Staff Attitudes to an Ultrasound-Guided Peripheral Nerve Block Room for Orthopaedic Patients

Abstract:

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Abstract

Ultrasound-guided peripheral nerve blocks have well recognised benefits in orthopaedic patients. Some hospitals, to maximise these benefits, establish dedicated block rooms to deliver this service. Orthopaedic surgery makes up a large proportion of our hospital's workload, and many of these patients would benefit from ultrasound-guided peripheral nerve blocks. We analysed the attitudes of key staff in our hospital towards the establishment of a block room. Sixty questionnaires were distributed and 47 (78%) were completed. Orthopaedic surgeons (n=6) were concerned ultrasound guidance may delay the orthopaedic list (83%), and cause patients pain (67%) and increased anxiety (67%). Anaesthetists (n=10) and Nurses (n=30) were concerned there was insufficient experience in their department to deliver this service (83% and 77%, respectively). However, 91% of all staff believed funding should be available for a block room. Our survey has identified areas of concern, and deficiencies that we must address before proceeding with the development of such a service.

Introduction

Peripheral nerve blocks (PNB) involve injecting local anaesthetic around a nerve to provide anaesthesia or analgesia to a particular region of the body. To accurately target the nerve, a nerve stimulator generating electrical pulses has been used to indicate the needle tips proximity to the target nerve. Once this is confirmed the local anaesthetic may be injected. In recent times, ultrasound has become a popular way of localising the nerve. Serious adverse events include peripheral neuropathy, seizures, respiratory arrest, and cardiac arrest. Fortunately, the incidence of these complications are rare (0-10 incidents per 10,000 cases). When compared with general anaesthesia (GA), PNB have been associated with less postoperative pain and nausea, better patient acceptance, and earlier ambulation and hospital discharge for many different orthopaedic operations. PNB may also be combined with GA or neuraxial anaesthesia for paresis of the foot and toes. Orthopaedic operations to enhance the patients post-operative recovery. Obviously, any intervention that has a significant positive influence on a patients post-operative recovery should have significant economic benefits for the hospital and society in general. This has been demonstrated in a number of studies. However, the method of administering the PNB, and the equipment and environment used, must be time and cost-efficient to realise these benefits.

The establishment of a block room, a dedicated space for the provision of PNB, stocked with the required equipment, and staffed by a trained operator, has been reported in numerous studies in orthopaedic theatres. In general, they report improved theatre efficiency. Over the past 5-10 years, ultrasound guidance is used more frequently for peripheral nerve blocks, in preference over nerve stimulation techniques. While there is strong evidence to suggest it is a safer approach, it has multiple advantages over nerve stimulation, including direct visualisation of the target structures and identifying anatomical variants, reducing local anaesthetic volume, and achieving less painful, better quality blocks. Considering this evidence, a block room should favour ultrasound-guided PNB (US-PNB) to maximise productivity.

Our institution is a 339 bed district hospital. A large proportion of the surgical operations are orthopaedic with approximately 1,500 cases (trauma and elective) performed annually. There is no significant history of US-PNB for orthopaedic patients in the hospital. We surveyed the relevant staff members on knowledge of US-PNB for orthopaedic patients in our hospital. We surveyed the relevant staff members on knowledge of US-PNB for orthopaedic operations, and their attitudes towards potential advantages and disadvantages of introducing a block room to our hospital. The successful introduction of any new service or technique to a hospital is heavily dependent on the support of the majority of the relevant staff. We planned to assess the level of support for such a service, and to identify issues that may obstruct the establishment of an efficient block room.

Methods

Local Research Ethics Committee approval was granted for our survey. We devised a two page questionnaire. It was anonymous, but identified the staff members occupation, and career grade. Staff were asked if they ever worked in a hospital that offered regular US-PNB to orthopaedic patients, and to rate their knowledge of US-PNB (none, basic, moderate, good, expert) to answer a number of questions related to operating a block room for orthopaedic patients in our hospital (Figure 1 and Figure 2). We told them that it was not a test of knowledge, but rather an assessment of their own personal opinions. What did they perceive as the advantages or disadvantages of introducing this service to our hospital? Finally, we asked if they believed the hospital should invest in a block room. Sixty questionnaires were distributed to the relevant departments, and the completed copies were gathered after one week.

Results

Of the 60 questionnaires distributed, 47 (78%) were completed and returned. The staff members represented (n, % total group) were Anaesthetists (AS) (10, 21%), Nurses (NS) (Theatre, Orthopaedic Ward, and Day Ward Nurses) (30, 64%), Orthopaedic Surgeons (OS) (6, 13%), and a Physiotherapist (1, 2%). The percentage of staff from each group that answered yes to a question are represented in Figure 1 (advantages) and Figure 2 (disadvantages).

When considering the advantages of a block room, all groups were in agreement that they expected faster recovery, less PONV, and less delirium post-operatively. However, the OS disagreed with the AS and NS who suggested that a block room would lead to “increased patient satisfaction”, and allow “faster mobilisation”, “decreased length of stay (LOS)”, and “cost savings for the hospital”. When asked about disadvantages or obstacles associated with a block room, OS were most concerned about delays to orthopaedic list (83%), and that it was a painful procedure (67%) that could cause high patient anxiety (67%). AS and NS were most concerned about the inexperienced staff in their individual Departments, 80% and 77% respectively. Ninety-one percent of all staff believed funding should be available for a block room.

