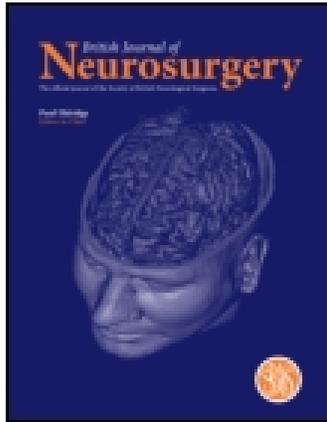


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ORIGINAL ARTICLE

Day case lumbar discectomy – Viable option in the UK?

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Abstract

Introduction. The inpatient length of stay for lumbar discectomy has been steadily declining, since its original description over 80 years ago. The operation was first described as a day case procedure in 1987, but only sporadically since then, especially in the UK. We describe our initial experience in introducing this service in Manchester. **Methods.** Over a 2-year period, 50 of 80 patients undergoing lumbar discectomy met the inclusion criteria for day case surgery, using standard microscopic techniques and admission via a day case unit. **Results.** Majority (N = 48) were single level, unilateral discectomies and 36 (72%) were discharged home the same day. The remainder (28%) were discharged after an overnight stay and within 24 h. Reasons for this included post-operative back pain and hypotension. Majority (N = 47), reported improvement or resolution of pre-operative back and leg pain, which was quantified using Visual analogue scores ($p < 0.01$). **Conclusions.** Lumbar microdiscectomy as a day case procedure remains a feasible and safe option in selected patients and can help free up inpatient beds with a significant economic benefit also.

Keywords: day case surgery; lumbar discectomy

Introduction

Lumbar microdiscectomy has been shown to provide a more rapid relief of symptoms from nerve root compression, with earlier return to work and thus reduced economic and social impact.^{1–5} Dandy first reported surgical intervention for a lumbar disc prolapse in 1929.⁶ His first patient, stayed in hospital for 4 weeks, but over the subsequent 8 decades, the length of stay has been steadily declining. Reasons for this are probably manifold, notably the advancement in anaesthetic and surgical techniques, including the introduction of the operating microscope in the 1970s.^{5,7}

Lumbar discectomy was described as a day case procedure by the late Huw Griffith in 1987.⁸ Despite sporadic efforts, it is still not a widely reported service in the UK.^{9,10}

We describe our early experience in undertaking day case lumbar discectomy in Manchester.

Patients and methods

Patients awaiting Lumbar Discectomy under the care of the senior author over a 2-year period between 2005 and 2007 were screened for suitability for surgery as a day case procedure (Table I). Patients deemed suitable for day case discectomy had little co-morbidity (American Society of Anaesthesiologists, ASA Grades 1–2)¹¹ and were independently mobile before the operation. We selected patients with relatively focal pathology (i.e. unilateral and single level disc prolapse) and those who had previous lumbar surgery were excluded (Table I). Only patients with predominantly radicular leg pain and with symptoms for at least 4 months and who had failed conservative treatment were included. None of these patients underwent surgery for predominantly back pain. After informed consent, all patients were admitted to a day surgery ward, with facilities for overnight stay if required and were placed first or second on a morning operating list.

Surgical technique

Surgery took place under general anaesthesia using a standard technique; premedication with Paracetamol, intravenous induction, tracheal intubation facilitated by neuromuscular blockade and maintenance with short acting volatile agents. Total intravenous anaesthesia (TIVA) was used in some cases at high risk for post-operative nausea and vomiting. All patients received at least 1 L of crystalloid intraoperatively, prophylactic antibiotics and steroids (Dexamethasone 4 mg), and a dose of non-steroidal analgesia (40 mg Parecoxib). Anti-emetics were routinely prescribed for post-operative nausea.

Patients were positioned prone and semi-flexed on the operating table on a Montreal mattress. Surgery was performed in a standard fashion through a small midline incision (approx. 2 cm) and with unilateral muscle retraction

Table I. Eligibility Criteria for day case lumbar microdiscectomy.

- Symptomatic leg pain despite conservative treatment for > 4 months
- Focal pathology (i.e. unilateral and 1 or 2 levels only)
- No previous lumbar surgery
- ASA Grade 1 or 2
- Independently mobile
- BMI < 35 kg/m²
- Availability of a responsible adult at home

(Fig. 1).¹² We used the operating microscope and a generous foraminotomy was undertaken in all cases. The most commonly used muscle retractors were the McCulloch retractor, with two hooks (Fig. 1). After wound closure, the wound and paraspinal muscles were infiltrated with local anaesthetic (20–30 mL of 0.25% Bupivacaine or levobupivacaine).

