

Counterbalancing clinical supervision and independent practice: case studies in learning thoracic epidural catheter insertion

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Key points

- In a qualitative study, the author explored the process of learning in anaesthesia clinical practice.
- Trainees and consultants were interviewed regarding their experience during insertion of a thoracic epidural catheter.
- Insufficient opportunities, lack of trainee/trainer familiarity, and mismatched expectations were the barriers to learning experience.
- A model for more structured clinical skill teaching has been suggested.

Background. Thoracic epidural catheter placement is an example of a demanding and high-risk clinical skill that junior anaesthetists need to learn by experience and under the supervision of consultants. This learning is known to present challenges that require further study.

Methods. Ten consultant and 10 trainee anaesthetists in a teaching hospital were interviewed about teaching and learning this skill in the operating theatre, and a phenomenological analysis of their experience was performed.

Results. Trainee participation was limited by time pressure, lack of familiarity with consultants, and consultants' own need for clinical experience. There was a particular tension between safe and effective consultant practice and permitting trainees' independence. Three distinct stages of participation and assistance were identified from reports of ideal practice: early (part-task or basic procedure, consultant always present giving instruction and feedback), middle (independent practice with straightforward cases without further instruction), and late (skill extension and transfer). Learning assistance provided by consultants varied, but it was often not matched to the trainees' stages of learning. Negotiation of participation and assistance was recognized as being useful, but it did not happen routinely.

Conclusions. There are many obstacles to trainees' participation in thoracic epidural catheter insertion, and learning assistance is not matched to need. A more explicit understanding of stages of learning is required to benefit the learning of this and other advanced clinical skills.

Keywords: anaesthetic techniques, epidural; education, junior staff

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Being a young and inexperienced anaesthetist is known to be stressful. A previous analysis and description of trainees' experiences and their tough working conditions¹ provides a quotation that will resonate with other practitioners performing epidural techniques:

You can feel the staff standing there waiting for me, and I have been busy doing that epidural for half an hour....

This suggests challenge, unmet expectation, and isolation. It prompts comment on the feeling of deep insufficiency, loneliness, and lack of support for junior anaesthetists. Easy access to senior cover and support for junior staff is mandated in current training programmes, but a learner's need for help has to compete with the many other pressures on their supervisors. Trainees from a different acute speciality have found it difficult to expose similar feelings of inadequacy and were keen on being seen to be performing well.² In this context, the supportiveness of supervisors' behaviour

might be expected to be a powerful determinant of the safety and effectiveness of workplace-based learning.

The aim of this study is to explore in more depth the process of learning clinical procedures in the operating theatre by focusing on a single technique. Thoracic epidural catheter insertion was chosen because it presents the technical challenge of negotiating the needle through narrow interlaminar spaces in close proximity to the spinal cord that, if damaged, would result in paraplegia. There is no easy method of verifying correct placement at the time of insertion, and success rates are modest.³ Insertion requires a high level of communication with the patient and health-care team, anticipating and minimizing discomfort, and recognizing the limits of safe practice, all of which are defined as components of expertise in regional anaesthesia.⁴ It is a core skill for higher professional training in the UK,⁵ although it is also known that some juniors may have difficulty mastering the technique.⁶

This research aims to explore the relationship between consultants and trainees during teaching and learning activity in the clinical workplace. It includes the progression from novice right through to expert, in contrast to much previous work that focuses on the initial stages of training (e.g. Peyton).⁷

Methods

The study was approved by the local research Ethics Committee in two phases. First, 10 trainee anaesthetists were studied, and after analysis of the data from their interviews, the study was extended in order to triangulate the findings by using the consultants' perspective. Recruitment was by response to an e-mail invitation within the anaesthetic department of a large teaching hospital. The participants appeared to represent a cross-section of the department and all gave written, informed consent. The author did not have a significant role in the academic assessment of the trainee participants.

