

## Audit Article

# The Scottish Otolaryngology Audit – Laryngeal Cancer Audit

ROBIN L. BLAIR, F.R.C.S., W. S. MCKERROW, F.R.C.S. (Dundee and Inverness)

### Abstract

Regional otolaryngological societies offer a valuable mechanism for the conduct of medical audit. The experience of the audit subcommittee of the Scottish Otolaryngological Society over the last few years is reviewed and a description is given of the findings of an audit of the management of laryngeal cancer in Scotland. The data collection infrastructure currently employed is described and emphasis is placed on the importance of 'ownership' of audit by those participating.

**Key words:** Physician's practice patterns; Laryngeal neoplasms; Otolaryngology; Scotland

### Introduction

In a speciality such as otolaryngology, departmental audit tends to examine the work of single individuals. To avoid this the Scottish Otolaryngological Society (SOS) established a subcommittee in the summer of 1989 to promote, develop and conduct audit within the speciality in Scotland. The umbrella of the Scottish Otolaryngological Society allows audit to be conducted in a larger, but still manageable, group. Every consultant and senior registrar in otolaryngology in Scotland is a member of the SOS and meetings, which are both academic and social, are held twice yearly in different parts of the country. The membership of the audit subcommittee comprises one consultant otolaryngologist from each Health Board area in Scotland in which an ENT service is based with two consultants representing Greater Glasgow because of its large population. A chairman and secretary were appointed.

A specialist society of this kind with an active membership of around 70 and with total geographical representation provides a unique means of conducting regional and supraregional audit. The SOS, like most such specialist societies, enjoys the active participation and goodwill of its members and activities such as audit are seen to be 'owned' by the society.

The audit subcommittee first met formally in September 1989 and agreed that a limited audit should be undertaken initially to familiarize the membership of the SOS with the mechanisms of audit. An assessment of the resources required to conduct audit on a regular basis was also made. The committee recognized the difficulties inherent in obtaining agreement about standards of acceptable practice on a national basis and recognized the need to determine the sources of variation in practice in the speciality throughout Scotland. The concepts of audit enunciated by The Royal College of Physicians (1989) proved helpful in clarifying the subcommittee's thinking.

### Audit of laryngeal cancer

Laryngeal cancer was seen as a suitable topic for an initial nationwide audit as this is a clinical entity familiar to all practising otolaryngologists and one of major clinical importance. The number of patients presenting in Scotland with laryngeal cancer in a single year is sufficiently small to allow analysis on a national basis without the need for complex information gathering technology. The committee decided to audit laryngeal cancer for the year 1986 and the audit criteria were chosen on the basis that they would form part of most clinicians' ideal management of this disease. It was recognized that many other criteria could have been examined, but the subcommittee deliberately confined itself to important, but relatively uncontroversial aspects of management of laryngeal cancer. The criteria selected for examination were as follows:

- (1) Demographic data.
- (2) Documentation of history.
- (3) Documentation of physical and endoscopic findings and investigations.
- (4) Facilities for interdisciplinary consultation, treatment and rehabilitation of laryngeal cancer.
- (5) Management of complications in patients undergoing laryngectomy.
- (6) Outcome as measured by the presence or absence of disease after two years following treatment.

The questionnaire completed on each patient presenting with laryngeal cancer in Scotland in 1986 is reproduced in (Table I).

Patient identification was principally from SMR1 (Scottish Morbidity Record 1) records augmented in some parts of the country by cancer registers, pathology departmental records and by records kept by individual surgeons (Table II – numbers of patients and mean ages by region). SMR1 records are admission forms for medical records'

**TABLE I**  
SCOTTISH NATIONAL AUDIT COMMITTEE FOR OTOLARYNGOLOGY  
(SNACO) (QUESTIONNAIRE)

AUDIT OF LARYNGEAL CANCER IN SCOTLAND 1986	
PATIENT DETAILS	
SEX .....	D.O.B.....
NAME .....	
ADDRESS .....	
.....	
.....	
.....	

