The History of Plastic Surgery- The Australasian Connection

by

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The Chairman of the meeting was Dr. John Marum.

Plastic surgeons and lawyers are no strangers when it comes to getting together, usually on the other side of the table and vision of the Balls here tonight brought back memories. I think that it is an opportune time to talk about relationships. Plastic surgery is very much an Australian venture and I suppose we're seeing it through Australian eyes but the history of plastic surgery really goes back to the Hindus in India prior to the birth of Christ. Of course, being asked to talk about history is also a bit of an embarrassment. It implies that you're in your dotage. I remember Billy Connolly saying thank God he hasn't got Alzheimer's disease, touch wood as he knocked on the wooden table - "Come in." And I feel a bit the same.

Plastic surgery prior to this century was limited to a few procedures and nose reconstruction was one that was well developed. This was known as the Indian rhinoplasty and the patients were labelled elephant men. In India at that time amputation of the nose was the price for adultery so techniques to reconstruct the nose were developed by the Hindus. Of course, it was associated with shame and it became quite an art form.

The other famous operation to reconstruct a nose was invented by the Brancha brothers from Sicily and further popularised by the Italian Tagliocozzi. The nasal bridge at that period in history was collapsing because of syphilis brought to Europe from the New World and, again, the social stigma of nasal deformity was very high. This was the operation that they devised. It was a flap of skin that was taken from the arm and plugged into the nose and the patient would sit in this harness for the period of time necessary for the skin from the arm to grow into the face by which time the flap would be able to be detached by cutting away the segment from the arm and it would be now living on the face. This really was the forerunner to what became the standard method of transfer of tissue from one part of the body to the other but it was about 400 years in limbo because the Catholic Church decried any surgery for cosmetic reasons. Tagliacozzi was buried in an unmarked grave and it wasn't until the beginning of this century that this technique was rediscovered.

This slide is of Gerry Moore. He graduated from Melbourne University in 1885 with first class honours in all subjects. He was the first person in Melbourne to gain the Master of Surgery and he was appointed to the Melbourne Hospital in 1887 and to St Vincent's Hospital one or two years later. Now this was the period of the frock-coated surgeon and one of the more notorious was Diamond Jim

Beaney. The medical students of today are still awarded the Beaney Prize for medicine and surgery. Diamond Jim allegedly earned two million pounds during his career and he was known as "Diamond Jim" because he wore diamonds in his lapel, his cravat and his cufflinks. Diamond Jim prided himself on not washing his hands. It was the period where Lister in Edinburgh had publicised and was demonstrating the value of washing your hands in carbolic acid but Diamond Jim scoffed at this pedantry.

Gerry Moore, who was now his resident, was appalled at the death rate at the Melbourne Hospital for abdominal surgery which in circumstances where the abdomen was opened, the death rate was 80 per cent. The law demanded that you must consult with three other doctors before you made the decision to open the abdomen, for the obvious concerns with possible death. Diamond Jim was charged with murder on two separate occasions during his career. The second occasion related to a giant bladder stone which he removed and had placed in a bookshop window in Collins Street with a caption that read, "The largest stone ever removed by Diamond Jim Beaney, Melbourne Hospital." Of course, it neglected to state that the patient died as a consequence. A court case ensued and the body was exhumed for purposes of post mortem. At that period, if found guilty, he would have been hanged. Needless to say, Diamond Jim mustered top legal support and was acquitted whereupon he promptly hired an elephant from a travelling circus which he rode up and down Collins Street to boast his success to the good citizens of Melbourne.

This slide shows Diamond Jim's house and hospital, as was typical of surgeons of that period and the building is still present today, situated on the corner of Collins Street and Russell Street. It is now, I think, the Westpac Bank and behind it is the Hyatt Hotel. The place at the rear was also another doctor's hospital and private house.

