

“OUR UROLOGICAL LEGACY”

2007 Presidential Address RSM Section of Urology

Mr Michael Wallace

I chose the title of my talk with some care; not because I wanted to dwell on my genetics and my upbringing, but because I wanted to think about our legacy to the young urologists of today. As you can see from the topics (*right*), morale in 2007 is low and there is great despondency.

I was first provoked to think about this topic last year when two of our bright young Registrars, both with PhDs, opted not complete their training. I thought I should look seriously at what we are doing in urology, what I had in urology and what we have got to pass on – in other words, what should be our legacy to today’s young urologists.

I’d like to start off by telling you a little bit about my own past because my beginnings in medicine were so important to me. I finished school like any other school leaver. I had a place at University College Hospital, London (UCLH), I had lousy A-Level passes, and I had the usual doubts & uncertainties as to whether medicine was for me. When I went eventually to Medical School, nine months later, I had turned it all around. How?

Well, I spent nine months in a mission hospital in Nigeria. I went out there at the age of 18 – as a medical student I just wanted to help. This was the hospital (*right*). The theatre was at the end and there were three vultures on the roof when I arrived.

On my second day, the first surgical emergency was admitted. A strangulated femoral hernia of three days’ duration, with spreading gas gangrene. The young surgeon that ran the hospital decided we should take the patient to surgery. I looked at the diary that I kept, and I wrote the following sentence:

“I gave the anaesthetic.”

What is putting trainees off urology?

- **MMC**
- **MTAS**
- **SUBSPECIALISATION**
- **OFFICE UROLOGY**
- **EWD**
- **It’s not what I thought it was!**



I had an E in A-Level Physics, I was 18 and I gave an anaesthetic! The patient didn't survive. That fortnight we had five Caesarean sections – only on number five did I see a live baby.

I then went to another bigger hospital to get a little bit of training over a period of about four weeks. I was put in the laboratory and was taught to recognise all the intestinal pathogens. I asked if I could see a bit more action and was sent to the operating theatre. Here there were two tables running; one seemed to do nothing except hernias and the nurses worked flat out. I thought I was getting in the way so I asked, "*Can I do something to help?*". By tea-time, I was a fully trained scrub nurse, taking my first hernia case (*right*).



I also learnt to suture and to drain abscesses; on incising one thigh abscess, I pulled out a car door handle – it became a trophy of my time there.

Following this, I went to a local leper colony where they had 450 patients in a 50-bedded hospital. We had one doctor and one British nurse, both of retirement age. Again, I thought I should try and make myself useful. Several things I did:

1. I looked after the feet - I learnt all about the neuropathic ulcers affecting these patients' feet. I studied how they healed (and didn't heal) and I pared them down and trimmed them in everybody twice a week on this table (*right*) - this was, interestingly, also the only place where I saw a chloroform anaesthetic given; and
2. I was in charge of drug delivery to these young patients (*right*). All these kids had leprosy, and I was responsible for ensuring that the drugs got into their stomachs and not into the marketplace;



So, I left here with huge confidence. I knew what I wanted to do, I knew I could be a doctor, but I also knew that I wanted to do surgery.