Post-operative care

Once the patients were back on the ward and able to eat and drink, the physiotherapists helped them to mobilise, climb steps (if required to do so at home) and supplied them with written instructions. Nurses provided patients with clear instructions about wound care, the discharge pain medications (Paracetamol, Non-Steroidals and/or Codeine Phosphate as required) and telephone contact numbers in case of post-operative problems. The surgical team also reviewed the patients, who were discharged once they had eaten food, voided urine and mobilised unaided.

The surgeon, anaesthetist and nurses all reinforced the plan for day case surgery, the small size of the surgical wound, and the fact that early mobilisation would help in the recovery process. Our aim was to discharge patients on the day of surgery, but some patients were kept in overnight. The reasons for this and the length of hospital stay were noted.

Patients were typically reviewed at 3–6 months post surgery and only reviewed again if they had on-going or recurrent symptoms. At first follow-up, we asked the patients to score their back and leg pain on the Visual Analogue Score (VAS) and to report any change in their pain killer intake. We also recorded the length of stay (same day discharge or overnight stay).

All data were entered and analysed on the SPSS statistical package (Statistical Programs for the Social Sciences, UK). Differences in VAS were assessed using paired Student's t-test.

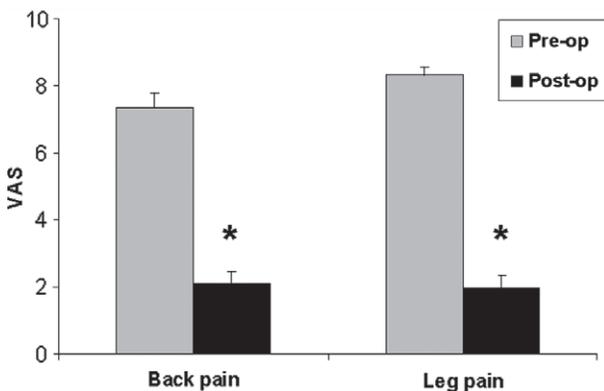


Fig. 1. Figure showing the change in pre- and post-operative visual analogue scores in back and leg pain in patients undergoing lumbar microdiscectomy (* $p < 0.01$ versus corresponding pre-op score; $n = 50$; paired Student's t-test).

Results

Out of 80 patients undergoing lumbar discectomy over the 2-year study period, 50 (62.5%) met the inclusion criteria for day case surgery. Mean \pm SD age was 43 ± 12 years (range 21–73) and the median follow-up was 4 months (range 3–21). Thirty-one patients (62%) were males and 10 (20%) were smokers. Surgery was undertaken at L5/S1 ($N = 27$, 54%), L4/5 ($N = 20$, 40%) and at L3/4 levels ($N = 1$, 2%). Two (4%) patients had surgery at both L4/5 and L5/S1 levels.

Thirty-six patients (72%) were discharged on the day of surgery and between 4 and 6 h post-operatively. Fourteen (28%) stayed overnight, but were discharged within 24 h of admission. Reasons for this included postoperative back pain (5) and symptomatic hypotension (5). One patient stayed overnight as the surgery was undertaken in the afternoon and three patients preferred to stay overnight out of choice and/or for social reasons (e.g. lack of carer, transport etc.).

The self-reported mean VAS for leg and back pain were reduced post-operatively ($p < 0.01$; paired Student's t-test; Fig. 2). Ten patients (20%) reported complete resolution of their overall pain and 37 (74%) reported improvement in pain levels. Two patients (4%) were unchanged and one (2%) was symptomatically worse. Majority ($N = 33$; 85%) stated that they would recommend the procedure to others.

