10,18]. Thorup et al. [18] demonstrated an independent significant correlation between the load of occupation and the length of sick leave. Patients with active and heavy work duties took a median sick leave

Table 1  
Clinical factors associated with early return to work<sup>a</sup>

Clinical variables	Weeks to return to work	P
<i>Age</i>		0.04 <sup>†</sup>
Age $\leq 50$ years ( $n = 58$ )	$2.5 \pm 0.24$	
Age $\geq 50$ years ( $n = 54$ )	$3.1 \pm 0.55$	
<i>Sex</i>		0.38 <sup>†</sup>
Male ( $n = 103$ )	$2.8 \pm 0.32$	
Female ( $n = 9$ )	$2.7 \pm 0.37$	
<i>Occupation</i>		<0.001*
Sedentary ( $n = 48$ )	$1.9 \pm 0.19$	
Light duty ( $n = 58$ )	$2.7 \pm 0.42$	
Heavy duty ( $n = 15$ )	$5.7 \pm 1.33$	
<i>Hernia anatomy</i>		0.02 <sup>†</sup>
Indirect inguinal hernia ( $n = 75$ )	$2.6 \pm 0.24$	
Direct inguinal hernia ( $n = 34$ )	$3.2 \pm 0.82$	
<i>Operative methods</i>		0.06*
Nylon darn ( $n = 78$ )	$2.3 \pm 0.29$	
Bassini herniorrhaphy ( $n = 19$ )	$3.9 \pm 1.05$	
Mesh hernioplasty ( $n = 15$ )	$3.6 \pm 0.76$	

<sup>a</sup> Figures represent mean  $\pm$  S.E.M.

<sup>†</sup> Student's *t*-test.

\* ANOVA.

Table 2  
Clinical factors associated with early resumption of normal activities<sup>a</sup>

Clinical variables	Weeks to return to normal activities	P
<i>Age</i>		0.12 <sup>†</sup>
Age ≤ 50 years (n = 66)	4.5 ± 0.49	
Age ≥ 50 years (n = 80)	3.8 ± 0.27	
<i>Sex</i>		0.57 <sup>†</sup>
Male (n = 131)	4.1 ± 0.29	
Female (n = 15)	3.7 ± 0.64	
<i>Occupation</i>		0.04*
Sedentary (n = 46)	3.7 ± 0.39	
Light duty (n = 57)	4.9 ± 0.55	
Heavy duty (n = 15)	4.8 ± 0.60	
Retired (n = 28)	2.9 ± 0.31	
<i>Hernia anatomy</i>		0.14 <sup>†</sup>
Indirect inguinal hernia (n = 94)	4.0 ± 0.29	
Direct inguinal hernia (n = 45)	4.6 ± 0.61	
<i>Operative methods</i>		0.76*
Nylon darning (n = 96)	4.1 ± 0.37	
Bassini herniorrhaphy (n = 28)	4.5 ± 0.46	
Mesh hernioplasty (n = 22)	3.9 ± 0.51	

<sup>a</sup> Figures represent mean ± S.E.M.

<sup>†</sup> Student's *t*-test.

\* ANOVA

of 7 weeks. The impact of occupation on convalescence seems to be universal in all countries. Reasons for the late return to work in these manual workers included patients' apprehension of recurrence and pain induced by heavy weight lifting. However, prolonged time off work had no correlation with the recurrence rate [19]. Rider et al. [10] attributed the late return to work to the inappropriate advice from general practitioners. It was a misconception of primary health care physicians, as well as patients, that early activity might adversely affect their recovery and increase the risk of hernia recurrence. Jarrett [20] highlighted the great variability in advice on when to return to work given by both general practitioners and consultants. Education of patients and physicians concerning the appropriate time of return to work are, therefore, essential [10,20,21]. Patients should be advised and encouraged to return to work once they feel comfortable [9].

Compared to a few studies in the UK our patients appeared to return to work slightly earlier than our Western counterparts [10,11]. The decision of returning to work was mainly based on patients' own assessment of their physical conditions. A less well established social security system in our territory may be account-

able for the difference. As prolonged sick leave may result in loss of income or even the job, economic consideration is a major impetus in returning to work early. Barwell [15] also reported that self-employed men were better motivated and most of these patients (80%) returned to work by 3 weeks. On the other hand, patients who received occupational compensation for work-related hernias have been shown to have longer recovery times and more prolonged post-operative pain than those who have commercial insurance in the USA [22].

Concerning the time to resume normal activities, patients with heavy duty occupations also required a longer convalescence period than those with light or sedentary occupations. This reflects that these heavy-duty workers consider that they have not regained full working capacity before returning to work.

In conclusion most Chinese patients managed to return to work within 3 weeks following ambulatory inguinal hernia repairs. A sick leave of 3 weeks seems to be appropriate for most patients after uncomplicated ambulatory inguinal hernia repairs. The nature of job was the only independent factor affecting the duration of time off work. During the pre-operative counselling of patients with inguinal hernias any misconceptions about the convalescence period should be clarified and patients should be encouraged to return to work once they feel comfortable.

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