

TWO YEARS AUDIT OF THORACIC SURGERY DEPARTMENT AT PESHAWAR

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ABSTRACT

Objective: The aim of the study was to audit all admissions for significant adverse events as well as to assess academic and research activities of our department during last two years.

Design: A descriptive audit comprising of surgical, academic and research aspects.

Place and Duration: Department of Cardiothoracic Surgery, Postgraduate Medical Institute, Lady Reading Hospital Peshawar from June 2002 to June 2004.

Materials and Methods: Data comprising of patients demographics, number and type of various surgical procedures, hospital stay, various complications and number of deaths that occurred were entered into database. A computerized record of all academic and research projects was kept. Data base analysis was carried out for determining morbidity and mortality.

Results: Analysis of surgical audit showed 2160 procedures. Tube thoracostomy was required in 1030 patients while elective procedures were 1130. Elective thoracic procedures were 969 (85.5%) while elective cardiac procedures were 161 (14.2%). Various procedures performed included, decortication 103 (9.1%), esophagectomy 73 (6.46%), Hydatid cystectomy 38 (3.36%), closed mitral valvotomy 51 (4.5%), PDA ligation 46 (4.07%), pericardectomy 17 (1.5%), lobectomy 59 (5.22%), pneumonectomy 11 (0.97%), thoracoplasty 21 (1.85%), while other thoracic and cardiac procedures were 13.3% and 5.6% respectively. Overall mortality was 3% while morbidity was 3.4%.

During this period our department had 17 publications; presented 22 papers in various conferences; has produced three fellows in thoracic surgery, one fellow in general surgery and conducted "First National Thoracic Surgery Course". One assistant professor and one senior registrar have been appointed during these two years.

Conclusion: Highest priority should be accorded to surgical audit to determine various risk factors for mortality and morbidity and ultimately to improve patient care. Moreover, all academic and research projects should be completed through mutual efforts of all teaching staff to achieve desired standards of teaching and learning. Accountability of the medical profession can only be achieved through surgical audit. It is high time that this becomes a part of our ward routine and teaching programmes.

KEY WORDS: Audit, Thoracic surgery audit

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INTRODUCTION

An audit of clinical practice is the analysis of data either prospectively or retrospectively to determine both quantitatively and qualitatively the work load of an institution or individual department. It includes numbers of admissions, patient demographics, various complications and mortality¹. The audit of a teaching medical institution or department is further subdivided into clinical, academic and research audit.

The society of Cardiothoracic Surgeons of Great Britain and Ireland was the first professional body to coordinate national data collec-

tion in the United Kingdom with the introduction of United Kingdom Thoracic Surgical Register in 1976 and the cardiac surgical Register in 1977². The evaluation of cardiothoracic surgical practice has been attended by an understanding of the influence of thoracic and nonthoracic factors on survival from thoracic surgery. Periodic clinical or surgical audit identifies risk factors for morbidity and mortality in addition to quantitative analysis of various surgical procedures³. It provides a valuable guideline for the better management of post-operative complications. Patient selection, pre-operative assessment, perioperative and post-operative management is improved⁴. This represents good risk management policy for hospitals, individual units and their surgeons and will raise the overall quality of clinical care^{5,6}. We present our two years audit from June 2002 to June 2004 covering clinical, academic and research aspects. The audit was designed with the objective to determine significant adverse events in our thoracic surgical practice as well as to highlight academic and research activities of our department.

MATERIAL AND METHODS

The audit encompassing clinical, academic and research activities of two years was carried out. Data collected included patient demographics (Age, gender, occupation); the number, type of emergency and elective surgical procedures, hospital stay, complications, mortality and were all entered into the database. We used the Database to determine the number of procedures and outcome factors for morbidity and mortality. Surgical audit meeting was conducted once monthly. Various complications and mortality factors were discussed.

Academic activities included monthly academic schedule in which various clinico-pathogenic conditions of academic interest were discussed. Every trainee was required to have presentation on allotted days of the week. The trainees were taught presentation and communication skills. Similarly Internet Journal Club, Internet Thoracic Imaging, Weekly radiology

meeting and clinicopathological conferences were conducted and various cases of clinical interest were discussed. Knowledge of recent advances in thoracic surgery was obtained through Internet Journal Club and Internet Thoracic Imaging.

Moreover, Surgical trainees and house surgeons were trained on bedside clinical examination and presentation. Preparatory course for final thoracic surgery fellowship examination were conducted.

Our main targets in the field of research were conferences and publications. Every consultant was given a research project for data collection, and finally the publication of material. These research articles were completed by junior consultants under the supervision of senior consultant till the final stage of publication. Computerized record of all academic and research projects was kept.