Twenty-nine patients (58%) had stopped taking pain-killers by their first follow-up clinic visit and 12 (24%) had reduced their pain killer intake. Six patients (12%) continued

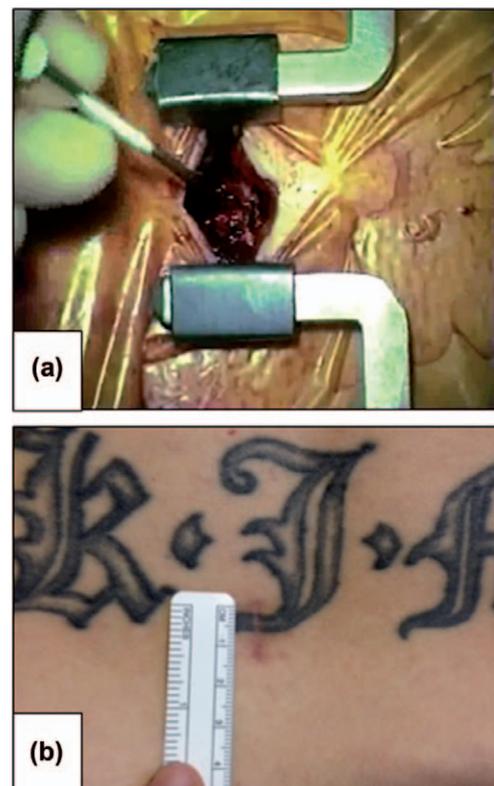


Fig. 2. Photographs depicting (a) the intra-operative use of the McCulloch retractor in undertaking a lumbar microdiscectomy and (b) the surgical wound at 3 months post-operatively.

to take the same painkiller dose and three (6%) took more painkillers after the operation.

With respect to complications, one patient developed a superficial wound infection that settled with oral antibiotics. One patient complained of worsening back and leg pain. The post-operative MR scan failed to show significant evidence of neural compromise and the patient improved after an epidural injection.

Discussion

Day case lumbar microdiscectomy was first described in Bristol in 1987 by the late Huw Griffith.⁸ In 1994, the same group reported a series of 100 microdiscectomies performed as a day case procedure. Interestingly, after recovery from surgery these patients were “stretchered to their own bed and cared for by a relative during 5 days of post-operative bed rest”.¹³ Such enforced periods of bed rest would be unusual in the modern era. Nevertheless, almost 2 decades later, day case lumbar discectomy appears to be an under utilised service in the UK.^{13,14} Indeed, there are more reports of day case discectomy from other parts of the world than from the UK.^{9,10,15–19} Moreover, of the 25 procedures used by the Health Care Commission to compare hospitals in their day case surgical activity, the only procedure related to neurosurgery is carpal tunnel decompression.²⁰

In the present study, we observed that approximately two-thirds of patients awaiting routine lumbar discectomy were suitable for admission into a day case facility. Definition of day case surgery varies and patients electively admitted for an operation and returning home on the same day or in less than 24 h have both been considered as day case procedures in different parts of the world.²¹ In our series, a majority (72%) were discharged on the same day. The remainder (28%) were discharged after an overnight stay and within 24 h. This was primarily due to the severity of back pain and symptomatic hypotension. Post-operative hypotension can be related to the anaesthetics used and the post-operative analgesic regime (e.g. strong opiates). We used a standard anaesthetic technique, only using TIVA where patients were at high risk of post-operative nausea and vomiting. No patient required regular morphine-based analgesia in the post-operative period. More aggressive use of intravenous fluids using nurse-led fluid therapy may have helped reduce symptomatic hypotension.

With respect to the severity of post-operative back pain, the surgical technique employed and the type of intra and post-operative analgesic regime will be relevant. There is ongoing debate as to the value of perioperative infiltration of the wound with local anaesthesia and steroids in the epidural space in reducing post-operative pain levels.^{22,23} We made use of long-acting local anaesthetic infiltration of wound and paraspinal muscles, but epidural steroids were avoided due to the theoretical risk of increased infection.

Although numerous variations to the lumbar discectomy technique have been described, we employed relatively standard microsurgical techniques in performing the operation.^{5,12} The McCulloch retractor was the most commonly utilised muscle retractor (Fig. 1). By utilising two

spikes, rather than a blade–spike combination, we found that the incision size could be kept very small. There have been a number of recent reports promoting the values of tubular retractor systems in minimising muscle trauma by their muscle splitting actions.²⁴ Whilst this may indeed be true in those cases requiring more extensive postero-lateral instrumentation (e.g. interbody fusion and pedicle screws), it seems less so in patients requiring a single level lumbar discectomy, where the paraspinal muscle retraction is relatively minimal. Indeed, recent randomised trials comparing lumbar discectomy undertaken with tubular or blade type retractors failed to show an advantage for the tubular system.^{24–26} It was also our observation that the size of the incision required to accommodate the tubular retractor, which are circular in cross section is typically more than that needed for the McCulloch retractors, especially utilising two spikes as described above.

