

Joint Lectureship of the Royal College of Surgeons of Edinburgh and the Academy of Medicine, Singapore-Accurate Long-term Documentation in Surgical Audit and Evaluation of Outcomes[†]

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Abstract

The purpose of a surgical audit is to allow a critical assessment of patient care, carried out among peers and in an atmosphere of learning, open discussion, free of recriminations. The results of a surgical unit will hopefully lead to improvement in the quality of care of our patients by reducing the preventable causes of mortality and morbidity. Data from surgical audit can also be used to monitor the teaching programme in a department. It may even allow us to study the cost effectiveness of certain procedures which is obviously very important in this era of diminishing resources and cost containment.

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Prof Sir Robert Shields, President of the College, Distinguished Council Members, Fellow Colleagues and Friends, Ladies and Gentlemen.

Tribute

Before I begin my lecture, I would like to pay tribute to a man I greatly admire who was the President of the College from 1982 to 1985, the late Professor Sir James Fraser. He was the man who made possible this series of Joint Lectureships between the Academy of Medicine, Singapore and the Royal College of Surgeons of Edinburgh.

Sir James comes from an illustrious family and lineage, steeped in academia, and closely linked to the college. His father, Sir John Fraser, was once the Regius Professor of Clinical Science and Vice-Chancellor of the University of Edinburgh.

I came to know Sir James during his term of office as President of the College. In 1984, Sir James and the Council of the College chose Singapore as the venue for the 4th Overseas Meeting of the College and decided to hold a Joint Meeting with the Chapter of the Surgeons, Academy of Medicine. Sir James and his wife, Lady Fraser, always had a special feeling and affinity for South East Asia in general and Singapore in particular, because it was in St Andrew's Cathedral, Singapore that they were married.

I had the enviable or unenviable task of organising this first joint meeting of the College and the Chapter of Surgeons of Academy, together with my good friend, Peter Edmund, from the College. This inaugural meeting attracted a participation of over 450 Fellows: 200 Fellows who journeyed from Edinburgh and the UK and 250 from Singapore and elsewhere in the region. It remains until today one of the most successful meetings ever organised between the Academy and any other Sister College-not only for the scientific and social content of the meeting but more importantly, for what came afterwards.

Through Sir James' foresight, guidance and stewardship, the following four significant links and traditions were established between the College and the Academy.

Firstly, this Joint Lectureship was created immediately following the 1984 Meeting. Prof Raj Nambiar, as the inaugural Academy lecturer, spoke of the Scottish Links of the Academy*-a most appropriate topic, and since then with each Annual Scientific Meeting of the College and the Chapter of Surgeons of the Academy, this tradition has been maintained, hopefully for posterity.

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Secondly, as a result of discussions between Sir James and the Minister for Health, Singapore, which began at the time of the meeting and continued subsequently with a visit by Sir James and Peter Edmund the following year, the Conjoint Exam was started in Singapore.

In 1986, for the first time, the successful Fellowship candidate was awarded both the FRCS (Edin) as well as the M Med (Surg) Singapore.

Thirdly, during the Joint Meeting in 1984, it was decided to inaugurate the Young Surgeon's Award, which was won by a surgical trainee from Hong Kong who had trained in Alder Hey.² This biennial award has now become the most prestigious event in the Annual Combined Surgical Meeting of the Chapter of Surgeons of Academy. I can attribute the establishment of this award entirely to Sir James' foresight and his persistent efforts to encourage the young surgeons to excel.

Lastly, perhaps most importantly, following the 1984 Meeting, a Memorandum of Understanding was signed between the College and Academy to assist the Academy in its efforts at Specialist Training and Certification. Since 1989, the Academy has begun its exit certification exercise leading to the award of FAMS (specialty). This has been made possible due to the strong support given by the College either directly through external assessors from the College or indirectly.

So the Joint Meeting of 1984 incorporating the 4th Overseas Meeting of the College, presided over by Sir James, has spawned many major developments and linkages between the Academy and the College. I was indeed saddened to hear of his untimely death on 8 January 1997.³ Today, I wish not only to pay tribute to the man but also to dedicate my lecture to him and to his memory. Scotland and the College have lost a noble son, and the Academy, a cherished friend.

Surgical Audit

The title of my presentation today is "Accurate Long-term Documentation in Surgical Audit and Evaluation of Outcomes".

I would like to start by making a few general statements about surgical audit before proceeding to talk about the strategies we have adopted for long-term documentation in cleft lip and palate surgery, which is my area of special interest and the focus of my presentation today.

Perhaps the definition provided by Hugh Dudley in 1975⁴ in his scholarly address to the Royal Society of Medicine, although given in a light-hearted manner, is perhaps the most succinct because it captures the spirit and meaning of surgical audit. He said and I quote "that surgical audit is a process of self-assessment which allows a clinician to say "I have handled this patient or group of patients in an appropriate way". Embodied in this definition are the key issues of a surgical audit—one of self-assessment and the other of appropriateness of what we do, whether in diagnosis or in therapy. But in the same light-hearted vein, Hugh Dudley⁵ also alluded to the fact that frank discussion in an open audit session is desirable but not always possible because as he pointed out, a critique of poor results is always more enjoyable when they concern someone else's patients.