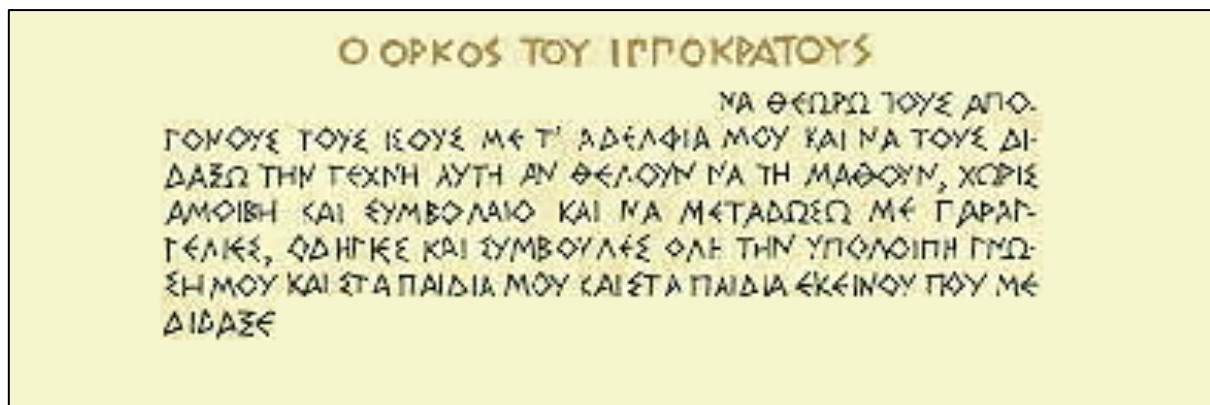


I went to UCLH; I was an undergraduate here (*right*). I did my registrar training and met my wife in the theatre at the top of this building. After my surgical training, when both my parents were out of the country, and without ever consulting them, I applied for my first urology job at the Institute of Urology with DI Williams - he gave me the job.



Thereafter, I worked for several distinguished urologists and former Presidents of this Section. Throughout my training, I was always rather embarrassed that I had a father in urology and that, as a result, I might have gained unfair advantage.

Eventually, I came across the Hippocratic oath (*below*), paragraph three of four. If you don't read Greek, this says, "*I swear to teach the offspring of my teachers*". Thereafter, I stopped worrying about it. I went into urology at a time when it had just begun to expand rapidly. I got my Senior Registrar job in 1980, and by 1984, when I got my consultant job, we were beginning to expand.



From then on, we were on an almost exponential expansion slope, and somebody needed to look ahead and see what was going to happen in the end. When I started, we had only 40 urology trainees, and now we have over 250.

We are fuelling expansion still, and something must change. In 1997, I chaired the inaugural meeting to discuss major issues like subspecialisation, workload, certification and regulation. As Ralph Beard told me at the time, there was a smell of fear in the auditorium, because we felt very threatened. I felt that we had to have an organisation where we could address these issues.

At the same time, the new labour government was looking at two other things. The audit of October 1997 had shown what appalling delays there were for cancer patients, and urology did worst, with prostate and bladder coming out right at the bottom of the table.

They were also aware of the poor outcomes in the UK. The next 10 years, we saw enormous changes, and I think what we've done for delays in urological cancer has been considerable. We were assuming that things were fairly static, but they are not, of course. Prostate and kidney cancer have been increasing – we were not aware of the increase in kidney cancer but it rose by 10% over 10 years.

Testis cancer increased slightly, but bladder cancer, which was the focus of a lot of our discussions, has been decreasing. Well, it was obvious that bladder cancer should start to decrease when we look what's happened to the prevalence of smoking since 1970. It has dropped enormously. And, if smoking is the major aetiological factor then, surely, we should see a change in bladder cancer. Sure enough, we have.



The incidence of bladder cancer is falling. Now, at that time, we tended to look at our workload like a pyramid (*right*). Right at the top we had the high-technology surgery, cystectomy. We all wanted to be doing the major surgery at the top of this pyramid but, as urologists, I think we neglected the pyramid and didn't look at the base. If we as urologists do not address this, somebody else will, and we'll be confined to the pinnacle.

