

## Factors Influencing Perfect Surgical Outcome

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### Abstract

*With affluence and education, the population of Asia will be demanding quality surgical care. The energetic, affluent and educated Asian professionals and business communities in the cities demand the best; and in surgery, they seek perfect results. Perfect results require a combination of 3 factors: the skill, knowledge and experience of the surgeon.*

*He must be a skilled surgeon with good basic surgical techniques and also technical skills in the management of his discipline combined with meticulous attention to details. Furthermore, he must have a clear knowledge of the basicphysiopathology of surgicalprinciples of the condition he is to manage.*

*Experience with difficult situations and intrasurgical problems are essential for success.*

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**Key words:** *Experience, Knowledge, Outcome, Skill*

I am honoured as an eye surgeon to address such an outstanding audience of general surgeons. We are especially honoured to have the Permanent Secretary of Defence and Chairman of the Health Corporation of Singapore, Mr Eddie Teo with us. There is a distinct similarity between a military battle and a surgical battle. We both use lasers to destroy the enemy. In addition to his many talents, Mr Teo is an intelligence expert. We use X-rays, scans, magnetic resonance imaging and blood tests for information. We repeat these tests to monitor progress. Finally, winning the battle but losing the war is like a successful operation but the patient died. I hope Mr Teo will teach us some of his battle techniques so that we can be more effective in our battle against diseases.

### Introduction

In the 21st century, Singapore will face the challenges of rapid changes in technology and the increasing demand for quality surgery as a result of affluence. Asian patients will flow to Singapore and demand the best; and in surgery, they will seek perfect results. To strive for perfect results, three factors are essential: knowledge, skill and experience.'

The surgeon must have sound knowledge of the condition he is dealing with. Knowledge is related to, but is not the same as skill. A skilled surgeon operates well, is gentle with tissues and is meticulous with details. Skill is mainly an inherent gift,<sup>2</sup> although with practice, it can be improved. A good illustration is found in games such as tennis. Without skill, all the knowledge of tennis will not create a Michael Chang.

I will move on to the third and perhaps the most important factor—experience. Experience does not mean that the surgeon must be old. Experience means that the surgeon should observe, assist and perform surgery himself, initially with assistance, and later on his own. Experience means that the surgeon has to learn every procedure carefully, step by step, especially the complicated procedures.<sup>3</sup>

Unfortunately, some young surgeons think that as soon as they have seen or assisted in a surgical procedure once or twice, they can perform effectively. This can be disastrous. Experience would mean that young surgeons need to follow a good leader, a good surgeon, and follow him through 10, 50, or 100 procedures.<sup>4</sup>

The identification of a first rate surgeon is essential. Young doctors will learn his good habits, develop good judgement in difficult situations and learn his techniques; why he has few complications and why his results are almost perfect. This is the only way to ensure that the surgeons of the future will be just as good, and hopefully even better, than surgeons of today.

It is well known that an hour with a skilled and wise surgeon is worth a month of study. On the other hand, if surgeons follow a second rate surgeon, they will end up as third rate surgeons.

I would emphasise that the surgeon who attains perfect results is not the surgeon who would hide his errors. The wise surgeon would analyse, discuss and remember his errors for he knows that he can learn from his errors. In addition, it is well known that the surgeon who does not analyse his errors, who does not strive

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for perfection, runs the risk of losing his interest and vitality.

### **Excellence**

Excellence is the basis for perfect outcome. In general, excellence can be divided into 3 types. First, there is the excellence relating to the intellect, and that is what we will be touching on. And of course there are the achievers of physical excellence in athletics, tennis, etc and those gifted masters in music and art.

An important factor for excellence is the strength of character of the surgeons. Competitiveness, commitment and industry are vital. The desire to win and to overcome challenges and problems—the desire to excel. And for them, unless the projects are demanding and challenging, they may lose interest and vitality.

Different people see differently when they look out of the window. Some see the stars and some see the mud, and those who see the mud will never excel. Excellent surgeons will be looking for stars and ways to overcome obstacles to attain perfection.

Can we measure excellence? We are all familiar with the measurement of physical excellence. Michael Chang is acknowledged by the world for his excellence in tennis by beating his opponents. Unfortunately in surgery, the measurement of excellence is more difficult. When we say a doctor has achieved excellence, we have to be clear whether his excellence is in research, service (clinical/surgical), teaching or publication.”

The surgical skill of a doctor is difficult to assess. However, for certain operations, measurement of excellence is easier. For example, cataract extraction can be measured by the visual results. It is possible for a good surgeon to restore normal vision in 98% of patients (without other ocular pathology) after cataract surgery.