Things were not so good for their counterparts in the bush. This slide shows a shingle which reads "Tom Smith - Surgeon" in rural Victoria in the 1880's. Tom was most likely an unqualified bonesetter. Surgeons were certainly kings in that period and an appointment to a public hospital was critical to their reputation and financial success. This cartoon from The Bulletin lampoons the system of voting for medical practitioners to the public hospitals. These characters were well-known doctors of the period at the Melbourne Hospital, Charlie Ryan and Springthorpe, and they are parading up and down the streets with sandwich boards promoting their wares. Diamond Jim's elephant stunt

was part of the publicity seeking that was vital for electoral success. The process was similar to our council elections where only subscribers to the hospital could vote for the candidates. The opium dens of Chinatown were a popular source of votes by paying them a shilling they would pay sixpence to be a subscriber, vote for you and keep the change. It was said that the voting rolls of the time read like a Chinese telephone book. If you look at this all the names are Chinese.

Gerry Moore did two major things with respect to this. He firstly introduced Listerian techniques into surgery at the Melbourne Hospital and reduced the death rate from abdominal surgery from 80 to 20 per cent. Secondly he was able to overturn the voting system in favour of an Electoral College process of appointments to public hospitals which remains the bench standard for today.

But of more relevance to us is that Gerry Moore also wrote, according to Sir Benjamin Rank the founder of Plastic Surgery in Melbourne, the first textbook entitled "Plastic Surgery" in the English Language. This slide shows the frontispiece of that book which was written in 1899 and the Table of Contents listing some of the procedures that were done and considered plastic surgery of that period. Looking at some of the illustrations in that book, it is quite extraordinary the results that he obtained in the late 1890s and early 1900s. This is a nose reconstruction and the case below shows a big hole in the cheek; it is quite remarkable how they were able to fill the hole. Even today that would be a major challenge.

This slide shows Collins Street in 1900 and on the corner of Spring and Collins is Alcaston House where Gerry Moore had his hospital. It was rebuilt in the 1930s and is still predominantly occupied by medical practitioners. The Melbourne Club is just down the road. Wolfe, a famous ophthalmologist who invented the full thickness graft practised in Glasgow came to Melbourne in the 1890's and actually worked in the same premises as Gerry Moore. It is likely that Gerry Moore consulted with him closely as he includes a chapter on the full thickness graft in his book.

The next chapter in plastic surgery begins with the First World War and in this context the Australasian connection is paramount. Harold Gillies who was from Dunedin in New Zealand studied medicine at Cambridge and was attracted to ENT surgery. At the outbreak of war, he was posted to France where he came under the influence of a legendary charlatan named Varnardiér. He was a self-appointed dentist, a French-American who practised private dentistry in Paris.

His chauffeured Rolls Royce had been converted into a dental caravan with a dental chair in the back. His practice focussed on the nobility but he also performed some remarkable operations and Gillies learned from him the fundamentals of maxillo-facial surgery.

Gillies was then sent back to England where he established a maxillo-facial unit. It was an invention of necessity to treat the First World War injury known as "trench jaw" where the lower part of the face was shot away by shrapnel. To reconstruct the jaw had been hitherto an almost impossible task. These patients died slowly because of their inability to swallow, aspiration of saliva and eventual pneumonia. The famous war artist and director of the Slade School, Sir Henry Tonks was assigned to Gillies' unit and recorded these injuries and their reconstructive stages.

Gillies invited surgeons from the other Commonwealth countries to partake in the formation of the new maxillo-facial unit so an Australian, a Canadian and a South African comprised the team. Their anaesthetist was also Australian. The Australian surgeon was Henry Simpson Newland from South Australia and he, therefore, was the first Australian to "learn" plastic and maxillo-facial surgery. He returned to South Australia in 1919 but didn't pursue plastic surgery, preferring the general field of surgery.