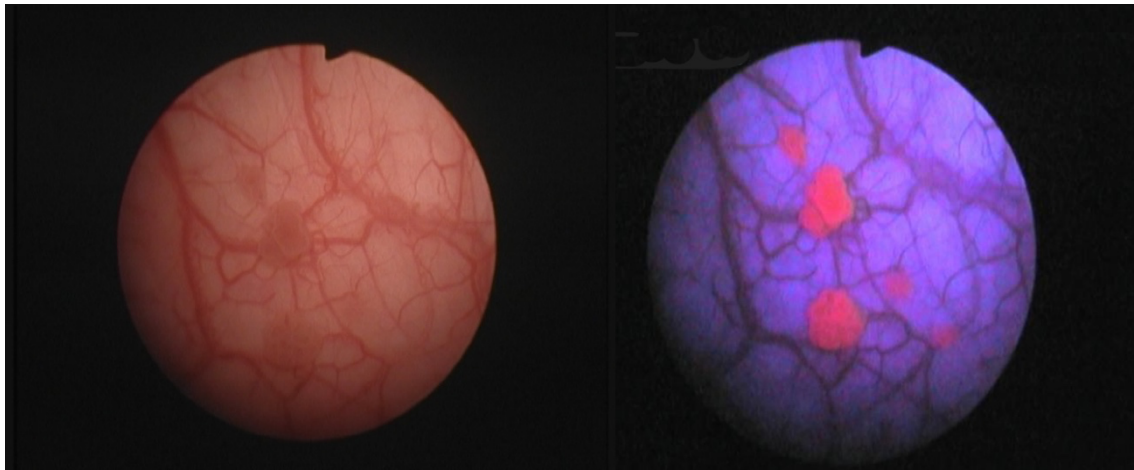
Things may, however, go the other way up, and we may be at the bottom of the pyramid or at a side corner. If we look at this workload pyramid, there are something like 1.3 million sandstone blocks. That is about the same number of patients as there are in a cancer network. At the base, we should be looking at lifestyle factors and preventative measures, particularly for urothelial cancer.

We should be addressing the problem of screening. For haematuria, we should be aware that our GP colleagues are seeing in this population about 5,000 patients with haematuria, and they are referring selectively. They should be selective about their referrals, with our help and involvement. They do refer into hospital roughly a quarter of their patients that we screen in our haematuria clinics, and we find about 20% with cancer, the majority in the bladder. So, in this 1.3 million, we will probably be picking up about 40 muscle-invasive cancers, of whom 20 would be fit for cystectomy. There are probably 14 urologists available to do those operations.

Now, we should look at the broad scope and workload of urology, so let's get down to the basics. My father, in his presidential address in 1972, chose the development of the cystoscope, as the subject his address, "*New Lamps for Old*". He took it up to the time of the introduction of the solid rod lens system and fibre optics. We now have superb optical technology, but we are forgetting how to teach and how to use our basic instruments.

The papers published about second-look cystoscopies, showing how often we miss tumours, are quite alarming. We now have some interesting technologies that confirm

this, one of which is photodynamic diagnosis (blue light cystoscopy), where Hexfix is put into the bladder, is selectively taken up by tumours and fluoresces in blue light, as is shown (*below*) on these images of Tim O'Brien's that shows there are not two or three (normal cystoscopy, left), but probably five tumours in the field (blue light cystoscopy).



Tim O'Brien has made the very telling confession that, after eight years as a consultant, once he started to do photodynamic diagnosis he realised how badly he was doing his cystoscopies.

And this technique may also show us carcinoma in situ that we could not otherwise see. My own interest has been in a different technique of "narrow band imaging" that is applicable to fiberoptic outpatient cystoscopy. By using sequential RGB technology, which gives the best picture, at the press of a button we can filter the light such that we get more contrast and get a more definite picture of a bladder tumour. Using this technique, we have studied patients with multiple recurrent tumours and picked up an extra tumour in 41% of patients.

So why could we not take this just a little bit further? We can see the urothelium so could we see the cells inside? We now may be able to because Olympus have an endocytoscope. It is 3 mm in diameter on a 2.4 metre cable and can be passed down the instrument channel of a cystoscope - it has 450 times magnification and allows you to see nuclear detail. What an exciting prospect for a young urologist to start studying *in vivo* pathology.

