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Evaluation of safety and quality of surgical care at a Veterinary Teaching Hospital

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A retrospective review of 463 case notes of surgical procedures performed on dogs at the surgery unit of the Veterinary Teaching Hospital, University of Ibadan Nigeria between 2003 and 2013 was conducted to evaluate the level of compliance with safety and quality of care standards. Quality of patients' records of major surgical procedures was evaluated with reference to pre-surgical evaluation protocols, anesthetic protocols, events during and after operation, complications and surgical outcomes. The results showed that records of significant number of indicators of safety and quality evaluated were not documented in 69.23% of procedures. Records of anesthetic monitoring, pre-surgical protocol and post-operative follow-up were documented in only 5.83, 19.00 and 25.05% of procedures, respectively, while complications were recorded in 38.01% of procedures audited. Records of anesthetic and surgical risks assessments were not reported in over 80.00% of procedures while complications were documented in 38.01% of audited procedures. These findings indicate substantial non-compliance with standard practices and guidelines on documentation of surgical procedures and a possible influence on surgical outcomes.

Key words: Safety, quality, surgical, care.

INTRODUCTION

Establishment of standards for veterinary practice facilities, be it private or state owned, requires that some basic facilities irrespective of diversity and location of practices, must be put in place, to ensure safety and guarantee quality of practice. While the development of a single set of specific standards applicable to all practices is somewhat not realizable, the desirability of some general guidelines aimed at ensuring safety and good quality of practice had received tremendous appropriate attention by numerous regulating bodies globally. Key among those guidelines are cleanliness and neatness of personnel and facilities, access to adequate equipment for resolution of diagnostic conflicts, adequate and complete patient and personnel records, proper equipment for anesthesia management and monitoring and provision of surgery in an aseptic environment with appropriate pre and post operative considerations (Russel, 2006; HSSEC, 2012).

Surgery being any procedure that exposes tissues normally covered by skin or mucosa can result in pain,

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damage to tissue and post-operative infections. It thus demands strict adherence to stringent guidelines, regarding training, surgical facilities, asepsis, surgical preparation, anesthesia, intra-operative records, analgesia, surgical technique and post-operative monitoring.

Attempts at producing high quality research information with respect to safety and quality of surgical practice have received tremendous boost in recent times. This is attested to by the number of institutions and decision-making and policy-formulating bodies that were established to help improve the safety and quality of surgical practice. To further underscore the importance of safety and quality in surgical practice, many organizations under the auspices of the Council on Surgical and Peri-operative Safety were established with a common goal that focuses on patient safety and promotion of policies and best practices that create safe and high quality healthcare environments. Among these institutions are: The Agency for Healthcare and Research Quality (HRQ); Anaesthesia Patient Safety Foundation (APSF); Joint Commission International for Patient Safety (JCIPS); Keystone Centre for Patient Safety and Quality (KCPSQ) and Vet Medical Board for Hospital Standards and Self Evaluation (HSSEC).

The ultimate goal globally regarding healthcare givers, whether human or veterinary is to deliver safe, high quality healthcare to patients in all clinical settings. This goal remains a tall order due to inadequacy in health systems resources particularly in a resource constrained setting, such as Nigeria (Kabe et al., 2006). Case note review methodology has been used by Peer Review Organizations through holistic implicit review methods, to determine standards of care, adverse events and clinical auditing in the U.S.A, Australia and the UK (Darzi, 2008). Despite its shortcomings, the use of case notes as the basis for assessing safety and quality of care is still almost universally used as a primary data source to provide process or care data and establish a relationship with outcome of care (Thomas et al., 2002).

The present study was informed by the need to develop best practices and guidelines for safe and quality surgical care in the study centre. It also aims at setting in processes for ensuring that surgeons and hospitals implement best practices by evaluating their level of compliance with minimum safety and quality of care standards required by law for best practices.