Data collection

The participants took part in a one-to-one interview that was recorded. Interviews commenced with the general question 'Tell me about your experience of learning/teaching thoracic epidurals'. Questions regarding obstacles to effective training and feelings about the training process were brought up as topics in the interview if they were not volunteered. Participants were free to elaborate any areas of satisfaction or concern. Care was taken to avoid imposing views on the participants by using open questions whenever possible.

Interview analysis

The stepwise analytical procedure based on Giorgi's⁸ descriptive phenomenological method and described in detail by Larsson¹ was used. In summary, this involves transcription of the interviews, dividing the data into meaning units (capturing shifts in meaning) and transformation of these into language relevant to the research question. The themes synthesized from the data were summarized and compared with the original interviews to confirm that they made sense in the context from which they were derived. The author sought the stance of observer by relying on the objective data derived from the interview statements.

Results

While consultants and trainees were caught up in the same tension between assuming a hands-on or hands-off role, the tension was a reciprocal one for the two parties. The tensions were accentuated by obstacles to trainees being active participants and consultants providing the right level of help at the right moment. The findings are presented as a narrative report with representative quotations from consultants (C) and trainees (T) to illustrate it.

Trainee access to and participation in practice

Opportunity for practice was limited because thoracic epidurals are performed relatively infrequently. Consultants observed that trainees' rotas prevented them from attending many of the operating lists on which they were performed and trainees expressed frustration when they were allocated to alternative lists with less relevant learning opportunities.

Consultants were equivocal about trainees' participation for a number of reasons. They perceived trainees' performance as less effective than their own and more likely to result in further intervention when the trainee was no longer present.

Somebody else's uncertainty is more difficult to deal with and I'm going to have to deal with their uncertainty for the whole case and then at the end of the case. (C)

Consultants were concerned about their own level of experience and responsibility to maintain and develop their own practice.

The thing that stopped me letting them do it was the lack of opportunity for me to practice. I am protecting that particular patient and my future patients. (C)

I'm at a fairly critical level of exposure myself and I wouldn't want to drop much below that and continue doing them. (C)

Participation was usually determined by the consultant on the basis of an informal assessment of the trainee. This included both clinical and non-clinical factors and was dependent on time spent together. There was little reference to external measures of progress or competence.

I'm often faced with trainees who I've never met before and with any practical procedure or indeed patient assessment, it really depends on my informal assessment of that trainee and a brief discussion to try and ascertain at what level of competence they are at. (C)

I usually get an impression of their skills from working with them, if they are gentle, knowledgeable and seem to be able to manage self-assessment. (C)

Sometimes access was granted reluctantly on subjective, very tenuous grounds:

What I do depends on the trainee. If they are junior and they turn up on time and manage not to do something to irritate me, I might let them do it. They have to have the right demeanour and the general impression to me has to be right. (C)

Lack of familiarity often resulted in participation being deferred, but, thereafter, further opportunities did not materialize.

The consultant said... 'let me do this first, you see me do it, and maybe the next case, the next opportunity arises, you can do it'. (C)

Examples of cases where participation was misjudged were given. A common theme was failure of communication and misunderstanding of each other's expectations and experience.

There is often great deference to a senior figure of the consultant... an urge to please, or biting off more than they can chew. (C)

The consultant was not very helpful in the sense that she said 'how many have you done? If you didn't know how to do it, then why did you do it?' (T)

This last quotation is from a trainee who was describing having attempted an insertion that resulted in the complication of a thoracic epidural puncture. They had done only one case previously with a different consultant. They were keen to show that they were enthusiastic but were uncertain how to explain that they needed more instruction. Fortunately, the patient was unharmed, but the trainee had been upset by the incident and the lack of support provided by the consultant.

Learning assistance

Consultant presence and observation

The consultant was usually present in the room when the trainee was performing thoracic epidurals and this was always the case with novices who welcomed high levels of support. However, once trainees were able to manage the complete procedure, they found close observation and feedback distracting. Trainees reported that being observed could discourage them from taking responsibility for the procedure:

I think being watched makes you more . . . , you're worried about who's watching you, how you're impressing them rather than the actual procedure you're doing . . . (T)

Consultants agreed and felt that there was also potential for patient harm.