Now, when I became a Consultant, I was grateful to John Blandy, who set up an occupational bladder cancer committee in BAUS, and Bill Hendry, who chaired it, asked me to join. We produced a report, and, from that, it kindled an interest in me in occupational bladder cancer. We set up a unit in Birmingham with Malcolm Harrington, Professor of Occupational Health, and we studied patients in the West Midlands with the co-operation of my urological colleagues. The outcomes in terms of occupational exposure were largely negative. We only found 1% had definite exposure, 25% had possible exposure, but 75% had no exposure at all, and we thought that routine screening would not be feasible and would be prohibitively expensive.

However, my urological colleagues collected data for me on all these cases - the stage, grade and delay periods, and their smoking history as well as occupational history. When we finished looking at the occupational factors, we just filed it - rather like a fine wine, we stuck it down in the cellar. Seven years later, when Rick Bryant joined me as a research registrar, we got it out again, ran it through our cancer registry, and came out with some interesting facts.

Delay did matter, and it was delay between onset of symptoms and getting referred that made a 5% difference to survival. That difference in survival occurred around a median of 14 days. This came out after the 14-day rule was set up by HMG and is, I think, the best evidence in favour of providing a better and more rapid access service for haematuria patients.

I like to compare this to a similar (5%) benefit in survival with neoadjuvant combination cytotoxic chemotherapy. Which 5% benefit would you rather have - a prompt diagnosis or go through this chemotherapy to get that benefit? At that time, one of the things that interested me was the bottom line - we needed to look at those who had never smoked; interestingly, nearly all of these had no occupational exposure either. So, why were these patients getting bladder cancer? I've looked at today's figures, and it's rather alarming. 25% of bladder cancer patients have never smoked, and the prevalence of current smoking now is inexplicably lower in bladder cancer patients than in the general population.

While I was pondering these factors, a 40-year-old man came into the Haematuria Clinic with irritative bladder symptoms and some microscopic haematuria. He had a red patch in his bladder, which I biopsied, and it was *carcinoma in situ*. He just happened to be the newly appointed Professor of Epidemiology in Birmingham. And if there is anything that focusses the mind on the epidemiology of cancer, it is having it yourself.

And after a lot of discussion at each end of the cystoscope, we put together a team of people to implement a bladder cancer prognosis programme, funded by Cancer Research UK (CRUK) for £2 million over 5 years. It is a longitudinal cohort study of all the incident cases.

We have:

- a planned recruitment of 3400 incident cases;
- a clinical trial of selenium and vitamin E for chemoprevention of the high-risk bladder cancers (2000 cases);
- a health-related quality-of-life questionnaire study providing a comprehensive study of epidemiological, biological, quality of life aspects of bladder cancer;
- a tissue bank of tumour tissue, blood, and urine which may become the largest bladder cancer biorepository in Europe, providing a unique resource for research; and
- a plan to use this for a study of molecular markers.

Who is going to inherit this? Will it be oncologists, epidemiologists or urologists? The design of the study has been to make it as simple as possible for urologists to carry it out. The urologist has little to do other than choose the tissue and fill in two forms. Most of the administrative work is done by two nurses. They are research nurses who will look after everything else.

We are now rolling this out to all the other centres in the West Midlands, and we currently have eight of the 12 centres on-board. Our recruitment rate is rising exponentially, and it is not far behind target. We have recruited 411 patients to date so, with four more centres to come in over the next few months, we hope we will soon be recruiting rapidly. This is one legacy that I hope we will leave to young urologists.

My other interest has been in major cancer surgery. I am interested not so much in the technology of the surgery but more as viewing it as a study in risk-taking. When I was younger, I used to do a lot of climbing. The more I did it, and the more I got into surgery, the more I saw very close parallels.

To sum it up, have you ever said to yourself, "*I wish I wasn't here*"? And if you ask yourself why you are saying that, then one of the answers may be that you shouldn't have been here in the first place! That certainly applies to surgery but getting out of that situation is not just physical – it is mental, too.