When the issue of surgical audit is raised, it either conjures up feelings of derision or unease on the part of those who don't necessarily believe in it but yet have to carry it out or to feelings of delight on the part of health administrators, who at long last, have a ready-made tool for the assessment of the performance of doctors. However, in today's climate of diminishing resource allocation and active consumerism, all doctors should participate in audit of their own work and that of their colleagues.

If we remind ourselves that the entire purpose of a surgical audit is to allow a critical assessment of patient care, whether this be in diagnosis or therapy, which results in the improvement of the quality of care, then the correct reaction to "surgical audit" should be very even keel and purposeful. In fact, surgical audit should be very much part and parcel of the routine of any surgical department. It highlights the strengths and weaknesses of any individual department. It allows easy comparisons of results within a department and between departments. It may even allow us to study the cost effectiveness of certain procedures and this is obviously important in this era of cost containment.

In an audit study carried out not far from here by the Lothian Health Board in 1986,⁶ there were unexpected benefits that arose from the audit exercise. Besides the improvement in re-operation rates for intra-abdominal complications, the trends in mortality showed that despite increased admissions and operations for abdominal aortic aneurysms (from 52% to 78% over a 5-year period), the postoperative survival rate increased. This was entirely due to the increasing specialisation in Vascular Surgery which resulted in better results in those units with vascular surgeons. The audit exercise had this unexpected bonus and because the data were irrefutable, the surgical audit led to the formation of a vascular unit. A policy change became possible and there was a move towards increasing specialisation in other areas as well.

Similarly, in the area of postgraduate training, the audit data revealed that there were gaps in caseload, different case-mix in certain departments which necessitated the rotation of trainees to different departments to allow them a wider exposure and experience.

The relevance and importance of surgical audit was also highlighted by Pettigrew and his co-workers⁷ in the University of Otago, Dunedin, New Zealand. After 6 months of audit on training, it was shown that 3 out of 6 consultants in the Unit were not supervising their trainees adequately. It revealed that they seldom assisted their trainees and either did the operations themselves or left the trainees entirely to their own devices. This information was conveyed to the surgeons concerned and in the log book of trainees in the subsequent 6 months, there was marked improvement in the training practice of 2 of the surgeons but one refused to budge.

Audit data from the same study was also used to refute the criticism of a prominent politician that surgeons with a private practice commitment did not contribute their fair share of the public surgical workload. Audit data showed that the most hours spent by any general surgeon in the public operating theatre was by one of the private practice surgeons.

If all that I have said till now has not convinced those of you who are not engaged in surgical audit, then I am afraid you will be like that lone general surgeon in Dunedin, who refused adamantly to change his practice, even if it was to share his experience and expertise with his trainees.

I would like to turn to what I believe is the key to any surgical audit, i.e. the data collection.

In devising the data form and in data collection, there is always a strong temptation to try and include as much information as possible. This tendency has to be resisted because everyone who has gone through the experience of data collection will give the same advice—collect only data that would be useful for the audit exercise.⁸ It has to be remembered that a surgical audit is not the same as clinical research. Maybe, the findings of a surgical audit will unveil certain unfavourable outcomes which needs further investigation. This can then become the focus of clinical research.

Secondly, the accuracy of the data must be verified by the consultant-in-charge. Without consultant-led supervision, the quality of the data decreases and will obviously affect the quality of the whole surgical audit. In order to assist in accurate documentation, it is helpful to define the parameters to be measured, to give the reference codes for diagnosis, complications and operative procedures so that they can be easily understood and followed.

Lastly, there is the question of incentives for those involved in data collection and data entry because this can be a laborious and long-term process. For surgical trainees, if the data collected can be used to generate their 6-monthly reports and logbooks, all consultant-verified, then this is a tremendous incentive for them to become involved and to accurately document what they do; the mortality and morbidity statistics. Similarly, if the secretaries and ward clerks involved in the surgical audit can use the data for the generation of discharge letters to GP's, this will make the data entry, part and parcel of their routine clerical work and responsibilities in the department.

After those general remarks on surgical audit, I would like now to turn my attention to Long-term Documentation in Cleft Lip and Palate and an audit of their management.

Accurate Long-term Documentation in Cleft Lip and Palate (CLP) and Audit of Management

The assessment of outcomes following CLP surgery is complex because of multiple variables present and also the treatment programme is very protracted. Children born with cleft or craniofacial anomalies are seen from birth until adulthood. Longitudinal studies require long-term documentation and hence, it is not surprising that 90% of papers written on clefts are to do with new techniques and very few devoted to long-term results⁹ on function, facial growth and aesthetic outcomes.