### **Obstacles**

A major obstacle to excellence in surgery is the doctors themselves. It is a worldwide problem. If we want excellence, we have to recognise excellence and actively promote it. We have to reward and applaud excellence.

One of the world’s most famous private clinics with over 300 specialists, the Cleveland Clinic, periodically holds simple functions to acknowledge and reward the achievements of their specialists. Unfortunately, we are often guilty of regarding excellence with envy and jealousy. And unless we can change our attitude, doctors will remain a major obstacle.

The second obstacle is sometimes the administrators. We must recognise that administrators and politicians can cripple excellence. In the past, for a variety of reasons, those in power, occasionally prefer to ignore the best doctors and work with the mediocre who are less demanding.

It was fashionable in the past decades for govern-

ments in Europe to talk of equality and that all men are born equal. To each according to his need, from each according to his ability crippled incentive and with it—excellence.

Fortunately, the situation has changed. In Singapore, excellence in surgery is now accepted as essential. For private hospitals, without the best doctors, they will lose the patients. Similarly, the Ministry of Health today recognises that without the best surgeons, the hospitals will be second-rate.

A potential problem is fee-for-service, where surgeons see a fixed number of patients per session with fixed consultation fees. This encourages doctors to retain simple cases. If there is no incentive for doctors to treat complicated problems which require time, standards can suffer. Patients with complicated and time consuming conditions who really need the care of good doctors may be neglected.

If we worry too much about trivial and sometimes unjustified complaints and litigation, we may be spending more time on less important problems at the expense of patients with major problems requiring time and effort.

In a nation where the public demand becomes excessive, where there is inability to distinguish between the serious and the frivolous, to distinguish between minor ailments and serious conditions, where there is insistence on figures rather than success in the management of complicated surgical problems, where seeing too few patients and taking too much time on a patient is considered poor performance, where the public is unable to understand the complexity of excellent surgical and medical care because of poor thinking, surgery in Singapore can decline.

### **“The latest may not be the best”—The Need to be Circumspect**

Over the past few decades, surgical progress has moved forward as a result of innovative technological advances. It is always fashionable to have the latest equipment and to be performing the newest techniques. It may sometimes be prudent to be circumspect and ask: “Are there situations when the latest is not the best?”

It is a delicate balance for innovative surgeons and manufacturers to have to weigh rapid progress against the dangers of using untested innovations. The past decades have seen numerous examples in which the latest was not the best. One classic tragedy was the inappropriate use of intraocular implants in the 1950s resulting in widespread blindness in Europe.

At this point, I wish to register my admiration and appreciation for the enormous contributions to progress made by innovative surgeons supported by equally innovative **manufacturers**.<sup>6</sup> Without their efforts in the past decades, the numerous advances of today would not exist.

The American FDA will go down in history for its role in the prevention of potentially crippling complications of untried innovations on human beings. Some may think the FDA too conservative; others may consider FDA approval too slow and costly. Because of the strict criteria set by the FDA, products approved by it will be approved more readily in other countries; thus FDA approval has unofficially become an internationally adopted standard.

All governments, manufacturers and eye surgeons have the grave responsibility of deciding on the cost and suitability of a new operation-and always remember that sometimes, the latest may not be the best.

### Quality Eye Surgery in the 1990s

The 1990s will be remembered for quality eye implant surgery.<sup>7</sup> There are moves in several countries to evaluate the skills of surgeons. In the USA, the American Board of Eye Surgery was formed on 20 July 1985. In Singapore, the Department of Ophthalmology, National University Hospital has introduced quality assurance cataract surgery since 1987, with tremendous impact on the quality of implant surgery.

“Should only the most skilled surgeons operate on one-eye patients?” “If so, how is a surgeon’s skill assessed?” “And by whom?”

We have regularly reviewed the quality of work of every ophthalmic surgeon who operates at the Singapore National Eye Centre. We decided to base our assessment of each surgical procedure on four criteria:<sup>8</sup>

- visual results;
- incidence of posterior capsule rupture during surgery;
- review of videotapes of each operation; and
- duration of surgery

As expected, the assessment procedure has considerable impact. The quality of surgery improved; the patients were assured of good visual results; and the residents received good training.

I have argued for over a decade that watching the way a surgeon operates is a good measure of his surgical skill. Videotaping of each operation is an invaluable measure of surgical skills.<sup>9</sup>

### Sunset Syndrome

I wish to show here a serious complication. A doctor colleague was operated on three months ago by another surgeon. The implant was noted to be unstable. She sustained an injury around the eye. The implant fell downwards and backwards and developed what is known as a “sunset syndrome”. Management of these problems can be difficult (show videotape).

