The Critical Under-Provision of Thoracic Surgery in the UK


Working party members

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tom Treasure</td>
<td>Chair</td>
</tr>
<tr>
<td>Jules Dussek</td>
<td>Secretary</td>
</tr>
<tr>
<td>Dennis Eraut</td>
<td>British Thoracic Society</td>
</tr>
<tr>
<td>Martin Muers</td>
<td>British Thoracic Society</td>
</tr>
<tr>
<td>Robin Rudd</td>
<td>British Thoracic Society</td>
</tr>
<tr>
<td>Willie Fountain</td>
<td>Society of Cardiothoracic Surgeons</td>
</tr>
<tr>
<td>Tony Morgan</td>
<td>Society of Cardiothoracic Surgeons</td>
</tr>
<tr>
<td>Roger Vaughan</td>
<td>Society of Cardiothoracic Surgeons</td>
</tr>
</tbody>
</table>

Lung Cancer

- Lung cancer with 40,000 cases diagnosed each year is the commonest cancer in the UK.
- Fewer than 4,000 (under 10%) of cases are resected which is far too low.
- The number of lung cancer operations should nearly double in the UK.
- The UK elderly are much less likely to have surgery for lung cancer.
- Five year survival rates for lung cancer in the UK are amongst the lowest in Europe

Manpower and work load

- Lung cancer surgery is performed by fewer than a hundred surgeons in the UK.
- There are fewer than 40 pure thoracic surgeons.
- Up to 50% of a thoracic surgeon's workload involves conditions other than lung cancer

Urgent action needed?

- Fifty extra surgeons are required to come up to European average standards.
- To meet the National Cancer Plan a commensurate increase in beds and infrastructure is required.
- A radical review of training is required with additional training posts (NTNs)
- We must rethink the entry pathways for surgeons into thoracic surgery.

The task of the Working Group is to Report on the provision of thoracic surgery in the UK and to make recommendations for the future. It is primarily concerned with the role of thoracic and cardiothoracic surgeons in the care of cancer.

Thoracic Surgery: the nature of the specialty

In the United Kingdom the specialty of Cardiothoracic Surgery includes the operative management of diseases of all the organs within the chest including the heart, lungs, oesophagus and the adjacent structures in the mediastinum, pleura and chest wall. The demarcation of the specialty in Britain is thus based on anatomical boundaries.

In other countries there are demarcations based more on functional distinctions with for example the heart and blood vessels being the domain of cardiovascular surgeons. In some countries lung surgery is part of the work of general (visceral) surgeons. These variations in practice and therefore in definition cause considerable difficulty in regulation.
(visceral) surgeons. These variations in practice and therefore in treatment cause considerable difficulties in regulation, training and certification in Europe but that need not concern us in this document. In Britain the specialty of cardiothoracic surgery is clearly agreed and understood both as an SAC defined specialty (Specialist Advisory Committee of the Royal Colleges of Surgery) and by membership of the Society of Cardiothoracic Surgeons of Great Britain and Ireland.

As a result of the increased demand for cardiac surgery over the last twenty five years about 40% of the 204 UK cardiothoracic surgeons in a 1999 survey 1 considered themselves to be to solely cardiac surgeons. About 40% have a mixed practice and work as cardiothoracic surgeons. Twenty percent confine their work to non cardiac surgery and are variously referred to as general thoracic surgeons, or simply as thoracic surgeons.

**Thoracic Surgery: lung cancer and mesothelioma**

Lung cancer with 40,000 cases diagnosed each year is the commonest cancer and one of the most rapidly fatal. The care of lung cancer in general and in the UK in particular has fallen way behind that of the other common cancers 2;3. To quote from the Lancet editorial ‘lung cancer remains the neglected cousin among the solid tumours’ 2.

There is an informed belief amongst chest physicians and thoracic surgeons that attempts to meet contemporary reasonable expectation will meet with a serious shortfall in provision of

- surgical provision for lung cancer resection,
- early diagnosis and staging of cancer,
- non-curative cancer surgery

In addition to lung cancer, there is compelling evidence that the incidence of malignant mesothelioma is rising and will continue to do so reaching a peak around 2020 with over 3,000 deaths per year 4;5. There is diagnostic and palliative work to be done in caring for these patients. Prospects for surgical cure at present appear bleak but if trials are to be done to establish the place of resection the surgical resource will have to be found.