RESULTS

Clinical Audit

Database analysis of surgical audit revealed that total procedures done were 2160. There were 1030 patients who needed thoracostomy for different conditions while elective procedures done were 1130. Total elective thoracic procedures done were 969 (85.5%) while elective cardiac procedures were 161 (14.2%). Operations performed were Decortication 103 (9.1 %); Esophagectomy 73 (6.46%), Hydatid cystectomy 38 (3.36%), Closed mitral valvotomy 51 (4.5%); PDA ligation 46 (4.07%); Pericardectomy 17 (1.5%); Pneumonectomy 11 (0.97%), Lobectomy 59 (5.22%), Thoracoplasty 21 (1.85%), Mediastinal mass excision 19 (1.68%), Retrosternal goiter excision 20 (1.76%), Mediastinotomy 64 (5.66%), Pleurectomy and Bullectomy 12 (1.07%); Chest wall tumour excision 12 (1.07%), Pleural mass excision 17 (1.5%); Open pleural biopsy 18 (1.59%), other thoracic 13.6%, others esophageal 9.1% and others procedures 4.5% (Table-I).

Over all morbidity was 39/1130 (3.4%) as shown in Table-II. Thirtynine patients developed various complications, which included wound infection 35%, esophageal leak 20%,

bleeding 10%, esophageal perforation 15%, bronchopleural fistula 7.6%, empyema 7.6% and acute renal failure in 1 (2.5%) patient. Detailed scrutiny of the record showed that the incidence of wound infection after decortication was higher than the other cases, which required thoracotomy. Similarly the incidence of endoscopic perforation was higher in esophageal carcinoma as compared to benign pathology. Three patients developed bronchopleural fistula; of these one patient required reexploration while in two cases air leak settled with low pressure suction.

The overall mortality was 33/1130 (2.9%) as shown in Table-III. The causes of death in these thirtythree patients were respiratory 48%, cardiac in 24%, sepsis in 15% and hemorrhage in 12%. Respiratory causes of death in our cases were marked bronchospasm in one patient who had COPD with bullae who underwent bullectomy; one patient with advanced myasthenia thymoma who failed to come off the ventilator, one patient with diaphragmatic rup-

TABLE-I
Surgical Procedures (n =1130)

Thoracic Procedures (n =969)	No. of Patients	%age
Decortication	103	9.1
Esophagectomy	73	6.46
Hydatid cystectomy	38	3.36
Mediastinal Mass excision	19	1.68
Retrosternal goiter excision	20	1.76
Lobectomy	59	5.22
Thoracoplasty	21	1.85
Mediastinotomy	64	5.66
Pleurectomy / Bullectomy	12	1.07
Chest wall tumour excision	12	1.07
Pleural Based mass	17	1.5
Wedge resection	13	1.15
Chest wall sinus excision	13	1.15
Cervical rib excision	03	0.26
Repair diaphragmatic hernia	08	0.70
Heller's Myotomy	04	0.35
Cardiac closed procedures (n = 161)		
Closed Mitral Valvotomy	51	4.5
Patent Ductus Arteriosus Ligation (PDA)	46	4.07
Closed Pericardectomy	17	1.5
Pericardial Intubation	38	3.36

ture and herniation of small and large intestine into left chest; two patients of irresectable carcinoma esophagus who aspirated after MB intubation,; one patient who underwent esophagectomy also had bullous lung disease and two patients developed respiratory distress, three days after esophagectomy most probably due to pulmonary embolism. Two patients with mediastinal masses developed cardiac arrest during surgery and two patients three days after esophagectomy dropped pressures despite volume replacement and inotropic support. Two patients developed mediastinitis and sepsis after excision of retrosternal goiter and anterior mediastinal mass, while two patients after esophagectomy and intrathoracic anastamotic leak. Two patients

TABLE-II
Morbidity (N =39)

Complications	No. of Patients	%Age
Wound Infections/Dehiscence	14	35.8
Esophagectomy leak	8	20.0
Bleeding	4	10.2
EndoscopicEsophageal Perforation	6	15.5
Bronchoplural Fistula	3	7.6
Empyema	3	7.6
Acute Renal Failure	1	2.5

TABLE-III
Mortality (n =33)

Complications	No. of Patients	%Age
Respiratory	16	48
Cardiac	8	24.1
Sepsis	5	15.01
Hemorrhage	4	12.1

TABLE-IV
Academic and research activities

- Three fellows in Thoracic Surgery
- One fellow General Surgery
- Twenty two papers presented at National and International Conferences
- Seventeen publications in various journals of the country

with chest wall tumour were reexplored for bleeding; while one patient with mediastinal mass and involvement of superior vena cava did not recover.

Academic & Research Audit

The academic and research contribution of the our department can be observed from the fact that the department has produced three fellows in thoracic surgery and one fellow in general surgery as assessed by College of Physicians & Surgeons Pakistan. Our department conducted the First National one week Thoracic Surgery Course in February 2003, attended by 5 examiners and 19 trainees from all over Pakistan. Our department conducts once monthly clinical audit, weekly journal club and weekly joint meeting with pulmonology and radiology department. One assistant professor and one senior registrar have been appointed over the last two years.