Newland was however responsible for attracting Frederic Wood-Jones to Adelaide. Wood-Jones was an anatomist and surgeon gynaecologist in London who was, to say the least, an interesting character. He participated in archaeological expeditions and explored the Egyptian tombs; he wrote articles on how to tie the hangman's knot and was a staunch anti-Darwinian. He married Clunies-Ross' daughter while studying atolls at the Cocos Islands. He was appointed the second Professor of Anatomy at Adelaide University and thence came to Melbourne, again as the Professor of Anatomy where through his special interest in the anatomy and function of the hand he influenced the young Benjamin Rank. He wrote several books including "Principles of the Anatomy of the Hand"

It was Gillies who pioneered the technique of jaw reconstruction by transferring large pieces of skin and fatty tissue from one part of the body to another by what became known as the "tube pedicle." The principle involved making parallel incisions across the abdomen and tubing the skin so that it remained attached only at either end. The tube would incubate there for a period of weeks to months until its blood supply strengthened sufficiently to tolerate its detachment at one end, the divided end being attached to the wrist. Again the patient had

to tolerate this position with the arm linked to the abdomen via the tube for a further two months or more until it grew into the hand. By then you could detach the component from the abdomen which would be transferred to the jaw line. In this slide where the tube has been transferred to the leg the patient would sit for another one or two months and eventually it would be detached and inset into the defect on the leg. This slide shows a patient who has had a tube from his wrist joined to his foot and he has allegedly been hypnotised to tolerate sitting in this position. This slide shows a boy in the process of having his cleft palate repaired by Gillies. The tube is running from his wrist into his mouth. It will be detached after a month or so and inset into his palate.

The next person who contributed greatly to plastic surgery was Archibald McIndoe also from Dunedin in New Zealand. He was at the Mayo Clinic studying when the famous Lord Moynahan from Leeds came to visit and he said to McIndoe, "Boy, you should come to England, you could be a professor within six months." Six months later McIndoe arrived in England with his wife and newborn child, penniless. He telephoned Lord Moynahan who denied any recollection of him and certainly made no job offer. So McIndoe, in desperation, contacted his distant cousin, Harold Gillies who offered him a post. McIndoe, in his own right, developed reconstructive techniques for grafting, particularly for the burned airmen of the Second World War in the Battle of Britain. He also pioneered hand surgery, especially for Dupuytren's contracture, the disorder which progressively pulls the fingers into the palm. McIndoe's patients became known as "the Guinea pig club" and some of these patients are still alive today.

The third member to join the team was Rainsford Mowlem. Mowlem was also a New Zealander. So, at this point, at the end of the Second World War there were four plastic surgeons in Britain, three of them were New Zealanders and an Australian anaesthetist. Rainsford Mowlem is accredited with introducing the cancellous bone graft technique when bone that contains marrow is taken from the hip for bone grafting. He has one other apocryphal claim to fame. McIndoe, who popularised the operation for Dupuytren's, when he developed Dupuytren's in his own hand, asked his colleague, Mowlem to remove it. In the process Mowlem accidentally cut the nerves to the fingers. Mowlem retired prematurely to Spain, cultivating an orange grove.

Back in Australia plastic surgery had not made many inroads. The unqualified free marketeers were dabbling as they do today. Paraffin

injections were used to enlarge your breast and smooth out creases in your nose. It is said - and I'm not sure of the validity of this – that Nellie Melba died following a facelift in St Vincent's Hospital, Sydney as a result of septicaemia. The College of Surgeons of Australia was founded in 1928. At their inaugural scientific meeting in Canberra plastic surgery dominated the program.

Benjamin Rank who was to be the founder of plastic surgery in Melbourne went to England to train in general surgery. By default he came under the influence of Gillies and was infatuated by the surgery he saw. He continued to train in the specialty and when war broke out in 1938 he was asked to set up a military hospital in Egypt at Al Kantor with the Australian expedition.

Darryl Lindsay, one of the famous brothers, subsequently became Director of the National Gallery of Victoria. He was assigned to Rank to record and paint the patients before and after reconstruction. The archives of the College of Surgeons possess a magnificent collection of his paintings.