**Thoracic surgery: other conditions**

The work of thoracic surgeons includes non-malignant pleural problems including pneumothorax and empyema that demand urgent in hospital treatment and surgical resource. There is no doubt that there is a gross underprovision of surgical care for these conditions resulting in excessive in hospital waiting times leading to bed wastage and morbidity. Oesophageal disease is also under the care of thoracic surgeons in many centres and must be provided for. (For a full list of thoracic procedures see Klepetko 5.)

**Lung cancer outcomes and surgical provision**

**UK results are reported to be poor**

Five year survival rates for lung cancer (from time of diagnosis) are amongst the lowest in Europe 7 (See Table 1.) These data are independent of staging and mode of treatment.

**UK resection rates are low**

It is agreed that the treatment most likely to cure lung cancer is complete surgical excision by removal of part or all of one lung. UK Lung cancer resection rates (that is the proportion, expressed as a percentage of cases, where an operation is performed to eradicate the cancer) are of the order of 10% 8;11 and have been at a similar level for years.

Data on resection rates are available for a population-based series of just under 8,000 patients from Rotterdam 12 and about 183,000 cases from the United States 13. The Dutch study reported a resection rate of 24% for non-small cell lung cancers (NSCLC) 12 while the American series reports around 25%. Less than half of the cases operated on in these Dutch and American series would have had surgery in Britain. Put simply that means that more than half of those who might be considered for operation are not offered treatment which gives any realistic prospect of cure.

**The UK elderly are much less likely to have surgery for lung cancer**

There is also a striking decline in the resection rate with age where that has been studied. In Essex the resection rate was 18% for those under 65 years of age, 12% for those 65-75 but only 2% above 758. Data from Yorkshire show almost identical figures with resection rates of 18.9%, 11.5%, and 2.7% in these same age groups in a study of 22,000 patients between 1986 and 199411.

There is very little fall off in the resection rate in the United States up to the age of eighty 13. The resection rate drops over the age of seventy in the Dutch series 12 but is still well above the overall UK rate.

These data suggest that the overall lower resection rate consistently seen in the UK is due at least in part to these very low resection rates in older people and yet the average age of presentation of lung cancer is rising.

UK Registry figures for 3,378 lung resections for carcinoma in 1999-2000 give a 3.3% overall mortality based on a low resection rate and high selectivity. Mortality figures are not necessarily higher for carefully selected older patients undergoing lung cancer surgery 12;14-17. It is likely that many of the older patients could be operated upon with acceptable mortality.

The number of lung cancer operations should nearly double in the UK.
To match the overall and the age banded lung cancer resection rates of the USA and Holland we would have to more than double our present absolute number of lung cancer resections. We must also do this without increasing the surgical waiting times.

Furthermore, this should not be at the expense of other work that has to be done for pleural conditions, oesophageal disease, resections for non-malignant pulmonary disease and for other thoracic disease operated on by thoracic surgeons.

In particular we will be called upon to help in the diagnosis, palliation, and in very selected cases, resection of mesothelioma which is likely to continue to increase in incidence over the next ten to twenty years.4,5

Who does lung cancer surgery in the UK

In the UK the surgeons within the SAC defined specialty of cardiothoracic surgery do virtually all lung surgery including resection aimed at cure, biopsies for diagnosing or staging disease, palliation, and surgery where it is combined with other modalities, in particular chemotherapy. In the specialty of adult cardiothoracic surgery there are 'pure' or 'general' thoracic surgeons who do no heart surgery. As we have seen 40% of cardiac surgeons declare themselves as doing no thoracic surgery. Amongst the cardiothoracic surgeons, on whom we rely heavily for more than half of all lung cancer surgery, there is a wide spread ranging from those who take a very active role, have dedicated thoracic sessions, and play a full part in multidisciplinary teams and meetings (MDT, MDM) to those who do only the occasional lung resection.

It should be recognised that the requirements of the National Service Framework for Coronary Heart Disease puts pressure on all cardiothoracic surgeons making it more difficult for them to fulfil a dual role.

Jeyasingham's survey of the members of the Society of Cardiothoracic Surgeons of Great Britain and Ireland 1 reported that 41 surgeons describe themselves as general thoracic surgeons (non cardiac) and 22 call themselves cardiothoracic as opposed to cardiac surgeons. We have been able to identify just 31 thoracic surgeons in England and Wales who do not also perform cardiac surgery? less than one per cancer centre.

The UK registry data provides surgeon specific data on lobectomy for lung cancer as required by the Department as part of the monitoring of cardiothoracic surgeons. (Adult cardiac surgeons provide data on coronary operations and paediatric surgeons on a group of representative procedures. Cardiothoracic surgeons who are the only group who have kept registry data of this type have been singled out for this scrutiny).

