

Experience in the Use of Epidural Anaesthesia

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Abstract

Background: Epidural anaesthesia is applicable for a wide range of surgical procedures and offers distinct advantages over general and spinal anaesthesia. It is however underutilised in our environment. We report a one year experience in the use of this technique. Our objective is to describe a one year experience in the use of epidural anaesthesia with emphasis on the scope and safety in our institution.

Method: A retrospective study of all patients that had epidural anaesthesia over a one year period for different procedures. Case notes and anaesthetic records were studied and analysed using EPI info 3.2.1. software.

Results: Thirty two patients had epidural anaesthesia over the period. Majority (18cases) were caesarean sections (56.3%). There were 9 general surgical cases (28.1%), four gynaecologic (12.0%) and one orthopaedic (3.1%) cases. Of the five complications observed (15.6%), only two could be traced to the technique of anaesthesia and the lone mortality (3.1%) was unconnected.

Conclusion: We conclude that epidural anaesthesia is applicable to a wide range of procedures within and across disciplines in our practice and is both easy to perform and safe.

Key words: epidural anaesthesia, scope, safety, our practice.

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Introduction

Epidural anaesthesia is a central neuraxial blocking technique with many applications¹. It can be used as sole anaesthetic for procedures involving the lower limbs, pelvis, perineum and lower abdomen.

Its application has also been extended to the upper abdomen, thorax and even the upper limbs². Regional techniques of anaesthesia generally offer distinct advantages over general anaesthesia. Firstly there is much less homeostatic disturbance making it particularly useful in high risk-surgical patients. Minimal respiratory disruption allows the patient to maintain control of their breathing. Overall metabolic response to the trauma of surgery is also decreased³. The main advantage of epidural anaesthesia over spinal anaesthesia is the ability to maintain continuous anaesthesia after placement of an epidural catheter, thus making it useful for procedures of long duration by 'topping up' of the anaesthetic agent. The epidural catheter can also be used for post operative analgesia as well as for pain control in obstetrics. Despite the obvious advantages offered by epidural anaesthesia, it is not as frequently practiced as expected. We review our experience in the use of this technique over a one year period, with a view to highlighting aspects of the scope and safety.

Patients and methods

Patient records from June 2006 to May 2007 inclusive were studied retrospectively. In all cases, the anaesthesia was administered by the same anaesthetist, a physician anaesthesiologist well versed in the technique. It was performed either in the sitting position or the left lateral position. Under aseptic conditions, the site of administration was selected depending on the desired height of anaesthesia. Utilizing the posterior approach, a wheal is raised on the skin of the site and the proposed track infiltrated with 2-5ml of lignocaine. A Tuohy needle was then passed between the spinous processes and advanced into the epidural space. Access to the

epidural space was confirmed using the hanging drop method. In this technique, a drop of saline is left on the hub of the Tuohy needle which was then slowly advanced. When this drop of saline was sucked in then access to the epidural space was confirmed. A test dose of the anaesthetic agent was then administered. Subsequently an epidural catheter was threaded through the Tuohy needle which was then removed leaving the catheter in situ. The required volume of the selected anaesthetic agent is then administered. Adhesive tape was used to secure the catheter in place and the patient reverted to the desired operative position. Information from the patient's folder was entered into a questionnaire on the EPI info 3.3.2 software which was used for the statistical analysis.

Results

34 patients had surgery under epidural anaesthesia over the study period. The case files of 2 could not be traced so only 32 were analyzed. There were 8 males and 24 females giving a male to female ratio of 1:3. The ages ranged from 17 to 65 years with a mean of 30.4 + 11.2 years).

Procedures were categorised as obstetric in 18 cases (56.3%), general surgical in 9 (28.1%), gynaecologic 4 (12.0%) and orthopaedic 1 (3.1%) (Figure 1). A total of ten different operations were done (table III). The most common operation was caesarean section (18 or 56.3%). There were three cases of appendicectomy, 2 cases each of prostatectomy, hysterectomy and herniorrhaphy. There was 1 case each of above knee amputation, colostomy closure, laparotomy, myomectomy and excision of an extremity soft tissue sarcoma, representing 3.1% each. The most commonly used inter-vertebral space for access was the L1/L2 inter-space (68.8%) (Figure 2). Other spaces used extended from the Th7/Th8 (3.1%) to the L3/L4 (6.3%). The mean duration of hospital stay was 7.3 days for caesarean section, 2.7 days for appendicectomy and 5.5 days for herniorrhaphy (Table I). Of the 5 complications (15.6%) observed (Table II), only two (6.3%) of these (headaches) could be attributable to the technique of anaesthesia. One mortality was recorded (3.1%). It was not related to the technique of anaesthesia.