We have had grades for climbing routes since 1896. Every little rocky outcrop in this country has routes documented on it which are graded, and those grades are constantly being revised. In North Wales alone, there are 10,000 graded rock climbs – all climbs are graded on this scale:

- **Difficult**
- **Very difficult**
- **Hard, very difficult**
- **Severe**
- **Very severe**
- **Hard, very severe**
- **Extreme** (which is also graded from 1 to 10)

What do we have in surgery? You all know it. We have BUPA!

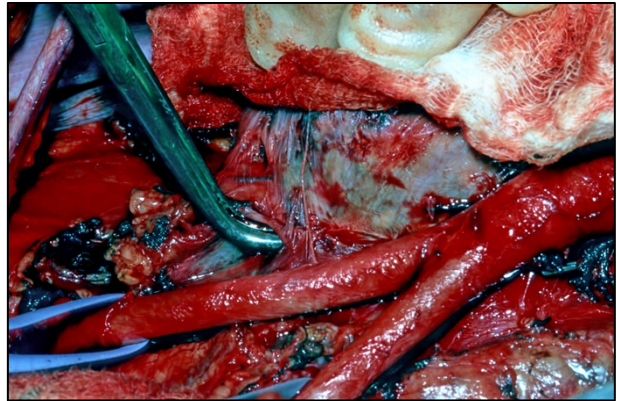
There are about 2,500 operations that are crudely classified by BUPA for severity, but these are no real guide to the difficulty of an operation that a surgeon may be taking on. The climbing grades consist of two components - the technical difficulty and the exposure, which basically means what happens when you fall off.

And surgery is also very like that. I was privileged to work as an SHO at Harefield Hospital for a man who made a huge impact on me, Sir Magdi Yacoub (*above*). He was undoubtedly the most talented surgeon I have worked for. He had immense stamina, courage and charisma.

Who else could turn up with his team to outpatients 10 hours late on successive weeks and get away with it? But two things about him struck me. First, was his ability to take major risks, and second his phenomenal concentration when he was operating. Up until then, operating had been perhaps an entertaining thing - we did it because we liked it. Operating with Magdi Yacoub was intense mental effort. I did not realise how much I would benefit from that training until I became a consultant and started doing high-risk operations myself.

My basis for this has always been an interest in retroperitoneal lymph node dissections (RPLNDs) for testis cancer, which I first learnt from Bill Hendry, extended my knowledge from a year in Bern, and then had the opportunity to operate and assist John Donohue and Don Skinner, who were the doyens of this type of surgery. I realised that what we were doing was pure and simple – a major vascular procedure. I extended this concept not just to node dissections, but also to renal cancer surgery. And I applied some of the lessons that I'd learned from rock climbing.

And here (*right*) is what not to do - this is a highly dangerous move in RPLND.



There's no protection here. I'll illustrate it in a different way with a climbing analogy.



When the chap on the ice face in the right-hand image comes off, he's not attached, and he is going straight to the bottom. When the chap on the left comes off, he's safely

anchored and is only going to drop about six feet. That is what it's like operating on the major vessels - you've got to think about your protection.

From doing this type of surgery, I've come to one major conclusion. These great vessels have gender - the aorta is masculine, and the vena cava is, very definitely, feminine ...

I have extended this experience into renal cancer surgery, because this is a growing aspect of urological cancer surgery. We have undertaken more cytoreductive surgery, stimulated by clinical trials and by the advent of targeted drug therapies. Now we are using them as adjuvant & neoadjuvant treatments and having to take on removing not just big kidney tumours, but bulky retroperitoneal nodes.

