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## Day-case conventional discectomy: a randomised controlled trial

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**Abstract** A prospective randomised trial compared the results of conventional lumbar discectomy performed as day cases with those performed on an in-patient basis. The aim of the study was to investigate whether conventional discectomy can be performed safely on a day-case basis. Thirty-one patients were included in the study; 18 were randomised to day-case treatment and 13 to in-patient stay. Day patients mobilised more quickly immediately following surgery and were better able to walk at 2 weeks. The rate of complications was unchanged. It is concluded

that conventional discectomy can be undertaken safely as day-case surgery and may indeed speed up the recovery process.

**Keywords** Intervertebral disc prolapse · Lumbar spine · Day-case surgery · Lumbar discectomy · Efficacy · Safety · Post-operative mobilisation

### Introduction

Day surgery is developing rapidly, and more patients are now being considered for this type of treatment. The types of operations considered suitable are also increasing. Performing surgery as a day case results in significant savings, allowing more patients to be treated [16]. There is evidence that many patients actually prefer day-case management [4, 5, 14, 15].

There are a number of reports of micro-discectomies performed as day cases [2, 9, 10, 17]. To the authors' knowledge, however, there is only one report on a conventional approach and discectomy performed on a day-case basis [13]. Before it can be recommended that conventional discectomy be performed on a day-case basis, it must be shown that this is safe and effective. The present study compares conventional discectomy (fenestration) performed on a day-case and on an in-patient basis.

### Materials and methods

The study is a randomised prospective trial comparing the results of discectomies performed on a day-case basis and on an in-patient basis. Thirty-one patients were randomised, 18 to day-case surgery and 13 to in-patient stay.

Patients were selected from consecutive patients presenting to a spinal surgical service and deemed appropriate for surgical discectomy. The indications for surgery were based on the criteria of the MacNab "Rule of Five" [11].

#### *Two symptoms:*

1. Leg pain greater than back pain
2. Specific neurological symptoms (paraesthesia), dermatomal distribution

#### *Two signs:*

3. Straight leg raising <50% of normal and/or positive cross-over test and/or positive Bowstring test
4. Two of four neurological signs (altered reflex, wasting, weakness, sensory loss)

#### *One investigation:*

5. Positive, concordant imaging

All patients had failed to respond to conservative treatment for a minimum of 6 weeks. Patients who required urgent surgical inter-

vention due to cauda equina syndrome or progressive neurological deficit were excluded from the study.

Patients were included in the study on the basis of their suitability to undergo day-case surgery according to the following criteria:

1. Age less than 65 years
2. Absence of significant concurrent medical problems
3. Adequate home support and a responsible adult to take the patient home after surgery
4. Travelling time from hospital to home of less than 1 hour

Printed information regarding the study was given to the patient and fully informed consent was obtained. None of the patients refused consent or withdrew from the study. The patients were then randomised depending on the month of birth: odd month of birth – day case; even month of birth – in-patient.

All patients were admitted on the day of operation. Two operating lists were in use and, although all in-patients were admitted to an in-patient ward, some day cases were admitted to the day unit and others to an in-patient ward depending on the location of the operating theatre. Patients and staff were naturally aware of the in-patient or day-case status.

Two patients had to be withdrawn from the study. One of them denied any medical problems at randomisation, but was later found to have sleep apnoea. The second patient's symptoms resolved completely before surgery, and was therefore taken out of the study.

All the patients were assessed before surgery by the surgical team. All patients had the same standard operation (fenestration and discectomy), performed by the same surgeon through a small (4-cm) incision. The level was located by identifying the sacrum during surgery by palpation and percussion. The flavum was excised and prolapsed disc material removed. The disc space was cleared of loose fragments. Curettage of the end plates was not undertaken. A microscope was not employed. A standardised general anaesthetic regime was used in all cases.

All the patients were assessed on the evening of the operation. The level of pain, amount of analgesia required and mobility status were recorded. In-patients stayed overnight and day cases were discharged provided they met the discharge criteria described in the Post Anaesthesia Discharge Scoring System (PADSS, [3]).

On discharge, patients were given an information sheet with post-operative instructions and telephone numbers to contact in case of problems. They were advised to gradually increase the level of activity. They were encouraged to walk regularly, but to avoid weight lifting. Pain and mobility at the time of discharge were recorded. All patients were provided with Ibuprofen (non-steroidal anti-inflammatory drug) for 1 week together with Cocodomol (8/500 codeine phosphate/paracetamol), to be taken as required.

Patients were next reviewed 2 weeks after discharge. Data were collected concerning pain control, analgesia consumption, hours of sleep, mobility, any contact made with the hospital or general practitioner (GP) after discharge and their opinion regarding the length of stay in the hospital. The wound was inspected and the clips removed.

Further review was undertaken at 6 weeks. Any subsequent appointments were then based on clinical need, but all patients were reviewed at 6 months, when, in addition, the Low Back Outcome Score (LBOS) was administered [8].

#### Statistical analysis

Statistical analysis was undertaken using the Chi-square test and the rank sum test.