In a subgroup analysis, the decision makers in the respective groups (Consultant Orthopaedic Surgeons (3), Consultant Anaesthetists (5), and Clinical Nurse Managers (CMN) (3)), were separated out from the general staff, and their answers were reassessed. We found that the CMN opinions correlated with the general NS on all questions. The CMN were more experienced and knowledgeable (Good/Expert) about the use of US-PNB when compared with the general NS (67% and 33%, respectively) and OS (67% and 20%, respectively). Consultant OS opinions were also in line with the opinions of the Junior OS on most questions except for the question of funding a block room. Only one Consultant felt this would be appropriate (33%) compared with 80% of the Junior OS who had more experience. Consultant OS’s were more experienced and knowledgeable (Good/Expert) of US-PNB when compared with the Junior OS (100% vs. 0%). In contrast, the Consultant AS agreed with the Junior AS on only two factors (100% on faster recovery and better pain control post-operatively). On every other question, the Consultant AS views were contrary to those of the Junior AS. What did the Consultant AS (100%) believe inexperienced anaesthetic staff would compensate the establishment of a block room. Only 40% of Consultant AS had previous experience of US-PNB in another hospital versus 100% of Junior AS.

Discussion

Figures 1 and 2 illustrate the relative importance of the advantages and disadvantages of US-PNB to orthopaedic surgeons in the hospital. Orthopaedic surgery makes up a large proportion of our hospitals workload, and many of these patients would benefit from ultrasound-guided peripheral nerve blocks. There are clear economic benefits, including faster recovery, less PONV, and less delirium for orthopaedic patients in the hospital. We surveyed the relevant staff members on knowledge of US-PNB for orthopaedic operations, and their attitudes towards potential advantages and disadvantages of introducing a block room to our hospital. The successful introduction of any new service or technique to a hospital is heavily dependent on the support of the majority of the relevant staff. We planned to assess the level of support for such a service, and to identify issues that may obstruct the establishment of an efficient block room.
We feel our survey has identified a number of areas that should be addressed before proceeding with further plans. The OS cited delays to orthopaedic list as the major disadvantage to setting up a block room. A survey of Canadian orthopaedic trainee on the cited delays in operating rooms and unpredictable success as the two main reasons they would not favour PNB. An efficient service should not delay lists, and may indeed improve list flow. However, OS perception is often more relevant than fact, and a subsequent analysis showed a surgeons personal preference for a nerve block predicted their preference for their patients anaesthesia. This is important, because the surgeon can influence the patients choice of anaesthetic. In the Canadian survey, 48% of surgeons directed the patient preference choice pre-operatively. In our study, the OS also raised concerns that it was a painful procedure and may cause high patient anxiety. Patients major concerns in relation to a PNB relate to a fear of having the operation, and at some stage patients may expect to be offered this routinely. Establishing a block room should be funded by the hospital administration.

Our study is limited by a small sample size. However, a good response rate from the key staff members provides us with very relevant data. Our results are unlikely to reflect opinions in other institutions, but repeating the same process could provide further data. This study has identified a number of issues that, through good hyper--disciplinary communication and educational programs, are not insurmountable. US-PNB in orthopaedic patients is a rapidly growing area, and at some stage patients may expect to be offered this routinely. Establishing a block room maximises the efficiency of this service, and provides a safe environment for practice and further education of trainees.

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References


5. Ilfeld BM, Wright TW, Ennecking FR, Mace JA, Shuster JJ, Spadon EB, Chmelewski TL, Vandenbore K. Total shoulder arthroplasty: patient preferences for pain management. Regional nerve block improves perioperative outcomes with all the required equipment in one location, and a good teaching environment for junior staff. The investment required to establish a modern block room is not impossible. Establishing a block room provides an optimal environment for pain management after major orthopedic surgery. Regional Anesthesia and Pain Medicine 2013, Mar;38:105-11.

6. Ilfeld BM, Ennecking FR, Mace JA, Shuster JJ, Spadon EB, Chmelewski TL, Vandenbore K. Total shoulder arthroplasty: patient preferences for pain management. Regional nerve block improves perioperative outcomes with all the required equipment in one location, and a good teaching environment for junior staff. The investment required to establish a modern block room is not impossible. Establishing a block room provides an optimal environment for pain management after major orthopedic surgery. Regional Anesthesia and Pain Medicine 2013, Mar;38:105-11.

7. Ilfeld BM, Wright TW, Ennecking FR, Mace JA, Shuster JJ, Spadon EB, Chmelewski TL, Vandenbore K. Total shoulder arthroplasty: patient preferences for pain management. Regional nerve block improves perioperative outcomes with all the required equipment in one location, and a good teaching environment for junior staff. The investment required to establish a modern block room is not impossible. Establishing a block room provides an optimal environment for pain management after major orthopedic surgery. Regional Anesthesia and Pain Medicine 2013, Mar;38:105-11.


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