Part of the problem in audit of cleft patients and their management is due to the relative infrequency of the condition. The incidence of cleft varies in different countries and in different ethnic groups, being higher in Asians and less so in Caucasians. In Singapore, the incidence is approximately 1 in 600 births¹⁰ (580 to be exact) and is higher amongst Chinese than Indians or Malays. In the UK, the figure quoted by Shaw¹¹ is 1 in 700 births. In terms of actual caseloads, I see about 100 new cases per year in my department in the Singapore General Hospital, possibly because most of the clefts born in Singapore come to our department and we also see quite a number of cleft babies from Indonesia and Malaysia.

Here in the UK, it is reported that in the whole of England and Wales, about 750 new cleft cases are born each year. The survey carried out by the Surgical Audit and Epidemiology Unit of the Royal College of Surgeons of England¹² has shown that this caseload is shared by 76 cleft surgeons, 64 of whom are plastic surgeons. It works out on the average, each surgeon would be dealing with 10 new cases per year. In fact, only 6 surgeons in this survey were

reported as doing more than 20 lip repairs per year. Amongst these 6 high volume operators, if they were seeing 40 cleft cases, they would be operating on 1 complete unilateral cleft lip and palate (UCLP) a month and 1 complete bilateral cleft lip and palate (BCLP) every 3 months. The low-volume operators which form the majority of cleft surgeons in the UK would in fact be operating only 1 complete UCLP every 4 months and 1 complete BCLP per year.

What are the implications in terms of this paucity of cases shared by so many low-volume cleft surgeons?

The question of proficiency arises and this is an issue of considerable debate and discussion at this moment in time. The Multicentre Eurocleft Studies¹³ carried out in 1986 involving 6 countries have shown that the results in those countries with regional centres and with high-volume operators had far better results in terms of growth and function than those where the caseload has dissipated amongst low-volume operators.

Because of the relative infrequency of the condition and the fact that all clefts are not the same, it is imperative that there are intercentre or multicentre audits of outcomes. In order to do so, it is essential that there are standardised protocols for cleft documentation that could be adopted by all cleft surgeons and the multidisciplinary team involved in cleft management.

At the International Congress on CLP and Related Craniofacial Anomalies held at the Gold Coast, Australia 4 years ago, an international committee¹⁴ was formed and tasked to bring out recommendations on cleft documentation and measures for audit of surgical outcomes. I was asked to chair this committee and the terms of reference given to the committee were as follows: firstly, to standardise the terminology and classification of clefts; secondly, to standardise methodology of documentation; and thirdly, to establish the parameters for assessment of outcomes in terms of function, growth and aesthetics.

The principle the committee followed was to make documentation as simple as possible in order to ensure maximum compliance and accurate data collection. I will not bore you with the details.

The schedule for documentation follows the surgical milestones in cleft surgery and management. Each time, a patient was admitted for one of these stages of repair, the records were obtained by the multidisciplinary team.

The minimum documentation had to include photographs taken with standardised views, anthropometric measurements, cephalograms at appropriate age, dental models, speech assessment as well as ENT and psycho-social assessment.

For a complete longitudinal record of a patient, the summary chart would be as shown in this illustration.

As far as storage of data is concerned, we used the software programme called CPIS or Cleft Palate Information System, which was developed in the University of Manchester by Prof Bill Shaw and his group with input from us. This is a multidisciplinary relational database that is capable of capturing longitudinal data for long-term audit and assessment of outcomes. So far, the Cleft Palate Information System has been in operation for a year.

At the Singapore General Hospital, we also have our own Facial and Cephalometric Evaluation (FACE) and Laser Scanning Laboratories to help us in the documentation of our cases.

I would like to briefly give you an idea of the documentation schedule of a cleft patient by taking you through the odyssey of a single patient born with a complete bilateral cleft lip and palate, from infancy until adulthood.

What does the future hold in terms of CLP Intercentre Studies and Audit? I think that the stage has been set and it is now possible to carry out intercentre and multicentre studies. Standardised methods of documentation will allow meaningful comparison of cases. This will of necessity involve long-term studies but we can now evaluate the outcomes of different management protocols and this will hopefully result in better quality of care and quality of life for our cleft patients.

Conclusion

In conclusion, surgical audit has become a necessity as part of quality assurance whereby we can objectively assess the quality of our work and seek to improve the care of our patients. The pursuit of excellence and quality of life for our patients is embodied in the WHO Charter which defines health not merely as a state in which there is absence of infirmity but also a state of physical, social and mental well being.

In order that surgical audit is successful and meaningful, we must measure and document accurately. I would like to end with this quotation from Lord Kelvin,¹⁵ who was not a doctor but a physicist. He said “when you can measure what you are speaking and express it in terms of numbers, you know something about it; when you can’t express it in terms of numbers, your knowledge is of a meagre kind”.

And lastly, may I thank you, Mr President and the College, for giving me the opportunity and the honour to present this 1997 Joint Lectureship.

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