Surgeon specific data on lobectomy for primary lung cancer are available on 92 surgeons for 1999 to 2000. The median was 12 operations with an inter quartile range of 5 to 27 of these operations. Forty seven surgeons did twelve or fewer lobectomies a year (no more than a case a month). (Figure)

It is clear that there are a lot of 'occasional' pulmonary surgeons. The relationship between the volume of work undertaken by an individual surgeon or within a surgical group is likely to have some relationship on outcome. This can be difficult to confirm18 but in the case of lung cancer surgery there is recent evidence that 30 day mortality, post operative complications, and five year survival are all better in larger volume practice19. Nevertheless at present, and until there is a radical change in the provision of thoracic surgeons in appropriate sized units, the surgical care of lung cancer relies heavily on surgeons performing a few cases amongst their already very busy cardiac surgical workload.

How many surgeons do we need to do the increased work?

Calculations based on existing practice and likely future need suggest that if we are to catch up in the provision of lung cancer and related surgery we will need an enormous expansion in thoracic surgeons. Last year (1999-2000) in addition to the 3,578 lung resections referred to above there a further 7,276 other major thoracic procedures carried out in the UK and 16,739 minor or intermediate operations. The European Association for Cardiothoracic Surgery (EACTS) has addressed the manpower and workload issues surrounding thoracic surgery6. This recommends 150 major procedures per surgeon which would require 71 full time thoracic surgeons.

However, if we were to increase our resection rate for lung cancer from 11% to 15%, a modest increase, this would bring the total number of major cases to 12,000, which would require 80 full time equivalent surgeons.

The pressure from waiting lists was persuasive in coronary disease where the background death rate is of the order of 3% per year for the many patients who can wait. Clearly putting patients on a waiting list for cancer surgery longer than a very few weeks is wrong. It would be inhuman to create waiting lists for leverage to make the case for more service provision. The threshold for referral with resection in mind is therefore consciously tempered by realism and knowledge of the local surgical provision. This tendency will particularly mitigate against older patients.

There are other manpower and resource implications

We must not think in terms of surgeons alone but the provision of beds, operating time, anaesthetists, post operative nursing care, radiology, physiotherapy, and all the other components of a surgical team. Details are provided by Klepetko6.

Modern cancer surgery includes intra-operative staging and confirmation of disease free resection margins. Additional pathologists will also be required.

Changes in the consultant surgeons? working pattern

Over the last decade we have seen huge changes in the way that consultant thoracic surgeons work, and will be required to work. None of these changes involves a reduction in work. These changes may be divided into those affecting all
Changes affecting all surgeons

Even if a surgeon were to be doing the same number of operations per annum as he was ten years ago he would still require more time to do that work. Consultations with cancer patients referred for surgical opinions are quite properly taking more time than was allotted in the past. Patients can no longer be seen in the cursory way that may have been the norm. They must be informed of alternative methods of treatment, what is involved in surgery in some considerable detail, the risks, the benefits and the consultation should include the documentation of informed consent. This consent should be obtained by someone familiar with the procedure, not left to a junior member of staff.

Operating lists can no longer be delegated to trainees. This has led to the abolition of twin theatre operating and perhaps more important, when a consultant is absent as he or she inevitably will be more than previously (see below) lists will have to be cancelled.

Medical team working is essential. This does not relate to the traditional team of consultant, registrar, and SHO, but to consultants working together and as necessary operating together. This entails further demands on a consultant’s time.

The reduction in junior doctors’ hours has put a huge burden on consultants. No longer can they depend on the regular input of their juniors who are also less experienced than formerly. While a move towards consultant based practice is laudable it does of course demand yet more of their time.

Audit and data collection are now an integral and yet again time consuming component of consultant life. The list of activities required of all consultants has steadily grown.

Changes particularly affecting thoracic surgeons

Much of a thoracic surgeon’s work relates to cancer including diagnostic, staging, curative, and palliative procedures. It is recommended that all cases of cancer are discussed at multi-disciplinary meetings at which a thoracic surgeon is required. Many of these are held away from the surgeon’s base hospital and attendance at such meetings can take a complete day if travelling time and associated clinics are taken into account. Most surgeons are required to attend several such meetings per week.

Cancer patients ought to be in clinical trials. It is time consuming to discuss the study and obtain fully informed consent. It thus takes much longer now to see the same number of patients and more time in interdisciplinary meetings.

The time taken to anaesthetise patients is much longer than it used to be. This is predominantly due to improved monitoring of patients and the introduction of newer and safer techniques. This means that fewer patients can be operated on in a given session.