. . . the trainee may also sort of absolve themselves of some responsibility, if you're watching them do a procedure, the trainee may say [think] 'I'll just carry on until they tell me to stop'. (C)

Feedback

The nature of feedback given was variable and rarely structured often occurring during the procedure. Novice trainees found this input helpful and reassuring, whereas at later stages in training, they preferred to be allowed to practice without it.

I don't mind somebody being next to me, but if they really are, you know, this, this and pointing and doing as you're trying to get on with it. (T)

Consultants were able to reflect on their own experiences of training and agreed that feedback was not always needed.

Perhaps I shouldn't give the more senior trainees any [feedback], not unless there's anything majorly wrong with what they're doing. (C)

Consultant taking over

If difficulties were encountered, the trainee usually surrendered the procedure to the consultant, but the point at which this occurred was poorly defined and led to uncertainty and concern.

I probably take over sooner than I should. By nature I want to snatch it out of their hands. (C)

Consultants differed in their willingness to allow trainees to struggle. Trainees felt that the older consultants were more relaxed and were more likely to intervene only when really necessary.

. . . other people will give you longer to try and get things in, and may well just try and talk you through it while you're there. (T)

Consultant absence

The more senior trainees were sometimes left to perform the procedure unobserved. This was welcomed and felt to be helpful and appropriate.

I think as a trainee, you feel, sometimes feel, you take charge more of the situation if you are actually on your own and ultimately responsible. (T)

However, without proper negotiation, it could be misjudged and leave the trainee and patient vulnerable.

I think they actually just didn't want to intimidate me, but . . . so I think it was meant in a good way but it wasn't really discussed or planned, that I would just be on my own. (T)

This last quotation is from a trainee who felt vulnerable and uncertain in the absence of the consultant who apparently assumed that their presence would have been counterproductive. Lack of communication between the consultant and trainee was frequently described as a causative factor with negative learning experiences.

Three stages of learning

The relationship and interaction between the consultant and trainee, level of participation, case complexity, and characteristics of feedback clearly need to change according to the progress of the trainee. There are three stages of learning defined by differences in these factors, which were described by participants referring to ideal circumstances of training.

Early stage

This includes the trainee's initial observation and participation in part-task or a basic procedure in clinically straightforward cases preferably with familiar and consistent consultants who are present throughout and assuming full responsibility for the management of all aspects of the case. Novice trainees are reassured by being alongside the consultant doing the procedure together. Continuous feedback with comments and tips are generally welcomed.

I felt comfortable. I didn't feel stressed because I had somebody senior there scrubbed and ready to help and he was very, very patient and he wasn't going to let me just do a procedure on my own without some guidance. I would have found it more stressful if I had to do it on my own with just him watching me. (T)

This stage is complete when the trainee is competent to perform an uncomplicated procedure without regular direction.

Middle stage

This is characterized by independent practice with the trainee taking responsibility for the procedure, which remains straightforward. They may be preoccupied with the procedure, so the supervising consultant may have to attend to the other aspects of the case as well. The consultant will recognize that the trainee is using their own rather than the consultant's preferred technique, and it is helpful to the trainees when this is permitted. Otherwise, learning may be impeded.

... you perhaps don't develop your own way of doing something, because you tend to go along with the technique of whoever's supervising you. (T) (A trainee reflecting on the pressure to use their consultant's technique)

Feedback and comment are avoided, if possible, especially during the procedure.

Perhaps I shouldn't say anything to them because they're just finding the technique that works for them (C)

During this stage, trainees develop confidence with their own technique. They respond to cues and difficulties during the procedure without prompting and will later prefer to be 'left to get on with it' with the proviso that help is available if necessary.

Late stage

When confident with straightforward cases, trainees will seek to extend their repertoire, for example, with variations of anatomical approach. They are more likely to relish the challenge of difficult and demanding cases for which they may need to seek some advice. Consultant presence is intermittent but when present, constructive feedback and critical discussion are generally welcomed. At this stage, trainees may involve themselves in teaching the technique.

