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Fentanyl

## Using spinal anesthesia in Day Surgery Unit

### *Znieczulenie podpajęczynkowe w oddziałach chirurgii jednego dnia*

**We present using "low-dose" spinal anesthesia in Day Surgery Unit since 2001 – eight years experience. Methods. Elective procedures in Day Surgery Unit between 2001 and 2008 undergoing 1000 patients. Of those 549 had received "low dose" spinal anesthesia. The 89% of them had been followed-up after discharge. We were concerned about mobilization time, post-operative voiding difficulties and the incidence of post dural-puncture headache. Results. Our recipe of low-dose spinal anesthesia was used for a variety of lower limb, urological and gynecological surgery with great success and enabled many patients who would have been unsuitable for same day discharge after general anesthesia to be treated as day cases. Conclusions. Spinal anesthesia for day surgery patients is main-stream practice. This anesthetic technique providing good operating condition. As our patient population ages and presents for day surgery with multiple co morbidities, we may well find this an increasingly attractive anesthetic option.**

*Praca dotyczy zastosowania znieczulenia podpajęczynkowego z użyciem małej dawki bupiwakainy z opioidem w oddziałach chirurgii jednego dnia. Grupę badaną stanowiło 1000 pacjentów, którzy byli operowani w oddziałach chirurgii jednego dnia z powodu schorzeń kończyn dolnych, schorzeń ginekologicznych i urologicznych. Tym sposobem znieczulono 549 chorych. Po wypisaniu ze szpitala kontroli poddano 89% z nich. Doświadczenia autorów zdobyte od roku 2001 do 2008 roku upewniają, że ten rodzaj znieczulenia stwarza dobre warunki operacyjne oraz jest dobrze tolerowany przez pacjentów w wieku podeszłym i z chorobami towarzyszącymi. Pacjenci po zabiegach operacyjnych są tego samego dnia wypisywani do domów, co znacznie redukuje koszty związane z pobytem w oddziale.*

### Introduction

Spinal anesthesia is growing in popularity for day surgery patients. It is a well-established technique providing good operating condition for selected surgical procedures. In recent years a number of publications have described and compared techniques for producing short duration intrathecal anesthesia [1,2,3,4,5].

In The Queen Elizabeth Hospital there is a guide to using spinal in Day Surgery Unit depending on the procedure. This 'recipe' is using with great success and enable many patients who would have

been unsuitable for same day discharge after general anesthesia to be treated as day case.

### Material

In King's Lynn we began using spinal anesthesia routinely for day surgery in 2001 and by 2008 we had accumulated a database of over 1000 patients, 89% of which had been followed-up after discharge. Of these, 549 had received 'low-dose' spinal anesthesia, that is Bupivacaine plus a variable amount of Fentanyl. This 'recipe' was used for a variety of lower limb, urological and gynecological surgery.

### Methods

The guide to using spinal anesthesia in day surgery depends on the procedure. The guide for day surgery unit was prepared by Dr BJ Watson

Table I

Procedure	Suggested solution	Technique
Knee arthroscopy, operations on feet and toes	2ml 0.25% plain Bupivacaine + Fentanyl 10 mcg	Rapid injection, then immediate lateral position, operative side uppermost for 3 minutes.
Inguinal hernia	1.5mls 0.5% heavy Bupivacaine + Fentanyl 10 mcg	Rapid injection, then immediate lateral position, operative side down for 3 minutes. Add ilio-inguinal block.
TURP, TURBT, testicular	1.5mls 0.5% heavy Bupivacaine + Fentanyl 10 mcg	Rapid injection, immediately supine.
Ano-rectal, vulval, perineal, penile	1 ml 0.5% heavy Bupivacaine + Fentanyl 10 mcg	Inject sitting, keep sitting for 3 minutes.

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and Dr J Allen in June 2008 (table I).

For orthopedic procedures we using plain Bupivacaine, because persistent sacral block seems to be less common with plain solutions. There are two principles which guide the modification of spinal solutions. Firstly, gravity and patient positioning are the main determinants of spread of the block, and secondly, the dose of local anesthetic is the main determinant of duration of the block. It is also important to be aware that individual patient response to small dose Bupivacaine is highly variable.