Check the following from patient case records:

1. Description of presenting symptoms recorded	Yes/No
2. History of smoking documented	Yes/No
3. Description or drawing of findings at indirect laryngoscopy	Yes/No
4. Description or drawing of findings at direct laryngoscopy to include site(s) of involvement	Yes/No
5. Histological confirmation of malignancy	Yes/No
6. If squamous cell carcinoma – is degree of histological differentiation documented	Yes/No
7. TNM stage recorded prior to start of therapy	Yes/No
8. Consultation in Combined Head and Neck Clinic by laryngologist and radiotherapist prior to start of therapy	Yes/No
9. Facilities available in Health Board area for radiotherapy	Yes/No
10. Facilities available in Health Board area for laryngectomy	Yes/No
11. Speech therapy available for laryngectomy patients in Health Board area	Yes/No
12. If patient had laryngectomy was he/she	
– seen by speech therapist pre-op	Yes/No
– was full blood count performed pre-op	Yes/No
– was chest X-ray performed pre-op	Yes/No
– was blood cross matched	Yes/No
– if laryngectomy alone performed did patient spend less than 6 hours in operating theatre	Yes/No
– if laryngectomy and neck dissection performed did patient spend less than 8 hours in operating theatre	Yes/No
– post-laryngectomy did pharyngocutaneous fistula develop	Yes/No
– post-laryngectomy did the patient develop adequate oesophageal speech	Yes/No
13. If the patient was treated by radiotherapy alone is the larynx free of disease 2 years after treatment*	Yes/No
14. If laryngectomy performed is the patient free of disease 2 years after treatment	Yes/No

\*Question 13. If laryngectomy performed post-radiotherapy please answer 'No'.

purposes containing the patient's personal details, GP, next of kin, admission details and discharge summary including diagnosis and operations (coded).

Relevant information was retrieved in each Health Board area by members of the Society scrutinizing medical records. The data for each area were then collated by the subcommittee representative from that area. Completed proformas were in turn collated by the chairman and secretary of the audit subcommittee. Difficulty was encountered in obtaining case records in a number of Health Board areas. SMR1 records were found not to be as reliable a source of information on case numbers as would

have been expected. More accurate data was obtained from cancer registries and from pathology department records. The nursing cardex filed in each patient's case records was also found to be a useful source of information. In particular the cardex was usually the only source of information about visits pre- and post-operatively by speech therapists.

By early 1990 the necessary data had been collected by each regional representative and further meetings of the subcommittee were held to review the information and to finalize a report to the SOS.

**Results**

*Demographic data*

In some areas it was difficult to obtain the relevant medical records: 226 new cases of laryngeal cancer were diagnosed in Scotland in 1986. Data were reliably documented in all cases. Mean age range was 56.5 to 68 years (Health Board records).

*History (Questions 1 and 2: see Table I)*

Documentation in the case records was generally satisfactory with accurate, reliable information being recorded in the great majority of cases. Smoking history tended to be better documented in the otolaryngological case notes than in those of radiotherapy.

*Documentation of findings and investigations (Questions 3, 4, 5, 6 and 7)*

In general patients were thoroughly and completely investigated and findings accurately recorded. However, the TNM (TNM Classification of Malignant Tumours, 1979; Manual for Staging of Cancer, 1988) classification of laryngeal tumours was available in an accurate form in only two-thirds of the case notes. The radiotherapy case notes tended to contain more accurate documentation of TNM status than those for otolaryngology.

*Facilities for inter-disciplinary consultation, treatment and rehabilitation (Questions 8, 9, 10 and 11)*

Satisfactory facilities were available in all Health

**TABLE II**  
NUMBERS OF PATIENTS AND MEAN AGES BY REGION

Region	No. of patients	Mean age
Argyll and Clyde	23	59.1
Ayrshire and Arran	9	64.8
Dumfries and Galloway	8	68.0
Fife	5	61.6
Forth Valley	12	64.3
Glasgow – Royal Infirmary	32	64.7
Glasgow – Stobhill	8	56.5
Glasgow – Victoria	22	65.5
Glasgow – Gartnavel	16	61.7
Grampian	12	67.4
Highland	7	61.3
Lanarkshire	27	59.7
Lothian and Borders	24	65.0
Tayside	21	64.3
Total number of patients	226	
Mean age of patients		63.2

Board areas for the management of laryngeal cancer. Half of all patients were assessed prior to treatment by a radiotherapist and an otolaryngologist in a formal combined clinic. In some parts of the country radiotherapy consultation was obtained on an *ad hoc* basis and this appeared to work satisfactorily. In some areas combined clinics were held infrequently and thus management decisions on patients presenting between scheduled clinics were made by the laryngologist alone. As expected, in rural areas patients often had to travel long distances for radiotherapy.

It is accepted that patients undergoing laryngectomy should have a pre-operative consultation with a speech therapist. Such a consultation was documented in only 90 per cent of cases. It seems most unlikely that such consultation would not have taken place prior to laryngectomy and therefore it would appear probable that documentation, rather than management, was inadequate in this area.