Although the present series is small and follow-up is limited, the overall outcome is comparable to the results of larger surgical series, where surgery was carried out as both day cases or as in-patients.^{4,15,17,24} We also recognise that beyond 6–12 months follow-up, outcomes from surgery and conservative treatment appears comparable in sciatica.¹ With regards to early surgical complications, cauda equina syndrome from a delayed post-operative haematoma is always a worry when discharging the patients on the day of surgery. However, post-operative haematoma typically presents within 4–6 h after surgery and so should be identified in the ward and prior to patient discharge.^{10,27,28}

All patients in this study were admitted through a dedicated day case ward, which can help facilitate same day discharge compared with standard in-patient wards.¹⁰ Day case wards are typically set up to admit and discharge elective patients in an efficient fashion and better cope with high patient turn over. Other benefits include nurse-led discharge and prompt prescribing of analgesics and physiotherapy review. However, with any new service staff training and the provision of a ‘lumbar discectomy care pathway’ can be helpful. Given the likelihood that a small proportion of patients may require overnight stay, the day case ward must also be able to accommodate such eventualities.¹⁰

The reasons for the relatively infrequent reports of day case discectomies, especially in the UK are probably multifactorial.^{13,14} Potential patient concerns about post-operative pain, possible complications and need for readmission to hospital are understandable.^{29,30} For similar reasons there may be a lack of enthusiasm from primary care physicians, who may be concerned about increased queries from patients discharged from day surgery (i.e. the community costs of day case surgery).³¹ But as observed in the present study and by others this is unfounded for the vast majority of patients and 85% stated that they would recommend the procedure for others.^{9,10,15,16,30} Clear instructions to patients, with provision of contact numbers is important in allaying some of the anxieties related to day case discectomy. Lack of surgeon interest for day case surgery may be a further reason and this may partly be related to the perceived short-term benefits of day case discectomy, when compared to typically one night stay for conventional lumbar discectomy surgery.¹⁰

However, the economic benefits of day case surgery are well established.^{20,21} Moreover, day case lumbar discectomy with increased use of day case ward beds can provide additional bed capacity for the spinal service and also help free up inpatient beds for other indications. In some units, poor access to day case facilities for spinal patients could be a contributing factor in this respect.

Conclusion

In selected patients, lumbar microdiscectomy can be safely undertaken as a day case procedure, and using standard operative techniques. Given the increasing pressure for more day case procedures within the health service, this service could be better utilised in the UK.