This videotape shows how the cornea of the eye was protected with viscoelastic material. A small amount of

viscoelastic material was used carefully and injected slowly to prevent displacing the implant. The implant was removed slowly without difficulty. The vitreous was removed from the wound, the pupil constricted and anterior chamber implant carefully inserted. A month later, normal vision was restored to the eye, 6/9 without correction.

When a complicated operation is watched by a relative who is a doctor, the videotape given to the patient can be used as a measure of good surgery.

### Quality Cataract Surgery in Asia

The challenge to Singapore surgeons is not just the work in Singapore but throughout Asia with 56% of the world’s population. Singapore can be proud that many of our surgeons have taught surgery in many Asian countries in the past years. In ophthalmology, our surgeons have been teaching for more than 30 years and in the People’s Republic of China alone, we hope to establish 10 centres.

Our approach is: *If you perform quality cataract surgery, each time you operate you will restore excellent vision to one man: but if you teach or insist that your colleagues perform quality cataract surgery they will ultimately restore excellent vision to the cataract victims of the world.*

### Tianjin-A Model for Quality Cataract Surgery

The Tianjin International Intraocular Implant Training Centre was opened on 29 September 1989.<sup>10</sup> It was a good choice as it has the support of the provincial government, the University and most importantly, a dedicated professor of ophthalmology, Prof Yuan Jia-Qin, supported by her team of ophthalmologists. This Centre has trained 2000 ophthalmologists. It has organised 34 courses in implant and microsurgery for ophthalmologists from different provinces of China. Besides short week-long courses, the Centre admits ophthalmologists for 3 to 6 months programmes for hands-on experience. Singapore is proud to have played a key role in the Tianjin eye development.\*\*

### Ethics and Values

Besides good surgical outcome, a good surgeon has to be concerned with his relationship with his patients, his ethics and his values.<sup>12</sup> Surgeons must remember that patients’ interest must be foremost and a surgeon in particular, must always remember that first, do no harm. This is especially in a complicated surgical procedure or using a new procedure.

### “Learning Curve”

A recent concern is the “learning curve”. It has always been accepted that students of medicine will learn their skills supervised by their professors. Recently, however, the term “learning curve”<sup>13-15</sup> has been used freely

to justify increased complications with new technology and procedures.

I was very distressed when one young ophthalmologist told me: "How can I learn phacoemulsification if I do not practise it on my patients?" I replied, "Practise? on the eyes of your patients? Why don't you use the laboratory?"<sup>16</sup> And the answer was, "But that's not the same. Anyway the "learning curve" is accepted internationally."

It is my belief that it is wrong to overemphasise the importance of money, as a good surgeon will perform without it. For the good surgeon, the real exciting objective is not money, it is surgical perfection. It is his success as a surgeon and the recognition of his skills, locally and internationally. For many surgeons, you can take money away and substitute it with awards and recognition of his professional or academic achievements. He will perform.

## 21st Century

In ancient society, the doctor was regarded as a supernatural figure as he grappled with the serious and mysterious forces of disease and death. In the information age, the situation has changed. In contrast to the acceptance of professional authority in the first half of this century, a growing public concern for their rights as patients has emerged in the last decade.

The public, in its enthusiasm for rights, should remember that the patient whose life is in danger; who is in danger of losing the sight of his only eye; who is in need of being relieved of pain and suffering is less concerned with his rights, but in having a good and compassionate doctor who will do his utmost to help him.

Tomorrow surgical skills can be taught via satellite to a hundred cities worldwide. This is how things will be in the 21st century. International surgery will be important and unique. Leading Singapore surgeons who strive for perfection will be able to perform excellent surgery not only in their operating theatres in Singapore but also have their operations transmitted from these theatres to cities hundreds of miles away. Experience and skills can then be spread rapidly throughout Asia.

As we approach the 21st century, all surgeons face the challenge<sup>17</sup> of whether they should embrace the exciting opportunities before them and work towards perfection or whether they prefer the cosy stagnation of remaining as they were.

Today, surgeons in Singapore have to grapple with new challenges of increasing patient demand, rapidly changing technology, severe competition, ageing population and more recently the presence of four permanent secretaries and leading accountants in key administrative positions. In addition, NUS plans to be a top

class university and the government believes we will be one of the world's ten richest nations.

## Conclusion

Quality surgery will depend on surgeons with skill, knowledge and experience, combined with good judgement, good health and commitment.

Surgeons will work towards perfection, not for money but because of the opportunity to excel.

Surgeons need to embrace these exciting changes and work together: we need to recognise and reward our leading surgeons and yet give every surgeon opportunities to contribute; we need to ensure that our citizens and patients enjoy all the benefits of quality surgery as we strive for perfection; we need to plan into the 21st century when our surgeons will be equal to the best in the world. Let us unite and move forward strongly into the 21st century.

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