

Convalescence and driver reaction time after tension-free inguinal hernia repair

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Abstract

To obtain an objective basis for a policy on the advice to patients on when to drive after anterior tension-free hernia repair. Foot reaction time before operation and on the 2nd postoperative day in 20 skilled male drivers with a right inguinal hernia was measured and compared with that of 30 normal subjects. The tests in a car simulator indicated that an untreated right inguinal hernia had no effect on emergency stop reaction time and that a plug-mesh hernia repair did not impair reaction time on the 2nd postoperative day ($P > 0.30$). Average visual analogue pain scores on the 2nd and 4th postoperative days were 2.3 and 1.7, respectively. On the 8th postoperative day 18 patients had returned to normal activity and work. There was no recurrences after a mean postoperative time of 18 months. These data suggest that open tension-free hernia repair allows return to normal activities and car driving within a few days of the operation. © 2001 Elsevier Science B.V. All rights reserved.

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1. Introduction

The most common question asked by patients after inguinal hernia repair is when they can return to normal activity such as work and car driving.

After inguinal hernia repair patients have been advised to limit their physical activity for 4–8 weeks or longer to prevent recurrence [1]. However, there is no factual basis for such advice since recurrence rates seem to be unrelated to early return to work even in heavy manual workers [2–4]. Modern tension-free prosthetic hernia repair has led to a faster return to unrestricted activity and a lower recurrence rate as compared with the standard hernioplasty [5–8].

Although patients may feel comfortable enough to resume car driving an essential requirement for safe driving is the ability to stop rapidly in an emergency. After various types of hernia repairs the emergency stop reaction times have been measured in a car simulator as the time taken to transfer the right foot from the accelerator to the brake pedal. It has been shown that the foot reaction times revert to normal as early as

8–14 days after conventional [9,10] and 6 days after prosthetic hernia repairs [11].

In order to obtain an objective basis for a policy on the advice to patients this study has assessed postoperative pain and recovery, the emergency stop reaction times and the one year recurrence rate after open tension-free hernia repair.

2. Patients and methods

Twenty consecutive skilled male drivers, aged between 20 and 61 years, with a primary right inguinal hernia had an anterior prosthetic repair using a standard technique [12] in which plug and mesh (Bard Marlex Mesh PerFix Plug) were secured in position with interrupted absorbable sutures. The patients were offered general anaesthesia (fentanyl/propofol), but two preferred spinal anaesthesia (lidocaine). They received prophylactic antibiotic and 0.5% bupivacaine hydrochloride was infiltrated into the wound before closure. Lornoxicam 8 mg was given at the end of the operation (intramuscular) and 8 h later (oral). All the patients were discharged the same day, and they were advised to resume normal physical activity and work as soon as they felt able to do so.

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After discharge, the patients received lornoxicam 8 mg b.d. for 4 days and they were provided with tramadol 50 mg (24 tablets) to be taken if required. Unused tablets were returned after 8 days, when the skin suture was removed. They were asked to assess the severity of pain daily for 4 days with the use of a 10-cm visual-analogue scale and to record the use of analgesic drugs.

The ability to perform an emergency stop in a car simulator before operation and on the 2nd postoperative day was measured and compared with that of 30 normal subjects. The system was designed and validated by The Danish Society of Polio and Accident Victims [13]. Foot reaction times were measured in milliseconds (ms) as the time taken to transfer the right foot from the accelerator to the brake pedal. An average of ten responses to light and sound signals were recorded on each test day. The results were expressed as the mean and S.D. for the group. Student's *t*-test was used for comparisons between groups. All gave informed consent. The study was approved by the regional ethical committee (01-251/98).

3. Results

In this series of patients there were 13 indirect hernias, three direct hernias and four with combined indirect and direct defects.

For normal subjects the mean reaction times to light and sound signals were 416 ± 64 and 375 ± 56 ms, respectively. Before operation and on the 2nd postoperative day the mean reaction times to light signals were 422 ± 61 and 413 ± 56 ms, respectively, and to sound signals 389 ± 55 and 395 ± 52 ms, respectively. No significant differences were found in foot reaction times between the preoperative and the postoperative tests ($P > 0.30$). Within the groups the foot reaction times were significantly longer to light than to sound signals ($P < 0.01$). On the whole there were two patients before and one after operation with markedly longer reaction times than the remainder of the groups (Fig. 1).