MATERIALS AND METHODS

A retrospective review of 654 case notes of surgical procedures performed on dogs at the surgery unit of the veterinary teaching hospital, University of Ibadan, between January, 2003 and December, 2013 was undertaken. All the procedures performed during the period under reference were classified into major and minor surgery. Procedures that involved entering into the body cavity (thorax, abdomen) and those with potential of having significant complications for example, orthopedic procedures were classified as major and included in the study. Other procedures that did not meet these criteria were classified as minor and excluded from the study. Twenty nine diagnosed surgical cases were not treated either because it was considered that the animals would not benefit from treatment or owners could not afford the cost. They were excluded from the study. A critical analysis of the 463 out of 654 that satisfied the inclusion criteria, was painstakingly undertaken by evaluating the quality of detailed patient records contained in individual case files, with reference to pre-surgical evaluation protocol, anesthetic induction, maintenance and monitoring including complications, events during operative procedure, surgical antibiotic prophylaxis, surgical outcomes/fatalities, post-operative complications including surgical site injection and post-operative follow-up. Data obtained were subjected to descriptive statistical analysis.

RESULTS AND DISCURSION

A total of 654 surgical procedures were documented during the period of study. Table 1 shows the categorization of procedures performed on the animals. Of the 654 procedures audited, 463 (70.79%) and 191 (29.21%) were categorized as major and minor, respectively. Open reduction of fracture/luxation were the most performed major procedure (201 out of 463; 43.41%), while splenectomy and cyatotomy procedures were the least performed and recorded (3 out of 463; 0.65%). Records of anesthesia used and prophylactic antibiotic administration were documented in all the procedures evaluated (Figure 1). Records of post-operative follow-up, pre-surgical evaluation tests, temperature maintenance during surgery and anesthetic monitoring were not documented in about 75.00% or more of procedures. Distribution of recorded complications according to procedures is presented in Table 2.

Percentage in Parentheses

One hundred and seventy six (38.01%) of the procedures audited were attended with various complications which included surgical site infections (14.47%), anesthetic complications (3.67%), post-operative complications aside from surgical site infections (18.79%) and fatalities (1.07%). Among the procedures evaluated, open reduction of fracture/luxation was associated with the highest number (91 out of 201; 45.2%) of recorded complications.

Medical record review has become a standard means of assessing quality and safety of care. This is despite uncertainty about which methods of record review are most effective and reliable (Hutchison et al., 2010). Similarly, review of quality care as described in written case notes has become a standard means of assessing variation from quality standard and for identifying adverse incidents, either concerning individual or groups of patients (HSSEC, 2012).

The present study utilized criterion-based review method that assessed quality of care that is anchored on a set of specific criteria, drawn from information from