Despite the increase in renal cancer and the rise in incidental cancers, we are also seeing an increase in the very bulky, advanced cancers at presentation. There are two aspects of renal cancer surgery that have preoccupied me in the last phase of my career as a surgeon. Two opposite extremes, perhaps:

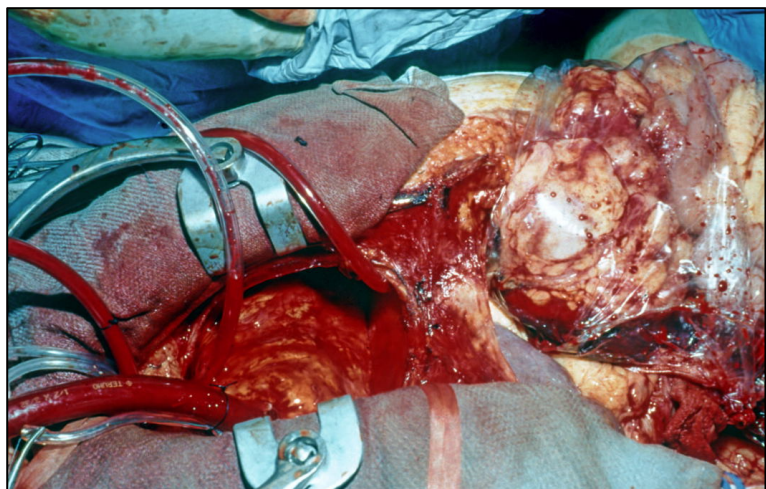
- IVC extensions; and
- nephron-sparing surgery.

Caval extensions

I have always been puzzled about caval extensions, because I saw my first case as a medical student at UCLH. It was pandemonium because they embolised the tumour and then put the patient on bypass - the patient died. I watched this as a student, and I never forgot it. I never saw another similar case until I became a consultant.

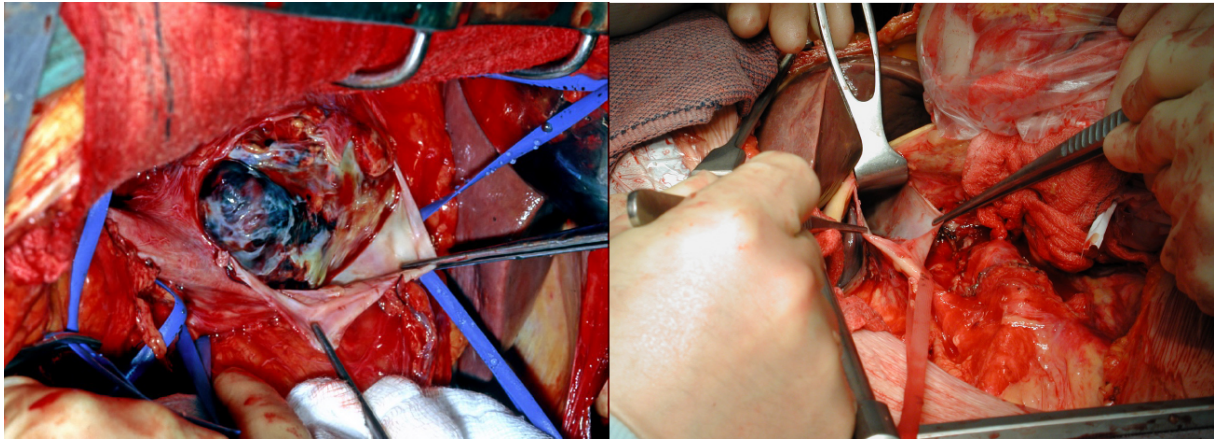
When I was called to theatre, the cardiac surgeons had opened the patient to remove what they thought was a right atrial myxoma, and I was presented with a patient on bypass with the heart arrested, the atrium opened, and they asked what they should do? The third case happened in 1993. I remember it well, because we were prepared, we completed the surgery without any problems, and the patient did well.

Since then, we have performed another 70 cases of level 3 or 4 IVC extension, but where did they all come from? Has the biology of the tumour changed? Unlikely. Is it just because we have better imaging? We have certainly got that. Can you miss a tumour thrombus in the atrium? Maybe. Or has referral practice changed, and clinicians recognise that these tumours are no longer inoperable?



The surgery is immense. As you can see in the image (*above*), split from stern to stern, with the bypass cannulas in place, preparing for what is likely to be a 6-10 hour operation.