Rank returned to Melbourne and established a plastic surgery unit at the Repatriation Hospital at Heidelberg and subsequently at the Royal Melbourne and Preston and Northcote Hospitals.

John Hueston joined Rank and Wakefield at the Melbourne Hospital to form a powerful triumvirate of plastic surgery. At Preston and Northcote Hospital Rank established the Victorian Plastic Surgery Unit which became the centre for training of plastic surgery, certainly in Victoria and also throughout Australia.

Hueston was a brilliant individual and an individualist. He was a world authority on Dupuytren's contracture and many people in the audience today knew John very well. He pioneered new operations for Dupuytren's contracture, wrote books and treatises on the subject in conjunction with Rank and Wakefield, wrote the classic textbook on hand injuries. He made many other original contributions to plastic surgery.

Another Australian whose influence and contributions were far reaching, but given little documented credit was Arthur (Ben) Murray. He was a Tasmanian. He had sustained ulnar nerve injury in one arm and lost a leg during his school years from a chemical experiment in the laundry but went on to study orthopaedics in Edinburgh where he established the famous Leith Hand Surgery Unit during the war. Ironically because he was maimed he wasn't able to join the army and when the British soldiers returned from duty they were preferentially

given the job to run the unit he had set up. He returned to Queensland where shortly after he was shot dead along with two other colleagues by a crazed patient. Murray was the first person in the world to design artificial joints which he inserted into the hand. He also transferred the ring finger from one hand to the other by the staged pedicle technique and designed the operation of converting the index finger into a thumb.

Another character with an Australian connection was Humby. Humby, while a British medical student at Guys, invented the skin graft knife that is used routinely in plastic surgery. His other claims to fame include being an understudy to Fred Astaire, the first to obtain a certificate for gliding in the United Kingdom and representing England in international yachting. The American Naval Air Command awarded him his wings. He was commissioned to secretly fly spitfires to Israel in their fight against the Arabs. Unfortunately, on his last mission he accidentally landed in Egypt. He managed escape via Barbados and eventually settled in Melbourne where he set up a plastic surgery practice in the cosmetic field. Benny Rank branded him a "lipstick salesman" and threw him out of town where upon he went to where he became superintendent of a small hospital dabbling still in cosmetic surgery.

The tube pedicle was the key advance that enabled tissues to be transferred around the body and until the 1970s was the standard method that we learned as plastic surgeons. Many of these flaps, of course, never quite survived the transfer process to reach their final destination. This slide shows a patient who has been wearing an unfinished tube on his leg for about 40 years. He no doubt would have had several months of surgery and had sickened of it and abandoned the process.

Although migrating tissue from one place to another was miraculous in one sense, it was extremely time consuming and cumbersome and was thwart with complications. It was the advent of microsurgery that heralded rapid change in practice. Microsurgery enabled small arteries and veins to be joined together to re-establish the lifeline to the tissue. The great exponent worldwide for microsurgery was Bernard O'Brien with whom I trained. Bernard was known as "the champ" because of his dogged determination and ambition to win no matter what the odds. He was a schoolboy sprinter of considerable renown but at university he realised that he would be competing against the Australian champion so he took up pole vaulting, then new to university sport. He was seen day

after day vaulting around the Newman College Oval and in due course gained a blue for pole vaulting. Thereafter he was known as champ and although not used commonly to his face, I am sure he inwardly enjoyed it. In the late 1960s he practised in the laboratory on microsurgical techniques of small vessel repair and published a large series with 95% patency of half millimetre diameter vessels. Similar successes were achieved with free microsurgical flap transfer in animals. The stage was set for this procedure to be done in humans.