There is a perception that at present patients requiring complex surgery, e.g. the resection of Pancoast tumours or sleeve resections are being denied such surgery, possibly because of the lack of specialist surgeons and available operating time.

Thus, the overall picture is one of an increasing workload over and above the task, as perceived by non-clinicians, of simply seeing and operating on patients.

Training Thoracic surgeons and the future work force

The present training is towards a generic Cardiothoracic surgeon

There is a common training of specialist registrars in the whole specialty of cardiothoracic surgery. The cardiac component includes everything from complex congenital surgery in babies, through the routine high volume coronary and valve surgery in adults, through to the less common and more challenging areas of work such as thoracic aortic replacement and heart and heart and lung transplantation.

The thoracic work includes all pulmonary disease and pleural disease as indicated above but also mediastinal, oesophageal disease plus surgery of the chest wall and diaphragm.

There are few suitable applicants for ‘pure’ thoracic posts

It is a matter of concern that recent vacancies for general thoracic surgeons have failed to attract anything like a reasonable short list of applicants. Cardiac and cardiothoracic consultant posts are hotly contested. And yet by the time the trainees are in their last year of training few of them are prepared give up cardiac practice to commit themselves to a career in general thoracic surgery.

The different attributes and skills of required in cardiac and thoracic surgery

The nature of the clinical practice of cardiac surgery and thoracic surgery are different. There is a risk of stereotyping which must be avoided but it would be generally accepted that there are different clusters of aptitudes.

In cardiac surgical practice once the diagnosis is made and operation decided upon, success depends on the reproducible delivery of a standardised and very precisely performed technical operation. There is a higher volume of individual operations, which individually take more operating time. Team working is essential but sequential in its nature. That is to say the cardiologist passes on the (more or less) fully worked up case to the surgeon who is likely to rely on the intensive care staff to supervise the post operative course. A variable but substantial part of later surveillance, re-investigation and management reverts to cardiologists.
The thoracic surgeon has a much greater role in the diagnosis, staging, and decision making across a wider range of circumstances. The teamwork is more in parallel. Preoperative assessment and postoperative care form a much bigger proportion of the overall work of the thoracic surgeon.

In order to overcome this problem the Society of Cardiothoracic Surgeons and the Specialist Advisory Committee (the SAC) in Cardiothoracic Surgery have tried to recruit trainees to protected thoracic surgical training posts. This must be pursued with some energy but the time lag is going to be great. Five such posts are suggested to the coming year that will produce that number at best in about six years' time.

There is an urgent need to expand dedicated thoracic training numbers over and above the expansion of cardiothoracic specialist registrars. Detailed work must be done on manpower planning, taking in to account retirements. Although this is notoriously unpredictable, our estimate is that there should be fifty extra thoracic surgeons as soon as is practical and a target of eighty surgeons to maintain stability.

The limited time to perform both types of practice to the full

Even if it is accepted that it is possible for an individual to have the requisite strengths to cover both styles of practice, it is undeniable that with the demands placed upon cardiac surgeons by the National Service Framework for Coronary disease and the pressure on the Thoracic Surgeon to attend multidisciplinary team meetings, it has become increasingly difficult for an individual to do full justice to both areas of work.

An alternative is to recognise from the outset that the type of young surgeons recruited into what is predominantly cardiac surgical training are not likely later to give up cardiac work completely, unless it is because they are not making the grade. Trainees doing less well in the predominantly cardiac training environments have tended to be offered thoracic surgical opportunities by their largely cardiac surgical mentors and programme directors. This is a bad reason for such a critical career choice and sends the wrong message to other trainees and colleagues in chest medicine and surgery.

Rethinking who should operate on lung cancer

We believe that there are significant numbers of trainee surgeons with the combination of interest and aptitude to make thoracic surgeons but who are put off by the current system whereby trainees are chosen at interview for predominantly cardiac training programmes. We have explored the possibility of upper GI general surgeons translocating into thoracic surgery and have so far not met opposition but instead support from those whose advice we have canvassed. This is possibly the most pragmatic way of developing the specialty of thoracic surgery.

There is no doubt that the training in thoracic surgery in many other countries is excellent and we would like to explore mechanisms to facilitate the entry into thoracic surgery in the UK of surgeons from the EU and elsewhere.

However, we must emphasise the need to recruit and train more thoracic surgeons from the outset of higher specialist training.

Reference List

11. NYCRIS. Cancer treatment policies and their effect on survival (lung) key sites study. 1999. Northern and Yorkshire Cancer Registry and Information Services (NYCRIS).