The pictures below show my cardiac surgery colleague displaying the tumour in the bloodless right atrium (*left*) - you can imagine the effect on quality of life of having a lump this size blocking your heart. Of course, I needed to open the vena cava to take the bottom end out, and so we also get a view (*right*) of what the bloodless inferior vena cava looks like from the inside.



What has concerned me is that, in my series, there have been three patients whose tumours were deemed inoperable but who came to surgery by a roundabout route. One extreme example was a woman with a massive thrombus in the atrium, pushing through her tricuspid valve, and not just that – she had a big tumour deposit in each pulmonary artery. She could only walk 20 yards. Judged inoperable, she was sent to an oncologist from whom she was referred to our oncologist. She was then referred to me and, three years later, she was back at work with no evidence of disease recurrence on any of her scans.

But it is not all like that. These are the cases that keep you going. The reality is that only about one third of our patients are reasonably long-term survivors, but it is quality of life that has made the difference to them.

Nephron-sparing surgery

My other specialist interest is in nephron-sparing surgery. Here, my legacy is that I was trained in open stone surgery by John Wickham and I did six years as a renal transplant surgeon at the Institute, at Bart's and in Edinburgh. My practice has been steadily increasing, probably because people have become more aware of what we do, largely because of the greater publicity. However, I am an open surgeon, and I do these as open surgical procedures, because I put the cancer first, preservation of the kidney second and, third, the comfort of the patient.

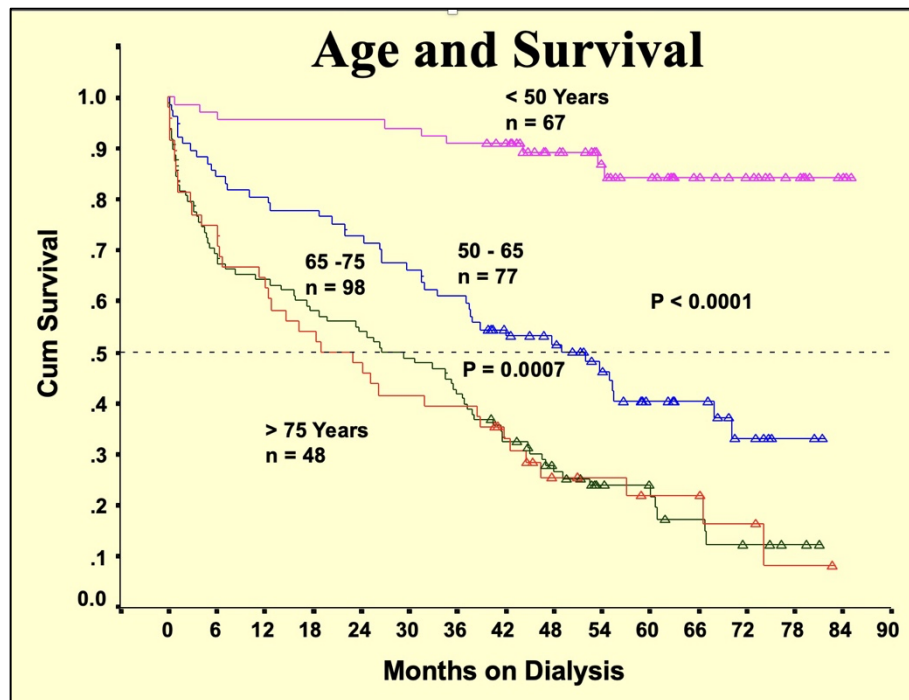
My technique is based on what I learnt from John Wickham about carrying out ischaemic renal surgery on these patients, resecting the tumour with an elliptical margin so I can get a good capsular closure with fine sutures, without the risk of the causing tissue

ischaemia by using the large buttress sutures in the kidney parenchyma. I probably have one of the largest series in the country (159 procedures). I have had to abandon the procedure twice because of hilar vessel involvement and lost one kidney, just two weeks ago. Two thirds of the patients have had obligatory indications for the procedure and only one third were performed electively (i.e. we could have done a nephrectomy because they had a good kidney on the other side). The data for 159 procedures are shown in the table below:

Elective total - 56 (35%) Non-elective total - 103 (65%)		
Absent (congenital)	6	(4%)
Absent (benign cause)	3	(2%)
Absent (cancer cause)	24	(15%)
Poor renal function	13	(9%)
Potential poor function	3	(2%)
Bilateral synchronous	37	(23%)
Other	17	(12%)
12 von Hippel-Lindau; 11 Tuberous sclerosis		
Median ischaemic time: 24 min (range 10 – 54) Capsular closure in 122 (76%) Two abandoned for radical nephrectomy 28 had other synchronous major surgery		
Patients with single kidneys (47)		
7 required acute dialysis, 1 late dialysis (nephrectomy for recurrence) & 2 had late renal failure		
Creatinine	Median	Range
Pre-op	113	70 -271
Max post-op	173	104 - 677
Nadir post-op	129	84 – 574

My main concerns have been with one sub-group, the patients who have a single kidney, shown above. These are the ones where I really can tell whether I am looking after the kidney or not. Acute dialysis was not required for more than a week or so, and none of them have gone on to require long-term dialysis. Two have developed late renal failure but are not on dialysis, and after three years I had to take one kidney out and that patient is on dialysis.

The message I pass on to my younger colleagues is that the crucial thing is to compare the outcome of other alternatives, namely nephrectomy and long-term dialysis, where the outlook is pretty appalling for the elderly, although it is rather better for younger patients (*see graph below*).



Nothing I have achieved has been done by me alone, because we have worked in teams, and I hope you have heard the words “we” and “teams” more often than “I”. I have been very fortunate to have wonderful teams to work with. We have always worked together, and it doesn’t matter who is standing on which side of the table performing the surgery. The people who have formed those teams are credited in the image (right).

Team Working in Clinical Practice

- Urology – M Hughes, D Farrar, A Wilkey
- Pelvic Surgery - J Fielding, C Chan
- Cardiac Cases – T Graham, M Faroqui
- Oncology – M Cullen, N James, E Porfiri
- Multidisciplinary Team –Radiology, Pathology
- Nephrology – J Michael, D Adu, G Lipkin

I have added up that there are more than 250 man-years of working with these colleagues, and I can honestly say I’ve never fallen out with any of them. And this is not only a legacy, but a challenge to younger urologists. Can you emulate that?

Finally, my longest standing colleague is here in the picture (*right*). If you can’t recognise us, that is me circled on the right-hand end of the second row and our nephrologist, Joe Adu is circled on the third row. Only last week he helped me by dialysing a post-operative patient.





My favourite instrument (the Thompson lithotrite) is in the picture above. It was given to me by my father. I should have brought it with me, but I completely forgot it! When he retired - and he was President of this Section in 1972 - I asked him where he got it from. He got it from Terence Millin, and he was President of this Section in 1936. He got it from a man called Edwin Canny-Ryall whose picture I do not have. I have, however, used his dilators almost every week! Where did he get it from? I am not sure, but it was made by the company Weiss, London, the company that made the lithotrite that Sir Henry Thompson used to treat King Leopold of the Belgians, and he, in turn, learnt his lithotomy from Civiale who tried to do better than William Cheselden practising lithotomy in the position shown at bottom right of the image. All the players mentioned above are shown in this image.

Few people now remember that we call this sitting posture the "*lithotomy position*" because this is how we used to carry out lithotomy – cutting for stone - in the 15th & 16th centuries. We have a very rich history in urology, and most people are not aware how fascinating this is. I think this is something we must pass on to the younger generation. We have a wonderful specialty, and we have a lot to offer.

I would like to thank you all for coming here and, especially, I would like to thank my mother who has come down from Ardnamurchan on the west coast of Scotland to listen to me, the second family member to give a Presidential address to this Section.

Thank you very much.