The later stage of training is more about developing your case-load, developing adaptations to the technique that work better either for you as an individual or work better with certain cohorts of patients. (T)

Negotiating learning support

Matching assistance to the trainees' needs is recognized as important. Trainees usually have a clear understanding of what they require in terms of learning support, but few are explicit with requirements for supervision. Negotiation between the consultant and trainee to determine learning assistance is recognized as a useful practice, but it is widely acknowledged that it rarely occurs.

I think it's rare that trainees come to you and are quite prescriptive of what they want you to do... it would be a very good thing if they came up and said well, I want to get this from this session or this procedure. (C)

Discussion

Principal findings and meaning

The results show that trainee participation in this experiential learning is limited by lack of familiarity to the supervising

consultant and by poor organization of access to a limited number of clinical cases. Learning is compromised further because assistance (consultant presence, feedback, and taking over) is not matched closely to the trainees' needs. The demonstration of three distinct stages of learning, each with its own requirements for participation, case complexity, consultant presence, and feedback, explains why the need for assistance changes as learning progresses. It provides a model for introducing more structure to clinical skills training in the workplace. The findings are applicable to many other clinical procedures.

Strengths and limitations

The study isolates the specific effect of acquiring a complex, high-risk clinical skill because the participants are already familiar with the nature and stresses of teaching and learning clinical procedures in the operating theatre. It is powerful because it explores the relationship between the consultant and trainee from both perspectives.

The numbers of participants are small but comparable with similar qualitative studies,^{1 4 9} and there is a high level of consistency in the data among participants and between the two groups. The analysis and interpretation of the data were obviously informed by the author's own knowledge and insights. Also, there is potential for sample bias from recruitment of participants who are particularly dissatisfied with training and also from recall bias for unfavourable events; however, these are unlikely explanations for the majority of the findings.

Comparison with existing literature

Skill acquisition has long been conceptualized as a staged process. The stages identified in this study correspond to the first three of the five stages of the Dreyfus and Dreyfus model¹⁰ (novice, competent, and proficient) and the three stages of both the Fitts and Possner¹¹ (cognitive, associative, and autonomous) and Anderson and Schooler¹² (knowledge compilation, proceduralization, and rule refinement) models. The middle stage of all of these models involves the development of internal or self-regulation feedback mechanisms that are so critical for higher levels of professional practice.¹³ In the current study, this middle stage was easily disrupted by unsolicited instruction, comment, or feedback. This observation aligns with the conclusions of a review of the cognitive psychology literature that confirms that trainees require independence at the competent stage in order for them to progress towards expertise.¹⁴

The assessment of trainees by consultants at the point of care is necessary in order to provide appropriate safe independent practice.¹⁵ It is critical in deciding the 'challenge point' for each learner and with it the level and type of learning assistance that is offered.¹⁶ Anaesthesia consultants have expressed confidence in determining trainees' competence by observing their attitude and general approach, and also technical skill, but this is a process that takes time and needs to be repeated to be a reliable indicator.¹⁷

Recent reductions in clinical training rotas in hospital departments are likely to make this difficult.¹⁸ Unfamiliarity of the consultant and trainee and lack of reference to more formal assessment are likely explanations for some of the findings of the current study.

In a study of obstetric epidural analgesia, the onus for negotiating supervision appeared to be with the registrar,⁹ and anaesthetic trainees have generally been encouraged to accept much of the responsibility for the level of supervision they receive.¹⁹ However, the means of achieving this are unclear. Elsewhere in healthcare, it is recognized that teachers and students need to size up the training environment and respond appropriately to each other's behaviour, style, attitude, and even demeanour in order to negotiate participation in learning as a joint responsibility.²⁰ This seems to be what is required in the workplace for learning thoracic epidural catheter insertion.

Implications and future work

There is demand for a more structured approach to the skills curriculum that balances graduated independence of practice with patient safety.²¹

A more explicit understanding that learning complex clinical skills in the workplace is a staged process will enable trainee participation and assistance to be negotiated more appropriately and make better use of limited clinical learning opportunities.

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Conflict of interest

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