## Results

In particular, we were concerned about mobilization time, post-operative voiding difficulties and the incidence and detection of post dural-puncture headache (PDPH).

Delayed discharge is clearly of great concern in day case patients. Assessing spinal regression after a low-dose technique has been employed not easy. The subtle nature of the sensory block is often not easily amenable to testing with ice even at the time of surgery, and the motor block is generally not marked. The most meaningful time interval to note is from the time of spinal insertion to independent mobilization of the patient, and this generally follows around an hour or so after attainment of a Bromage score of 1. This delay of mobilization after apparent attainment of full motor power was nicely demonstrated by the Toronto group in 2003[6].

The issue of voiding after spinal anesthesia remains under investigated, but the risk factors, anesthetic and otherwise, are gradually being teased out. Provided the dose of local anesthetic is low (< 7 mg Bupivacaine) and the bladder is not over-distended by IV fluids during the period of detrusor paralysis, the anesthetic is unlikely to be the cause of post-operative retention. However, surgical and patient factors are also present and we have found it very helpful to use ultrasound bladder scanning routinely for many of our day surgery patients.

PDPH is of concern because, although rare, there have been case reports of serious consequences following prolonged untreated low-pressure headache. For day surgery patients who have had spinal anesthesia, the PDPH rate is of the order of 1% or less [5], non-specific headache being a much more common occurrence. It is clearly important that patients know where to seek help should they experien-

ce symptoms after discharge so that the diagnosis can be made in a timely way.

In King's Lynn there is "Spinal anesthetic patient information sheet", in which we explain what is a spinal anesthetic, benefits of a spinal anesthetic and side effects.

If the patient get a headache or any other problems related to anesthesia can always call to Day Surgery Unit or speak to the on-call Anesthetic Registrar.

## Discussion

The primary objective in day surgery patients to reduce the duration of the block and so it follows that the dose of local anesthetic must be reduced. The spread of this reduced dose can be restricted by using patient positioning so as to obtain a segmental, unilateral or saddle block. In addition, although a small dose of local anesthetic alone may be insufficient to produce a block suitable for surgery, the addition of opioid can enhance the sensory block whilst leaving motor function relatively unaffected. This later effect is referred to as "selective spinal anesthesia" in that the sensory modalities are affected to a greater degree than the motor.

Ben-David, for example, used a combination of heavy Bupivacaine 5mg with Fentanyl 10mcg given in the lateral position with immediate supine positioning for knee arthroscopy [1]. This technique gives a bilateral sensory block whilst most patients retain Bromage scores of 1 or 2 i.e able to flex their knees or better. Korhonen described using heavy Bupivacaine 3mg with Fentanyl 10mcg to produce a denser unilateral block for the same surgery [2]. Earlier this year, a review article in the BJA from the Toronto group summarised a number of similar papers: 4-5mg hyperbaric Bupivacaine can effectively produce spinal anesthesia for knee arthroscopy with unilateral positioning [3]. Still on the subject of restricting block spread, Gurbet et al gave hyperbaric Bupivacaine, just 2.5mg with Fentanyl 25mcg to give a saddle block which was successful for anorectal day surgery [4].

Department of Health target is that three-quarters of elective operations will be performed on a day case basis within the next decade. If this is to be achieved, increasing number of patients presenting

to day surgery will be elderly and/or obese with associated co-morbidities. For many of those patients spinal anesthesia will be a suitable option. Accordingly, we anticipate that the use of spinal anesthesia in day surgery will rise further. Rearranging the operative list and use of esta-

Table II

Use of spinal anesthesia	Number of Units (%)
regularly	13 (12)
sometimes	52 (47)
hardly ever	42 (38)
never	3 (3)

blished low-dose techniques can help to prevent delayed discharge.

In the autumn 2008 a simple postal questionnaire we send to 240 day surgery units in UK. We collected data regarding frequency of use of spinal anesthesia, indications for its use, post-operative problems and follow-up arrangements.

We received 124 (52%) of which 110 were suitable for analysis.

Spinal anesthesia was mostly used for orthopedic procedures followed by general surgical, urological and gynecological procedures. The main reason for selecting spinal anesthesia was cardio-respiratory disease followed by patient preference and the obesity-related considerations.

The further expansion of day surgery will require that anesthetists re-evaluate how best to care for their patients.

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