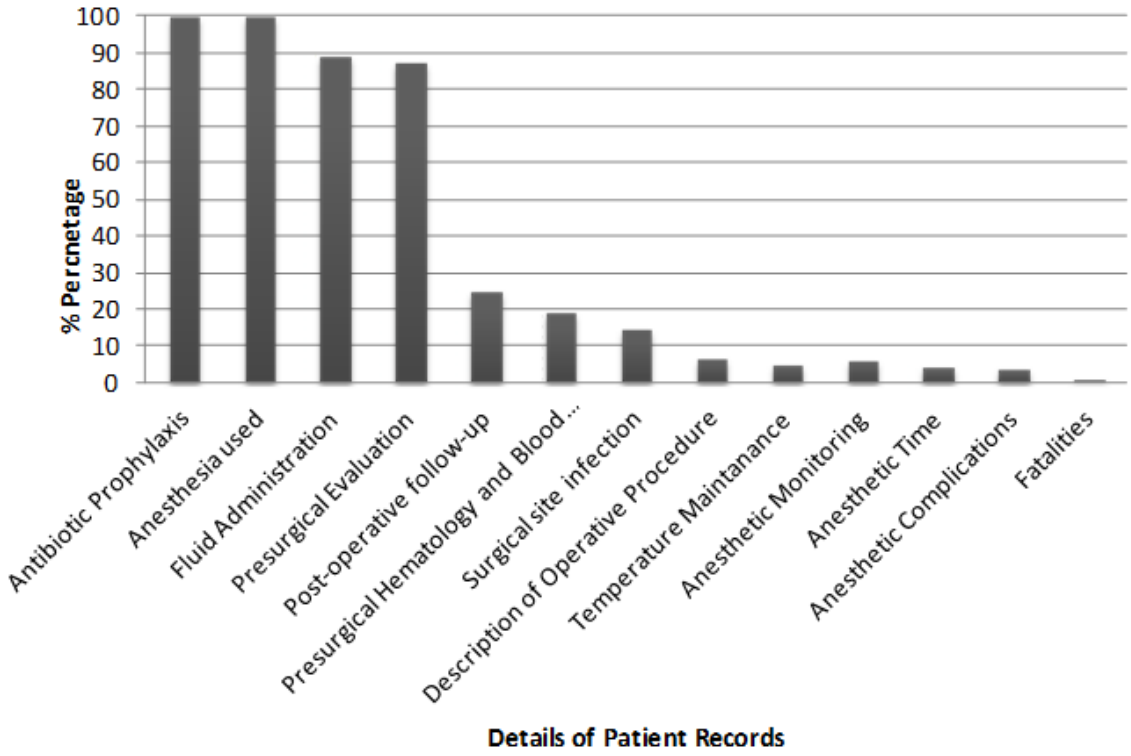

Figure 1. Details of patient records on 463 documented major surgical procedures evaluated (2003-2013).

Table 1. Categorization of major surgical procedures documented (2003-2013).

Procedure	Number (n)	Percentage (%)
Open Reduction of fracture/Luxation	201	43.41
Ovariohysterectomy	119	25.70
Caesarian operation	62	13.39
Hernioraph/Hernioplasty	26	5.62
Intestinal Procedures	17	3.67
Gastric Operation	11	2.37
Eye Operation	8	1.72
Thoracotomy/Esophagotomy	4	0.86
Ear Resection	5	1.08
Exploratory Lapatomy	4	0.86
Spleenectomy	3	0.65
Cystotomy	3	0.65
Total	463	100

patients from patients' record. Safety and quality of surgical care was evaluated using information regarding the process, procedure, complications and outcome of surgical procedures as documented in individual case files of the hospital. Quite a substantial number of documented procedures (70.79%) performed in the hospital during the period under reference were categorized as major surgeries. This class of procedures requires adequate attention to safety and quality of care, in addition to demanding greater skill and precision on the part of the surgeon, to influence positive outcome.

Most performed procedure, open reduction of fracture/luxation was attended with incidence rates of post-operative complication and surgical site infection of 21.39

Table 2. Distribution of documented complications of major surgical procedures.

Procedure	No. of complications documented	Distribution complication			
		Surgical site infection	Anesthetic complications	Post-operative complications	Fatalities
Ovariohysterectomy (n=119)	47 (39.49)	18 (15.12)	5 (4.20)	24 (20.16)	-
Caesarian operation (n=62)	16 (25.80)	3(4.83)	2(3.22)	9 (14.51)	2 (4.83)
Gastric procedures (n=11)	2 (18.18)	- -	--	(9.09)	--
Intestinal procedures (n=17)	6 (35.29)	3 (17.64)	2 (11.76)	1 (5.88)	--
Herniorrhaphy/Herniplasty (n=26)	8 (30.76)	2(7.69)	1(3.84)	4(15.38)	1 (3.84)
Open Reduction of fracture/luxation (n=201)	91 (45.27)	39(19.4)	7 (3.48)	43(21.39)	2 (0.99)
Thoracotomy/esophagotomy (n=4)	1(25.00)	--	--	1 (25.00)	--
Spleenectomy (n=3)	--	--	--	--	--
Eye operation (n=8)	2 (25.00)	--	--	2 (25.00)	--
Ear Resection (n=5)	2 (40.00)	1(20.00)	--	1 (20.00)	--
Cystotomy (n=3)	1 (33.33)	--	--	1 (33.33)	--
Exploratory Laparotomy (n=4)	--	--	--	--	--
Total (n=463)	176 (38.01)	67(14.47)	17 (3.67)	87 (18.79)	5 (1.07)

and 19.40%, respectively. These findings are considered high when compared with previous reports (Idowu et al., 1994; Morgan et al., 2008). Management of fractures is reported to pose serious challenges to clinicians due to failure of treatments resulting from faulty clinical management and pre, peri and post-operative complications (Idowu et al., 1994; Halling et al., 2002). Surgical outcomes from this most performed procedure may to a large extent, be an indicator of safety and quality of care received at the hospital. Based on the quality of available patient records which was considered to be quite inadequate, the incidence of post operative complications reported in this study may probably not represent the true values, perhaps higher in the opinion of the author.