Table I: duration of hospital stay

PROCEDURE	Mean duration of hospital stay (days)
Amputation	15.0
Appendicectomy	2.6
Caesarean section	7.3
Colostomy closure	7.0
Herniorrhaphy	5.5
Hysterectomy	7.0
Laparotomy	8.0
Excision(soft tis. Sarcoma)	14.0
Myomectomy	7.0
Prostatectomy	9.5

Table II: Complications

Complication	Number	Per centage
Wound infection	2	40
Fever	1	20
Headache	2	40
Total	5	100

Table 3: procedures

Procedure	Number	Percentage
Amputation	1	3.1
Appendicectomy	3	9.4
Caesarean section	18	56.3
Colostomy closure	1	3.1
Herniorrhaphy	2	6.3
Hysterectomy	2	6.3
Laparotomy	1	3.1
Myomectomy	1	3.1
Prostatectomy	2	6.3
Excision of soft tissue sarcoma	1	3.1
Total	32	100

Figure 1: Type of Surgery

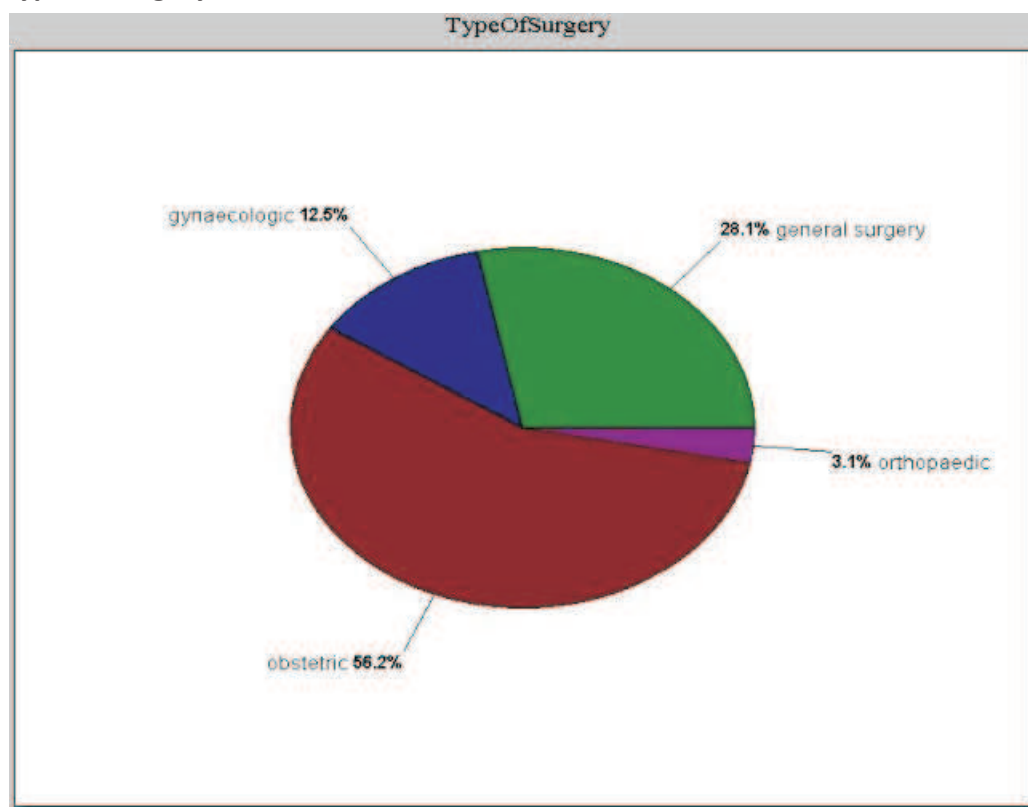
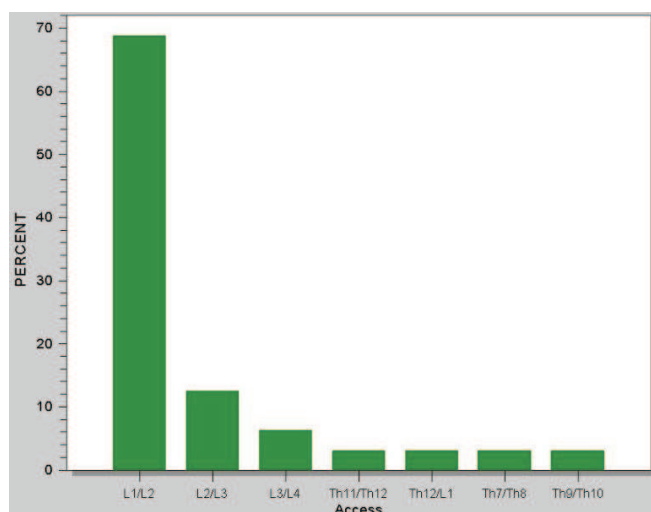


