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Anaesthesia in 2050- How do I visualise

“No matter what measures are taken, doctors will sometimes falter, and it isn’t reasonable to ask that we achieve perfection. What is reasonable is to ask that we never cease to aim for it.”

-Atul Gawande, Complications: A Surgeon’s Notes on an Imperfect Science

On October 16, 1846 William T. G. Morton created history by being first person in the world to publicly and successfully demonstrate the use of ether anaesthesia for surgery. This took place at what came to be known as “The Ether Dome,” at Massachusetts General Hospital, Boston. However, the use of anaesthesia dates as back as 600 B.C. when India’s physician Sushruta used cannabis vapours to sedate surgical patients. Ever since, the branch of anaesthesia has seen a stupendous growth in terms of technology, academics and research. I envision anaesthesia in 2050 to have grown in all aspects of development. Leaving the pharmaceutical and technological advancements for scientific experts, I would like to focus more on a holistic development of anaesthesia.

Six Sigma in anaesthesia. What is six sigma? It is a set of tools and techniques for process improvement. In simple words, it means ‘a measure of quality that strives for perfection’. This concept was introduced by American engineer Bill Smith while working at Motorola in 1980. Processes that operate with “six sigma quality” over the short term are known to produce long-term defect levels below 3.4 defects per million opportunities (DPMO). The Six Sigma components are as follows, DMAIC: Define, Measure, Analyse, Improve, Control. This concept was first used in manufacturing units but now finds its application in fields ranging from finance, construction to healthcare. It can be applied in the field of airway management, regional anaesthesia, advance monitoring, issuing fasting orders to nursing staff and prescription management and implementation. Six sigma application in anaesthesia would ensure increased patient satisfaction, fewer human errors, increased prescription accuracy, reduced cost and savings and eventually increased physician satisfaction.

Safe anaesthesia for all. It is astonishing how many parts of India still rely on only basic monitoring like pulse oximetry and electrocardiogram even during major surgeries. The best of government hospitals in major cities today still compromise on patient safety by using redundant methods and tools. The Boyle's machine is not just an antique in the museum. Halothane is the most commonly used inhalational gas in many developing countries. A major reason for this is fund distribution in government hospitals and no standardisation of care in private nursing homes. It cannot be justified that even today patient safety is put at risk due to inadequate funds. I envision that by 2050 our government takes a serious step towards increasing the healthcare budget and we practice what I would like to call 'Safe Anaesthesia for all'. There is standardisation of basic monitoring required and no procedures can be performed in private or government without them.

Anaesthesia by choice or by chance? Anaesthesia in India even today is looked up as a branch taken by circumstances rather than choice. It is often considered as a settlement instead of internal medicine or a pathway to Critical Care. A large reason for this is due to inadequate exposure of the field during under-graduation days. Anaesthesia during medical training is no more than 15 pages of hand down notes. This leads to the general misconception that this field is limited to nothing more than sedate and ventilate. A resident comes into this field having no idea what to expect from this field. Most residents have never crossed the surgeon-anaesthetist 'blood brain barrier' in the operation theatre to the head end during internship days. This ignorance often leads to disappointment amongst newly joined junior residents eventually leading to dissatisfaction and even changing of branches. When this is the situation amongst the learned, what do we expect from the laymen? Even today a vast number of people undergo surgeries without having any idea who their anaesthetist was or what role they played. What we require is more patient interaction explaining to them the importance and the role we play in their surgery. There needs to be compulsory preoperative visits explaining to the patient what to expect from us on the day of the surgery. The work of the anaesthetist does not end at shifting the patient in the recovery. How often do we remove time to revisit the patient after a while making sure they are pain free and comfortable. Just a two minute chat with the patient about their experience will go a long in building relations. The term peri-operative physicians is now coming up and slowly replacing the word anaesthetist. It proves that our field of expertise is no more limited only to 'knocking a patient off and grabbing your morning cup of tea.'

The surgeon anaesthetist relationship is usually like a 30 year old marriage. You bicker too much about each other but you can't survive without the other half. The surgeon always

thinking of ways how to induce a case, and the anaesthetist always thinking of ways how to fire one. I found this amusing from day one because it made me feel that while the surgeons truly enjoy what they are doing, the anaesthetist somehow treats their work as an obligation to the surgeon. This attitude is both demeaning and disheartening. If both parties saw the patient as their own patient, maybe the morning discussions would deviate more from ‘which theatre will run how long?’ to ‘so what are we learning today?’

‘Primum non nocere’ often translated as ‘first do no harm’ has become the mantra of modern medicine. Professional liability insurance is still an ignored term in India. However with the surge in legal complications and google doctors I hope that by 2050 every anaesthetist has first insured their hard work before slipping on their gloves.

We are the future and the future is bright!! In this fast paced world, anaesthesia has not taken a back seat. By 2050, I envision this branch to be one of the most sought after branch. With better trained OT technicians, automatic record keeping and drug delivery systems, the anaesthetist can completely focus on the physiological aspects of the patient. Self diagnostic tests, automatic temperature control machines based on feedback mechanism, point of care anaesthesia machines, robotic anaesthesia, simulation based learning, widespread use of xenon, universal availability of sugammadex and introduction of nanotechnology are just some of the few examples I wish to see in the future.

The clinician in me never dies. Let us remember that we are all physicians first and then anaesthetists. Anaesthesia today is one of the youngest and fastest growing branch in medicine. Robotics, anaesthesia delivery systems and advance monitoring; they are all surging into the market like hungry mice. By 2050, anaesthesia will see a steep climb in technology. Some say anaesthesia in the next fifty years may either completely die out or become the next big thing. However, in all this madness and chaos let us not forget that the radial pulse is still best felt with three fingers; your index finger being closest to the patient’s heart.