The quality of records contained in the case notes reported in this study was most unsatisfactory, as it fell short of the guidelines as stipulated by regulating bodies (Hutchinson et al., 2010). Records of anesthetic and surgical risk assessment through preoperative hematology, blood biochemistry and urinary tests were not documented in over 80% of procedures. Similarly, documentation with respect to anesthetic monitoring and temperature maintenance during surgery were not documented in about 95% of procedures audited. These factors have been reported to influence surgical outcomes (Mant, 2001). Since evaluation of safety and quality of care through case notes review is critically dependent on the quality of information obtained from case notes, it is the opinion of the author that the indices of safety and quality of surgical care as reported in this study may be suggestive of apparent deviation from standard practices and minimal compliance with safety and quality guidelines (Russel, 2006). Veterinary Medical Board Hospital Standard Self Evaluation Check-list recommend that record keeping of surgical procedure shall include a description of the procedure, the types of anesthesia, prophylactic antibiotic medication used and the route of administration; anesthesia monitoring include all events that occur, pre, peri and post-operative (HSSEC, 2012).

Review of quality care as described in written case notes has become a standard means of assessing variation from quality standards and for identifying adverse incidents, either concerning individuals or groups of patient (Vincent et al., 2004; Krecker et al., 2009). Assessment of the quality of recording in case notes using appropriate clinical guidelines has equally been used to seek associations between recorded quality of care and outcomes (Hutchinson et al., 2010).

The low fatality reported in the study may not be a true reflection of the actual situation, considering the fact that records of post-operative follow-up was not documented in a significant number of major procedures performed. It may equally be said that fatalities probably maybe more than the 5 (1.07%) reported in this study. Lack of information

on fatalities with respect to 98.93% of procedures hindered an objective evaluation of safety and quality based on surgical outcomes. Previous studies have documented the use of surgical outcomes for evaluation of safety and quality of care (Russel, 2006; Kruckler, 2009). Some of the reports were anchored on textual review in which quality of care was assessed using the reviewers' professional opinion, while others were based, as it was in this study, the use of specific criteria drawn from patient records (Vincent et al., 2004; Hutchison et al., 2010).

Research into surgical outcomes for assessment of safety and quality has primarily focused on the role of patients' pathological risk factors and on the skills of the surgeon aside from quality of patients' records. The role of patients' pathophysiological risk factors, as well as the skills of the Surgeons that performed the operative procedure, were not determined in this study due to insufficient information. Outcomes of surgery as an evaluation tool is also dependent on the quality of care received throughout the patients stay in the hospital and the performance of a number of health professionals/support staff. All these factors are also subject to the environment in which they operate (Hutchinson et al., 2010). Records of hospital stay and the role of other health professionals in the prosecution of procedures were not documented in the case notes evaluated in this study.

An incidence rate of 38.01% complications that attended major procedures evaluated in this study is quite instructive. Notwithstanding the low fatality reported, the observed incidence rate of complication in the author's opinion may be an indicator of the level or degree of safety and quality of care provided in the hospital. The findings of this study suggest a compromised process procedure of safety and quality of care in the hospital characterized by non-compliance with standard practices and surgical care guidelines (Krucker et al., 2009; HSSEC, 2012). Tools for assessment of safety and quality of surgical practice are normally anchored on the reviewed criteria generated by National clinical guideline. This presently does not exist in Nigeria. Every country needs to review these guidelines from time to time as these remain a significant part of tools needed in formulation of any new quality improvement programmes.

In view of the need to develop best practices and guidelines for safe and quality surgical care in Nigeria, the author recommends the establishment of Veterinary Hospital Standards Evaluation Board by the Veterinary Council of Nigeria (VCN) to review the minimum standards for safe and quality surgical practice and enforcement of strict compliance with the guidelines of the board. This will be achieved through random routine inspection and compliant initiated inspections.

Limitations of study

The tools used in the study have its shortcomings. There is need to expand operative assessment beyond patient's factors. The technical skill of the surgeon and other health professionals including available surgical facilities should be considered in the evaluation process. Evaluation of safety and quality of surgical care based on retrospective case note review are insensitive for detecting potential adverse effects (Sari et al., 2007). Evaluation based on care process that takes cognizance of frequency of harmful outcomes and detection of potential adverse events would be more effective in monitoring care quality and safety (Kreckler et al., 2009).

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Conflict of Interest

The author(s) have not declared any conflict of interests

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