Figure 2: Type of Access

Discussion

Majority of our operations were obstetric (caesarean section), in 18 patients (56%). General surgical procedures, (appendicectomy, prostatectomy, laparotomy, excision of a soft tissue sarcoma and herniorrhaphy) accounted for 9 cases (28%). The gynaecologic operations were 9 which accounted for 12%, mainly hysterectomies and myomectomies. The only orthopaedic case was an above-knee amputation (3.1%). This spread is consistent with the wide range of procedures for which epidural anaesthesia is used in the literature. This mix constitutes some of the more routinely performed operations in our institution, showing that epidural anaesthesia does find some relevance in our practice. In more sophisticated practices, this scope has further been expanded to include upper abdominal, thoracic and upper limb (cervical) procedures². It is also becoming increasingly important as a modality in paediatric surgical anaesthesia and analgesia⁴.

The age and sex distribution is indicative of the predominant use of epidural anaesthesia in women of reproductive age, specifically for caesarean section in our setting. The predominant inter-vertebral space for access (L1/L2 inter-space) is reflective of the desired height of anaesthesia for this procedure. The overall duration of hospital stay, with respect to each procedure was in keeping with the usual practice when procedures were done under general anaesthesia.

Several authors have noted that epidural anaesthesia is associated with reduced hospital stay and, reduced cost of hospitalisation^{5,6}. Of the five complications (15.6%) we observed, only two (cases of headache) could be attributed to the technique of anaesthesia. These resolved on simple analgesics. None of the more serious complications associated with epidural anaesthesia were encountered in our study. This low rate of major complications is a recurrent finding by many workers^{5,6,7}. The single mortality (3.1%) occurred following a prostatectomy and was not directly attributable to the epidural anaesthesia.

Yaeger⁶ in his elegant paper of 1987 conclusively demonstrated that high-risk surgical patients operated under epidural anaesthesia had statistically significant reduction in overall post operative complications, cardiovascular complications, major infective complications, urinary corticosteroid excretion (a marker for surgical stress) and importantly, hospital costs when compared to a control group undergoing surgery under general anaesthesia. Although some researchers have found no overall difference in long-term morbidity or mortality between regional and general anaesthesia^{5,8}, there appears to be a consensus that epidural is associated with superior analgesia, reduction in peri-operative stress response and respiratory complications^{5,9,10,11}.

We observe that epidural anaesthesia in our environment tends to be reserved for patients with severe co-morbidity in whom general anaesthesia is considered unsafe¹². While it is undeniably very useful in such high-risk conditions^{5,6,12,13}, this makes its use less than routine in our environment. Developing sufficient expertise in administering epidural anaesthesia safely requires skill, time and practice. It is difficult to achieve such proficiency in a setting in which the procedure is practiced infrequently. Our study demonstrates the versatility and safety profile of epidural anaesthesia in our practice. Although we did not use it for post operative or obstetric analgesia, we found it useful not only in

high-risk patients, but also in patients otherwise fit for general anaesthesia. The usefulness of epidural anaesthesia in our environment is difficult to ignore. With the patient awake during surgery, intra- and post-operative monitoring is not as demanding as in general anaesthesia. This is important considering the paucity of sophisticated monitoring gadgets in our operating theatres. Also the burden on nursing personnel in the wards is less than that demanded by general anaesthesia in the immediate post-operative period. This is particularly important in our busy surgical wards with few nurses attending to a high number of patients. The prospects for post operative and obstetric analgesia are immense but remain largely underutilised. In a study from UCH Ibadan, epidural anaesthesia accounted for only 1 % of post operative analgesia¹⁴.

A review of options for analgesia in labour from Benin found that epidural not only provided superior analgesia but was also fast, effective and safe¹⁵, while a large survey of antenatal patients in UCH Ibadan found that though the awareness of obstetric analgesia was low, a majority (57.6%), would welcome analgesia in labour if offered¹⁶. We posit therefore that the argument in favour of epidural anaesthesia is compelling and calls for a renaissance of this technique in our environment.

Recommendation: a call for a renaissance in the practice of epidural anaesthesia is made. Surgeons and anaesthesiologists are encouraged to embrace the technique and avail themselves of the numerous advantages it offers.

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