Bernard brought back photos of his visit to China in 1971 which demonstrate some teething problems at the time. This slide shows a replanted leg that looks to have replanted back into the wrong leg, but it is not as silly as it looks. The patient, in fact, had both legs amputated and his left leg which was less damaged distally was replanted into the lesser-damaged proximal stump of the right leg. The left leg is in fact a prosthesis. Chinese advances were limited because of lack of equipment and instrumentation. To rectify this Bernard O'Brien established a microsurgical research centre at St Vincent's Hospital, Melbourne where he attracted many people from overseas to come and train and undertake experimental work. In 1973 Ian Taylor from the rival Melbourne Hospital secretly recruited one of Bernard's overseas fellows to do the world's first free flap tissue transfer. This created a furore with international reverberations and a rift in Melbourne plastic surgery circles for many years. Spectacular forms of reconstruction followed because for the first time you could transfer tissues of election from one part of the body to another in a single stage operation. You could decide which tissue you wanted and which was the most appropriate. This slide is of a young man that we did in the early 1970s who had amputated his hand through the proximal palm. We have reconstructed the hand using the big toe from his foot and the ring finger from his opposite hand to create a functioning hand with movement and feeling.

The field where microsurgery had its most spectacular impact was in reattaching amputated parts. This case of an avulsed scalp including forehead and one ear was replanted simply by rejoining one artery and multiple veins to achieve an almost normal reconstruction which would be impossible by any other means.

Nose reconstructions which in the past would have been done by the Tagliacozzi method of the arm joined to the head, can be done by directly transferring tissues from other parts and reconstructing them by rejoining their arteries and veins. This slide shows an elegant procedure

where a young girl has had radiotherapy to the right side of her nose with atrophy of the nostril and by selecting a part from her ear which is uniquely similar to that portion of the nose, we can transfer it on its artery and vein and transplant it into the site of the damaged nose.

Here is a man with a cancer of the face who in days gone would have had his tumour removed and then undergone a long period of reconstruction of advancing tube pedicles and flaps from the trunk and the neck. In his case we have restored the external surface with local flaps for the best colour and texture match and the internal surface with a free microsurgical flap from his arm. We simply dissected out the arm tissue, identified the artery and vein, cut them and transferred the flap to inside the mouth and rejoined the blood vessels.

A now common application of microsurgery is breast reconstruction. Tissue from the lower abdomen can be shaped to the appropriate proportions of the breast and transplanted into the breast. This has now revolutionised breast reconstruction which Gillies had done 50 years before with his tube pedicle. He would use the belly button to form the nipple and achieved remarkably good results. But the secondary defects were really unacceptable and, of course, the time taken to reconstruct them was impossible, as would be the hospital costs by today's standards.

This is a girl who is having an ear reconstruction. We can incubate or grow the ear in the arm. The rib cartilage framework for the ear has been shaped and it is being wrapped in living fascial tissue of the forearm with its radial artery. It then remains buried in the arm for about six or eight weeks when it is now a living structure with an artery and vein that can be reconnected to the side of the head and then skin-grafted.

This man has had skin cancers removed from his face and the problem here is the cosmetic colour mismatch and altered contour, what we need is a flap that matches. Now the body doesn't have any suitably thin flaps of appropriate colour and textures that occur naturally with appropriately large blood vessels. In this case we have implanted blood vessels under a patch of skin of his neck that we feel is the most uniquely appropriate tissue to form the flap. We are "prefabricating" tissue of our choice into a flap by implanting blood vessels underneath. To implant the blood vessels we take a pedicle of blood vessels from under the arm and tunnel it across the shoulder and implant it under the skin of the neck. At a second stage, approximately six weeks later when the blood vessels have grown into the overlying patch of skin, it is dissected free with its blood vessels and transferred it to his forehead.

This is a slide of a girl who had a lot of publicity following amputation of her face. She avulsed the whole of her face in a milking accident and, again, by joining up arteries and veins, we were able to re-attach her face.

Finally, the new direction of plastic surgery - and again this is very much Australian directed - is in tissue engineering where we are trying to create new tissues, body parts and organs. At the moment they are being grown in animals but potentially in the future in laboratories using extracorporeal circulation techniques. We have developed a chamber that we put inside an animal and a blood vessel loop is inserted inside the chamber which is buried for four weeks. When we explore the chamber we see tissue growing out from the edge of this vascular loop to fill the chamber. This engineered tissue grows according to the shape and size of the chamber. Adding various cells can potentially change the nature of the tissue.