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References

1. Peul WC, Hout WB, Brand R, Thomeer RT, Koes BW. Prolonged conservative care versus early surgery in patients with sciatica caused by lumbar disc herniation: two year results of a randomised controlled trial. *BMJ* 2008;336:1355-8.
2. Pearson AM, Blood EA, Frymoyer JW, et al. SPORT lumbar intervertebral disk herniation and back pain. Does treatment, location, or morphology matter? *Spine* 2008;33:428-35.
3. Newsome RJ, May S, Chiverton N, Cole AA. A prospective, randomised trial of immediate exercise following lumbar microdiscectomy: A preliminary study. *Physiotherapy* 2009;95:273-9.
4. Türeyen K. One-level one-sided lumbar disc surgery with and without microscopic assistance: 1-year outcome in 114 consecutive patients. *J Neurosurg (Spine 3)* 2003;99:247-50.
5. Koebbe CJ, Maroon JC, Abla A, El-Kadi H, Bost J. Lumbar microdiscectomy: a historical perspective and current technical considerations. *Neurosurg Focus* 2002;13:E3.
6. Dandy WE. Loose cartilage from intervertebral disk stimulating tumor of the spinal cord. *Arch Surg* 1929;19:660-72.
7. Nystrom B. Experience of microsurgical compared with Conventional technique in lumbar disc operations. *Acta Neurol Scand* 1987;76:129-41.
8. Griffith H, Marks C. Outpatient surgery for prolapsed lumbar disc. *Br J Neurosurg* 1987;1:105-9.
9. Hanif MA, Norrish AR, Sheikh R, Abdel-Gadir M. The outcome of lumbar microdiscectomy performed as a day case procedure: A comparison of 67 consecutive patients undergoing surgery on a day case or inpatient basis. *J One-day Surg* 2005;15:74-6.
10. Gonzalez-Castro A, Nagendar ASK, Greenough CG. Day-case conventional discectomy: a randomised controlled trial. *Eur Spine J* 2002;11:67-70.
11. Fitz-Henry J. The ASA classification and peri-operative risk. *Ann R Coll Surg Engl* 2011;93:185-7.
12. Brock M, Kunkel P, Papavero L. Lumbar microdiscectomy: subperiosteal versus transmuscular approach and influence on the early postoperative analgesic consumption. *Eur Spine J* 2008;17:518-22.
13. Kelly A, Griffith H, Jamjoom A. Results of day-case surgery for lumbar disc prolapse. *Br J Neurosurg* 1994;8:47-9.
14. Gnanalingham KK, Abou-Zeid AH, Jordan D. Day case lumbar microdiscectomy: Is it a viable option in the UK? *Br J Neurosurg* 2008;22:166.
15. Best NM, Sasso RC. Success and safety in outpatient microlumbar discectomy. *J Spinal Disord Tech* 2006;19:334-7.
16. Singhal A, Bernstein M. Outpatient lumbar microdiscectomy: A prospective study in 122 patients. *Can J Neurol Sci* 2002;29:249-52.
17. Asch HL, Lewis PJ, Moreland DB, et al. Prospective multiple outcomes study of outpatient lumbar microdiscectomy: should 75 to 80% success rates be the norm? *J Neurosurg (Spine 1)* 2002;96:34-44.
18. Hersht M, Massicotte EM, Bernstein M. Patient satisfaction with outpatient lumbar microsurgical discectomy: a qualitative study. *Can J Surg* 2007;50:445-9.
19. Fallah A, Massicotte EM, Fehlings MG, et al. Admission and acute complication rate for outpatient lumbar microdiscectomy. *Can J Neurol Sci* 2010;37:49-53.
20. Jackson I. Day surgery overview: Where are we now, how did we get here and where are we going? *Curr Anaesthesia Crit Care* 2007;18:176-80.
21. Gandhimani P, Jackson I. UK guidelines for day surgery. *Surgery* 2006;346-9.
22. Kjærgaard M, Møiniche S, Olsen KS. Wound infiltration with local anesthetics for post-operative pain relief in lumbar spine surgery: a systematic review. *Acta Anaesthesiol Scand* 2012;56:282-90.
23. Rasmussen S, Krum-Møller DS, Lauridsen LR, et al. Epidural steroid following discectomy for herniated lumbar disc reduces neurological impairment and enhances recovery. A randomized study with two-year follow-up. *Spine* 2008;33:2028-33.
24. German JW, Adamo MA, Hoppenot RG, Blossom JH, Nagle HA. Perioperative results following lumbar discectomy: comparison of minimally invasive discectomy and standard microdiscectomy. *Neurosurg Focus* 2008:E20.
25. Ryang YM, Oertel MF, Mayfrank L, Gilsbach JM, Rohde V. Standard open microdiscectomy versus minimal access trocar microdiscectomy: Results of a prospective randomized study. *Neurosurgery* 2008;62:174-82.
26. Arts MP, Brand R, van den Akker ME, et al. Tubular discectomy vs conventional microdiscectomy for sciatica a randomized controlled trial. *JAMA* 2009;302:149-58.
27. Kotilainen E, Alanen A, Erkintalo M, Helenius H, Valtonen S. Postoperative hematomas after successful lumbar microdiscectomy or percutaneous nucleotomy: a magnetic resonance imaging study. *Surg Neurol* 1994;41:98-105.
28. Papadoulas S, Konstantinou D, Kourea HP, et al. Vascular injury complicating lumbar disc surgery. A systematic review. *Eur J Vasc Endovasc Surg* 2002;24:189-95.
29. Ghosh S, Kershaw AR. The patient's and general practitioners notions of day surgery. *J One Day Surg* 1991;1:10-11.
30. Ghosh S, Sallam S. Patient satisfaction and postoperative demands on hospital and community services after day surgery. *Br J Surg* 1994;81:1635-8.
31. Barrow S, Fisher A, Seex DM. General practitioner attitudes to day surgery. *J Public Health Med* 1994;16:318-20.