## Results

Thirty-one patients were studied, 18 of them were planned day cases and 13 were in-patients. The age range in the day-case group was from 32 to 65 years, with a mean of 41.5 years. For the in-patient group, the age range was from 32 to 61 years and the mean was 42.5 years. Sex distribution was similar, the day case group comprising seven women (38.8%) and 11 men, and the in-patient group comprising four women (30.7%) and nine men.

Thirteen out of 18 (72%) of the planned day-case patients were discharged on the same day. Five patients could not be discharged as planned; two could not mobilise, two had minor post-anaesthetic problems and one did not have adequate pain control. All planned day cases unable to be discharged on the same day had originally been admitted to the in-patient ward.

The patients therefore were categorised into three groups:

- Group 1a: day cases
- Group 1b: planned day cases retained overnight
- Group 2: planned in-patients

One patient in group 1a was re-admitted the day after discharge with an episode of syncope. Nothing significant was found, and she was discharged the following day. One patient in group 1b and one in group 2 had to be readmitted. In both cases the re-admission occurred a week after surgery, analgesia was adjusted and no other treatment was needed.

The mobility after surgery, hours spent in bed on the first post-operative day and the walking ability at 2 weeks were significantly better in the day-case group (Table 1, Table 2, Table 3). The hours of sleep on the first night and the ability to do house work at 2 weeks demonstrated a non-significant trend in favour of the day cases (Table 4,

**Table 1** Mobility after operation: comparison of the three groups (*group 1a* day cases, *group 1b* planned day cases retained overnight, *group 2* planned in-patients)

	1a	1b	2
Unable to sit up		4	8
Able to sit or stand			2
Able to walk with or without help	13	1	3

1a vs 2  $P < 0.001$

**Table 2** Daytime hours spent in bed on 1st post-operative day

	1a	1b	2
Whole/most of the day	5	4	7
Half day/few hours	3	1	6
None	5	0	0

1a vs 2  $P < 0.05$

**Table 3** Walking distance at 2 weeks (compared to pre-op)

	1a	1b	2
Less	0	0	3
Same	6	3	8
More	7	2	2

1a vs 2  $P < 0.05$ **Table 4** Hours of sleep (first night)

	1a	1b	2
None	2	1	5
Less than usual	4	4	6
Same as usual	5	0	1
More than usual	2	0	1

**Table 5** Ability to do house-work at 2 weeks (compared to pre-op)

	1a	1b	2
Less	1	2	5
Same	6	1	6
More	6	2	2

**Table 6** Patients' opinion of length of stay

	1a	1b	2
Too short	2	1	1
Adequate	11	4	8
Too long	0	0	4

Table 5). The patient's opinion of the length of stay did not differ (Table 6). No differences were observed in mobility on the first post-operative day, contacts with the GP or hospital, pain relief, or ability to exercise at 2 weeks.

No differences were observed at 6 weeks or at 6 months in any of the variables studied. At 6 months the median LBOS scores for the three groups were: 44.7 (range 24–66) for group 1a; 40.6 (range 26–58) for group 1b and 39.2 (range 22–60) for group 2 (n.s.).

## Discussion

Double blinding was not possible in this study, owing to its nature. However, at review the questionnaires were administered by a staff member who was unaware of the admission status.

Day cases displayed an advantage in mobilisation up to 2 weeks following surgery. It would be expected that day

patients would be more mobile on the evening of surgery, as they were being prepared for discharge. However, this advantage in mobility and ability to undertake ordinary household tasks was retained at 2 weeks, suggesting a continuing effect. It is suggested that the difference in the speed of recovery may be due to differences in the patient's expectations. Day cases may recover more quickly because less emphasis is placed on the operation and more on mobilisation. No differences were apparent after 2 weeks, suggesting the advantages of day-case surgery became less with increasing time following surgery.

Previous studies have indicated a number of potential barriers to day case surgery. Although generally in favour of day-case treatment, patients have expressed concern over information provided and pain relief [6]. Special documentation was provided in this study and no differences were seen in patient satisfaction with pain relief. Other barriers to day-case surgery have been a negative evaluation among surgeons themselves [7], which one study found to be related to the age of the surgeon [12]; GPs also have expressed concerns [1]. These concerns related to complications, re-admissions and pain relief – concerns that have not been borne out in the present study.

In the present study it is interesting that day-case patients admitted to an in-patient ward were much less likely to be discharged the same day as patients admitted to the day-case ward. In-patient nursing staff were concerned that day-case surgery was inappropriate, especially when other surgeons using the same ward retained discectomy patients for 5 days. Subsequent to this study, after the results were made available to the nursing staff, the rate of discharge as day cases increased to almost 100%. It is clear, therefore, that nursing staff were also concerned about day-case surgery for some procedures, and that these concerns must also be addressed.

When planning day-case discectomies, post-operative pain control, provision of adequate patient information and proper preparation of all the clinical staff involved are the key issues.

## Conclusions

This study concludes that conventional discectomy is not only safe as a day case procedure, but it may be beneficial for the patient.

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