This slide shows an injection study of the blood vessel loop with multiple extensions of blood vessels that are growing out from its surface. Tissue grows in response to this new vasculature so that we can create a fibrous flap of the required dimensions. It can be transplanted by dividing those blood vessels and transferring the piece of tissue to where you might need it. And the hope, of course, is to differentiate this to create more specific tissue such as muscle, bone, and cartilage and so on for maybe ears or noses or whatever. We can add cells taken from the same individual and expand their number and reinsert them into the chamber to become a living structure. We can use stem cells which have multi potential properties to be differentiated into many different tissues or organs. Here we have differentiated the newly growing cells into fat. So this is now becoming a living fatty organ that we can transplant and potentially, you might imagine, be suitable for breast reconstruction. These cells are actually growing. So we are not robbing Peter to pay Paul but we are simply putting a small number of cells in and expanding them to grow into the part that we ultimately need.

Finally, of course, what the microsurgeons have been looking for is the ability to transplant other people's tissues from one to another. Already of course hearts, kidneys, lungs and so on have long been transplanted and the side effects of the essential drugs to suppress rejection are considered justified. But non-vital tissue transplantation such as limbs, faces, ears and jaws has been technically possible for many years. The ethics of these procedures at the moment, we think, are not quite appropriate. The drugs and the immuno-suppression that is required to maintain these organs in place have too many side effects

to justify this surgery, especially knowing that the expectations of function of limb transplant are relatively limited. So far these patients with limb transplants have minimal function but have already had significant complications of the drugs.

Mr Chairman, thank you for the opportunity to give you an ego trip of Australasian plastic surgery. It is said that surgeons are like monkeys, the higher they climb the more you see of their unattractive parts; most of the names mentioned in this talk have climbed high at the expense of showing some unattractive traits. Be that as it may, I think the contribution of the Australians and New Zealanders especially has been significant. It's a local boast and I'm sure the American and other versions would see it somewhat differently. But there's no question that certainly British plastic surgery has been driven and still continues to be driven by the Australasian connection.

QUESTION: MS SKENE. Loane Skene, Melbourne University Law School. Like everybody else, I've been absolutely agog, Professor Morrison, at what you've been able to achieve with your surgery to date. From a medico-legal perspective, I would be interested to hear more about cosmetic surgery. You've mentioned this only with two fleeting references and yet the cosmetic surgeons are one of the highest with regard to their litigation exposure and pay commensurately high premiums. And yet as you were speaking, I couldn't think of any case in which somebody who is trying to do the sorts of things that you do has been sued by a patient. I'd be interested to know about the categories of registration and whether you pay the same premiums as the so-called cosmetic surgeons and if you know of any cases where people like you have been sued.

PROFESSOR MORRISON. Well I've been sued. With regards to the premiums, I believe there is a category if you don't do cosmetic surgery. The difficulty is though, what is the definition of cosmetic surgery and the MDAV doesn't actually clarify that. I don't think that there's a huge reduction even if you don't do cosmetic surgery. But you're right. The rest of the medical profession basically subsidises plastic surgeons. I do some cosmetic surgery. What is cosmetic surgery? The standard bread and butter cosmetic operations for plastic surgeons would be reduction mammaplasty, reduce the breasts and the floppy tummies, abdomino-lipectomy. The rest of it I could happily never do in my life and I very rarely do them, the facelifts, eyelids, augmentations and suction lipectomy would be the mainstream of those.

The premiums at the moment are $22,000 and there's been a one-off - we're told one-off but it almost certainly will be a continuing extra premium of another $20,000. So we currently pay $42,000. Now Stan O'Loughlin who is here from orthopaedics, he's paying the same amount and I think the neurosurgeons might actually pay more than that and I think obstetrics and gynaecology must be close to that. So that plastic surgeons are not, as far as I know, the highest although they probably should be. And, as I say, I think we're being subsidised by others.