All the patients had taken lornoxicam for 4 days as prescribed, and additional oral analgesia was not required in 11 patients. More than 60% of self-administered tramadol (299 tablets) were returned. Seven patients did not complete analogue scales correctly at home. Average pain analogue scores on the 2nd and 4th postoperative days were 2.3 and 1.7, respectively.

At the postoperative visit after 8 days two patients required paracetamol occasionally for postoperative pain. One patient had a small haematoma that resolved spontaneously. All patients, except two without apparent reasons, had returned to normal activity and work.

The 1 year follow-up, with an average of 18 months, revealed no recurrences and no limitations to physical

activities. There was no evidence of chronic groin pain following inguinal hernia repair.

4. Discussion

At present the most common open approach to inguinal hernia repair appears to be a tension free prosthetic technique, which has led to greater immediate patient comfort, faster rehabilitation and earlier return to car driving than after conventional hernia repairs.

In our series the open prosthetic plug-mesh repair and postoperative non-steroidal anti-inflammatory medication for 4 days allowed return to normal activity and work within 8 days of operation without significant discomfort and pain. Most of the 20 patients had a sedentary occupation, only three were heavy manual workers.

The tests in the car simulator indicated that an untreated right inguinal hernia had no effect on the emergency stop reaction time and that an open tension-

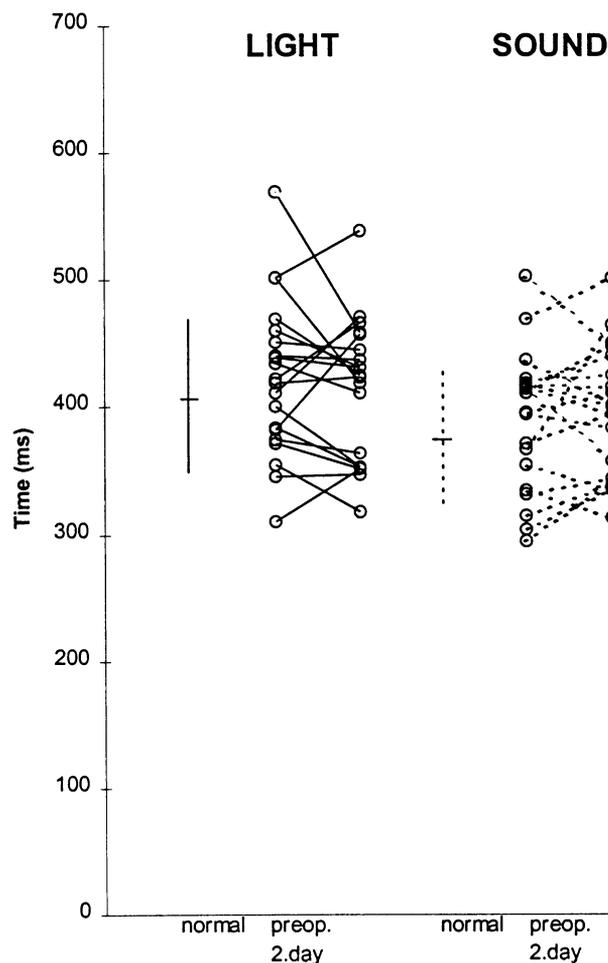


Fig. 1. Foot reaction times (ms, mean \pm S.D.s) for normal subjects and for patients before and after operation. —, Light; ···, sound.

free plug-mesh hernia repair did not impair the reaction time on the 2nd postoperative day.

Driving a car is a complex skill requiring only little physical effort except when making an emergency stop. Fear of pain or discomfort may impair such a movement. Because the results are obtained in an experimental situation, the values for foot reaction times may not be directly applicable to driving. However, the individual changes in reaction times compared with preoperative values must give an indication of fitness for driving a car and could be used as a guide in advising patients.

In conclusion, these results provide objective evidence that open tension-free hernia repair allows a return to normal activities and car driving within a few days of operation.

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