Our department has presented 6 papers at Pakistan chest society meeting in 2002 and won the Best Paper Award. Nine papers were presented at Biennial conference of Pakistan Society of Cardiovascular and Thoracic surgeon in December 2002; three papers in 6th Biennial Conference of Pakistan Chest Society March 2004 at Karachi, and one paper at Pakistan Cardiac Society Meeting in 2002 and three papers at Annual Meeting of Pakistan Society of Cardiovascular & Thoracic Surgeon at Quetta in October 2003. The department has 17 publications to its credit in the last 2 years, five papers published in Journal of Post Graduate Medical Institute, JPMI, Peshawar, 7 papers published in Annals Journal King Edwards, two papers published in Journal of Ayub Medical College and three paper published in Pakistan Journal of Cardiovascular & Thoracic Surgery.

DISCUSSION

An audit of surgical mortality can be seen as the final step in what has been termed the "journey of care" for both the individual patient and for the population as a whole⁷. When outcomes are open to scrutiny, data validation

is a vital component of meaningful clinical audit. It outlines in greater detail the progress and problems in surgical audit⁸.

The individual and institutional responsibilities are that it should provide the hardware, software and personnel to allow patient oriented data collection for risk stratification. The cardiothoracic surgical unit should define the strategy for data collection, collation and presentation, and should dedicate time each month for presentation and discussion of surgical activity and results⁹. The unit should identify one consultant with overall responsibility for coordinating and developing audit programme. Each consultant surgeon must assume full responsibility for collection of complete, accurate and honest data on all cases under his / her care¹⁰.

The audit process involves data collection, data validation, audit meeting and surgeon specific review^{11,12}. Data collection remains the joint responsibility of the hospital and the surgeon. Data collection strategies must be determined locally. A network computerized system with good statistical capabilities is recommended. Data validation should be performed by random selection of case notes to reduce gaming/fraud. Audit meeting should be held monthly in allocated and dedicated time¹³. All consultants should attend meeting and they should foster an air of constructive analysis and criticism.

Specialist registrars should be involved as part of their training and attendance of nursing, technical and other staff should be encouraged. A register of attendance should be kept. The form of presentation and discussion should be agreed and developed locally but meeting should address total surgical activity, risk stratified activity, mortality and morbidity and intermittent detailed review of specific issues and outcomes in order to improve practice¹⁴.

Overall mortality in thoracic surgery has been reported as 2.5 to 4% in many studies^{8,9,14}. Mortality in our two years audit was 2.9% (i.e. 33 deaths). The respiratory and cardiac causes of death are comparable to other studies while death due to sepsis in 5 (15%) cases in our study

is higher than others^{3,9,14}. Proper sterilization and asepsis in all respect of surgery needs to be addressed in our circumstances. Morbidity in our study was 3.4% (i.e. 39 cases). Various complications that occurred are comparable to other studies^{8,9}. However, we had higher incidence of wound infection 14 (35.8%) and endoscopic perforation 6 (15.5%), which needs to be addressed.

The services and facilities provided by our department are; 24 hours on call for emergency take, OPD once a week; 2 operating table twice a week, 31 bedded ward, 6 bedded Intensive Care Unit, 4 theatres suites and 2 private rooms. Over 5570 patients were seen in out-patient department; over 1630 emergencies received and 1130 elective surgical procedures were performed. There was 550 OPD admissions 1630 casualty / emergency admissions and 550 patients were shifted from other units, during these 2 years.

Scrutiny of computerized record showed that inflammatory lung diseases, chest trauma and carcinoma esophagus are on rise while bronchogenic carcinoma is not as common as in the West¹³. Regarding the patient care there is close liaison with Pulmonology, Radiology, Paediatrics, Medical, Cardiology, Neurology, Physiotherapy and anesthesiology department.

In order to further improve our services, there is dire need for video assisted thoracic surgery (VATS) suite, a dedicated esophageal unit and in integrated chest facility.

CONCLUSIONS

Accurate outcome data following thoracic surgery; as well as of academic and research activities are essential for proper audit and hence for improvement in clinical practice, academic and research excellence to occur.

RECOMMENDATIONS

Accountability is the buzzword these days. It is high time that like the rest of the world, the medical profession in Pakistan, is also held accountable. Every unit and every consultant should be required to submit their annual audit, to a Central Registry for every specialty.

This central Registry can be with either the Pakistan Medical & Dental Council (PM&DC) or Specialist Societies / Associations. From this Central Registry a National Standard should be determined. Anyone falling below this standard would be instructed to improve / reprimanded / chucked out. This is already the practice in UK in the form of the British Thoracic Registry since 1976. It is high time that PM&DC gets in step with the rest of the world.

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