But, unfortunately, it is the cosmetic plastic surgeon who is being sued time and time again. The Australian Society of Plastic Surgery has recently been enhanced. We used to be a division of the College of Surgeons. Recently the plastic surgeon group have separated and are now pretty much all controlled by the Australian Society of Plastic Surgery which is very much a cosmetic-driven group and I feel strongly that we should be trying to secede from that. I think there should be a reconstructive group and a cosmetic group. The problem if you do that though is that cosmetic surgery is not easy. Technically it's not easy and it's good surgery done well. The problem is that it's marketed just the same as a product is marketed. It's lost the ethics of it being a medical condition. For people having cosmetic surgery it should be the law that the general practitioner is the patient's advocate. They must go first to a general practitioner and he/she would then refer the patient to the surgeon of their election. At the moment 90 per cent of cosmetic surgery is done by advertising and marketing and, therefore, the patient is in no position to make a judgment as to who or what they are dealing with or what is going to be their outcome.

We have reduced ourselves to the level of the charlatan cosmetic surgeon or the unqualified, untrained cosmetic surgeon. We are in the same marketplace advertising in the cosmetic journals. There are now two or three journals of cosmetic surgery where doctors including our own members have personal testimonials. This is back to the 19th century where they're saying, "photograph of before and after"; obviously shonky photographs. It's just a ludicrous situation.

And we feel that they swing on our coat tails and that we're the legitimate, well-trained people. The problem is that they are equally trained. Many of our trainees are out there too. It's a grizzly business. It's to do with money and I really don't know what the answer is.

But if we abandon them then I think cosmetic surgery and the patient becomes an even greater victim. There's a symposium called

"Advertising - Is it in the Patient's Best Interest?" and the ACCC and other groups have really promoted this. They've allowed - in fact encouraged - doctors to advertise and there's no protection for the patient. They are the losers in this. So it's a strange period in ethical medical history.

QUESTION: MR HAREWOOD. Laurence Harewood. Not so much a question, it's a comment. I was interested to see that Gerry Moore was a pioneer in plastic surgery in this country because he was also the pioneer of urology becoming the head of the urology unit at Royal Melbourne and the first urologist in Australia. So quite an extraordinary character. A very eclectic person by the sounds of it.

PROFESSOR MORRISON. Thank you, Laurie, I wasn't aware of that. That's very interesting. He had a sad demise and he isn't given much credit in the lexicon of Australian surgeons. We here about Devine and others but Moore isn't spoken much about and his last years were totally preoccupied with a legal issue where a fellow practitioner sued him and challenged him through the BMA and the courts for unethically, as he claimed, seeing a patient who was actually a patient of this other practitioner without invitation. And this went on for years and Moore became soured and preoccupied with this and wrote letters to the papers and basically involuted, I think, in terms of enthusiasm and surgical endeavour.

QUESTION: DR COURT. John Court. I'm actually a paediatrician but I am also on the Medical Board so I'm interested in some of the outcomes from some of this work. My question is do you think there's a danger of creating unrealistic expectations in the community? You're doing some absolutely superb work and, indeed, the advertisements you're alluding to also raise expectations. Do you see a danger of that and, if so, how would you address that issue?

PROFESSOR MORRISON. I think there's a very real danger. That's exactly the issue, really. These things are being marketed without any justification from what the expectation is and it's totally out of control at the moment. Mind you, the sort of things that I'm talking about here, as were mentioned initially, we're at the other end of the spectrum, we're fringe-dwellers in a sense of experimenting on people. When I started in microsurgery that was a pretty big experiment that mercifully worked occasionally and we got better at it.