#### *Management of complications – patients undergoing laryngectomy (Question 12)*

Eighty patients in the study underwent total laryngectomy. Satisfactory pre-operative assessment as measured by estimation of full blood count, typing of blood and performance of pre-operative chest X-ray was documented in all but one patient. A few patients spent what was considered to be a prolonged period in the operating theatre. This time was taken to include both anaesthetic and surgical time. Very small numbers of patients undergoing laryngectomy alone or laryngectomy with neck dissection spent more than six to eight hours respectively in the theatre. The subcommittee felt that these times represented the extreme limits of what could be considered acceptable practice and in view of the fact that most operations were accomplished well within these limits the subcommittee felt that those falling outside these limits warranted detailed individual audit by the surgeons concerned. Eighteen per cent of patients undergoing laryngectomy developed pharyngocutaneous fistulae. Factors such as the patient's general health, use of prophylactic antibiotics, pre-operative radiotherapy and pre-operative haemoglobin and plasma proteins may all be relevant to the development of this complication, but for simplicity were deliberately not audited.

Only 40 per cent of laryngectomees developed adequate oesophageal speech. In 1986 it was not common practice in Scotland to insert speaking valves at the time of laryngectomy and therefore this type of rehabilitation was not assessed.

#### *Outcome (Questions 13 and 14)*

Of those patients treated by primary radiotherapy 70 per cent were free of disease two years after completion of their treatment. Of those patients undergoing laryngectomy 60 per cent were disease-free two years after surgery. Because of the incomplete documentation of TNM status at the time of presentation valid conclusions regarding outcome relative to the stage of the disease were not possible.

#### *Summary of findings*

The main findings of this audit were:

- (a) Audit was hindered in some Health Board areas because medical records were difficult to obtain.
- (b) Clinical data was generally well and accurately recorded.
- (c) Documentation of TNM classification of laryngeal cancer was inadequate in some areas.
- (d) Resources for the treatment of laryngeal cancer are well distributed throughout the country.
- (e) Good and timely communication between the laryngologist and the radiotherapist is essential. Some patients had to travel considerable distances for radiotherapy.
- (f) Overall the management of patients with laryngeal cancer met the standards set. Outcome measures were difficult to establish because of lack of adequate TNM data.

The findings of the Laryngeal Cancer Audit were reported to a meeting of the Scottish Otolaryngological Society in late 1990. The main recommendation from the subcommittee was that TNM classification of laryngeal cancer needs to be more stringently documented. This recommendation was accepted by the SOS.

To complete the audit cycle it is planned to repeat this audit in 1995.

#### **Discussion**

Audit of otolaryngological practice is not new. Traditional methods have included morbidity and mortality meetings, review of personal series of cases by individual surgeons and by assessment of performance of doctors in training. These methods suffer from lack of comparability with results obtained elsewhere. Results of personal series tend to reflect optimal practice by masters in a given field and not the results achievable by 'average' surgeons or departments.

The term audit is most familiar in a financial context where financial activity is reviewed by a disinterested third party. Such a review of their clinical work is threatening to most clinicians. Because of the complexity of medical and surgical practice, medical audit can only be properly performed by members of the discipline involved. For colleagues to accept and cooperate in audit, trust and goodwill as well as confidentiality are required. Audit findings must be reviewed, shortcomings identified and specific measures recommended and acted upon to correct deficiencies identified. Audit should therefore not be seen as threatening, but as an opportunity to improve practice.

A specialist society appears to be an appropriate vehicle to conduct audit on a regional or supranational basis. The members of the audit subcommittee of the Scottish Otolaryngological Society were elected by their consultant colleagues throughout the country and with regular communication and feedback of information, every consultant and his team throughout the country has been involved in the 'ownership' of the audit. Audit is seen by the SOS as an ongoing process and the constitution of the subcommittee calls for a regular rotation of the membership. In this way the threat of a small group auditing their colleagues in perpetuity is removed. An organizational infrastructure, including computer hardware, has been established throughout the country and further audit projects are currently being undertaken.

#### **References**

The Royal College of Physicians (1989). *Medical audit: a first report*, Royal College of Physicians, London.

*TNM Classification of Malignant Tumours* (1979), 3rd Edition (Harmer, M. H., ed.), Union Internationale Contre le Cancer (UICC), Geneva.  
*Manual for Staging of Cancer* (1988), 3rd Edition, American Joint Committee on Cancer, USA.

Address for correspondence:  
Robin L. Blair, F.R.C.S.,  
Department of Otolaryngology,  
Ninewells Hospital and Medical School,  
Dundee DD1 9SY.