But in this day and age, I think you are vulnerable to put to a patient, "Look, I think this is going to work but I'm not too sure. Will you come with me?" And that's not much different to what this hand transplant

business is all about. I'm sure those people justify what they did by saying "Look, we have explained to the patient that it may not work, it's got a high chance of failure, there's a high risk of complications but it just might work." And you'll find patients who will accept that. You could put this to a patient with cancer, "It just might work that if you take apricot kernels and I'll charge you $3 million and I'll give it a try." What is the judgment between ethics of realistic expectation and a desperate person? It's not a fair decision. The patient is not an equal to you in those judgment stakes. You can virtually manipulate them to say what you want them to.

QUESTION: MR PARKER. Keith Parker. I'm a secondary teacher. In a previous life I was a biochemist. You mentioned tissue engineering. Have you seen any influence or do you foresee an influence in Don Metcalfe's work on colony stimulating factors where you can stimulate particular cell lines to grow?

PROFESSOR MORRISON. That's what this is very much about, really. Don Metcalfe pioneered the GCSF and GMCSF to stimulate the white blood cells to proliferate and that has a great role in cancer and other things. But this GMCSF is what's called a growth factor and we do apply growth factors. Angiogenic growth factors are the ones we're most interested in. These are growth factors that will stimulate the blood vessels to grow out and that's really the essence of this chamber. It's an angiogenic model. So we have used fibreglass growth factor, PDGF, platelet-derived growth factor and other growth factors. GMCSF - this is getting a bit technical but we're interested in nitric oxide. Nitric oxide is a gas but we've actually shown that it is probably the thing that drives angiogenesis and GMCSF has a role in that.

QUESTION: MR HAREWOOD. What about VEGF - actually attacking not just through colony stimulating factors but directly getting into the gene and maybe using adenoviruses or whatever. Is that on the agenda at any stage?

PROFESSOR MORRISON. Yes, and we've used VEGF too. We're boasting here. But they're the principles. The growth factors or, alternatively, injecting the gene that will make the cell produce the growth factor, such as VEGF as you say. And already in vascular surgery they're injecting this VEGF. This is again a growth factor that makes blood vessels grow out and they can inject them into the coronary arteries directly and they can show that new blood vessels are growing out in response to patients who have had heart attacks. It's quite remarkable. Gene transfer is one way of getting growth factors

to work. Another way is just artificially adding the growth factor. Cell culture. Stem cell technology is the other thing that we're interested in, of course, because you can find the actual cells, the primitive cells in the body that can differentiate into the various type cells that are destined to become, say, a heart cell. You can actually get a whole heart to grow from these stem cells. So it's very exciting but, of course, we're neophytes in all this. The problem is that globally, in the individual fields, there are people so far ahead but when you add it all together it's quite an exciting concept.

QUESTION: MR WILSON. One thing that everybody asks me is why are we called "plastic surgeons" and I best thing I can come up with - "We're malleable, colourful, pliable and cheap."

PROFESSOR MORRISON. That's not what I've heard about you, Bill.

QUESTION: MR WILSON. Could you please give everybody that wants to know what a plastic surgeon is or from whence comes the word "plastic?

PROFESSOR MORRISON. I'm sure you're better at this than I. "Plastic, literally, is Greek "to shape or to mould", plasticine, plastic materials and to some extent it's a bit of an embarrassment because many people will come in and say, "You will be using plastic material, will you, doctor?" and "Will I melt if I go out in the sun?" Tragically, some of these people are serious. So it shows you the level of some of the people you're dealing with in this cosmetic business. It's not as silly as it sounds, of course, because in the era of the paraffin injection people did literally melt when they stood in front of the fire and paraffin was used to augment tissues. So they used to melt.

Plastic surgery, I think the name has condemned us because we're all identified as being plastic, somewhat artificial and cosmetic driven. If the average person in the street is asked what a plastic surgeon does they simply and immediately and reasonably say, "You're a cosmetic surgeon" and that's how we promote ourselves. That's what the magazines tell the people we are. So I think that's what we are, Bill.