

Anesthesia in 2050, How I visualise

A good day

"That was a good night sleep", was the first thought that came to his mind after waking up, "hope it's a good day" he thought turning his head to other side of bed, his wife was already awake and going about her daily routine. That moment his wife entered the room, "Good morning Dr. AJAY!" Saying that word turned on dim lights and started low volume hymn on speakers, "I love both your voice and this hymn" he said smiling.

Dr Ajay is an anesthesiologist at an upcoming hospital at riverside Delhi. Getting up early morning is his daily routine. Ajay while having breakfast, took the liberty to look at his electronic tablet for the case list and investigations he advised. "Please have peace while having breakfast! In matter of minutes you'll be doing only that!!", said Shalini. "I had it coming. ", thought Ajay. " OK, OK as you say honey"

Ajay sat in his car and said, "Take me to work and show me the cases today", he had already worn his glasses which displayed the route and his case list is displayed, Automated car has it's route panned out on it's navigation and started it's way through morning traffic. "Show me my morning fasting glucose levels, and insulin I have consumed." Ajay was diagnosed with diabetes two years ago, He got a DM band which he wears on his arm. It automatically measured capillary Glucose and administers the Insulin, which controls his blood sugar real time. His sugar-insulin graphs are displayed on VR HUD.

He had many cases scheduled for today. He takes care of three ORs, "Show me reports of Mr Vinod" Mr Vinod had history of heart valve repair, lab grown autologous valves, his echo reports are fine so he is good to go for hernia repair today (no anti-coagulant were needed) , he OKAYed the case, by that time he had reached his hospital.

"Good morning Dr. Ajay!!" greeted Dr Arun, "Arey!!, Rahul was searching for you." "This guy could just have nudged on 'Frez' (social networking with VRsupport)", he said pointing at his glasses. "Alright, I'll catch up". All Four OR were already prepped up, and ready to go. In first OR, he set patient's ID, all data was extracted from server on his Login. He set the tube size, checked all backup gave it thumbs-up. He loaded quanta-propofol which has miniature soluble packets containing propofol which didn't cause pain in injection. All patients before induction were injected 'hemecols' which is specially prepared encapsulated protein which has 10 times more O2 carrying capacity, thus helpful even in difficult intubation scenarios p. Neuromuscular blocking agent targeted only to NM junction with addition of antigen-ab mechanism added to it, thus preventing side effects and for reversal either of three agents are infused in patient which degrade the NMBD to be easily eliminated through kidney or liver or lung. For pain management, drugs are available which roam in blood and block pain wherever it is starting and not attaching to every receptor thus reducing side effect profile of the drug. He attaches single monitor to the

patient, which records O₂ saturation, heart's electrical activity, blood PCO₂, and also gets data from implanted microprocessor that everyone gets implanted nowadays, which him real time haemoglobin, electrolytes and any unwanted product like carboxy-hemoglobin. All this is relayed to the robotic workstation and then to his VR-HUD. Ajay met the patients and took informed consent. First patient, Mrs Neha was a sweet lady in her 60s. She had limited neck mobility. So, Ajay made sure difficult airway equipment is loaded in his robotic workstation. Mrs Neha was posted for Incisional hernia today, she was a little nervous about her surgery today, Ajay said, "Don't worry, Mrs Neha you'll be alright, you're in good hands. You won't feel a thing." Mrs Neha felt reassured and gave a smile. It's an old saying that you can choose your surgeon but you don't get to choose your anaesthesiologist, so that is why all anaesthesiologists are trained to be equally well qualified. We can replace anaesthesiologists with robots but we can't replace the human he is, who is required in situations like this. Ajay went on to take a look at second OR, where a Case was planned to be done in regional anesthesia. Nerve blocks are done using xound devices which is mixture of Ultrasound and very low energy X rays which make 3d image of the anatomy by doing scan one time and then shows needle position in 3D. Anesthetic drug used is targeted only to nervous tissues so no chances of local anaesthesia systemic toxicity. Neuraxial blocks are also automated with devices which automatically detects loss of resistance and stop transmitting the force being applied to needle and then catheter is threaded, and in spinal anesthesia, minute changes in giving spinal is measured at needle tip so dural puncture is felt and drug is delivered automatically after successful aspiration of CSF detected by spectral wavelength detection inbuilt in it.

Mrs Neha indeed had little neck extension, so robot was instructed to use curved laryngoscope blade with ET tube with stylet. She was induced in matter of minutes and handed over. With all her vitals displaced on Ajay's VR, He went to second OR for nerve block. After successful nerve block, Ajay felt the need of a coffee, he went to coffee machine in complex, where someone called his name, "Oh HI!! DR Rahul, how are you?", "Hi Ajay, one of my patients was asking to thank you for one fine painless labour that you gave to her. Well done.!!". "It is not me she should thank, current advances in electronics, biometrics, nanotechnology, all have pushed anesthesiology leap forward, which would have been unbelievable 50 years ago. And anaesthesia have come a long way from" Ether dome". That building in Massachusetts general hospital, is now towered by modern building with all modern equipments but that place still remains reminding of our humble beginnings. WTG Morton, Humphrey Davy, Joseph Priestly, Jon Snow, Joseph lister, Crawford Long are the people to Thank... Send my regards" smiled Dr Ajay." It's time for my ICU rounds", he thought.

Both ongoing surgeries are stable as Ajay is receiving the data on his VR-HUD, He made his way for the ICU. One septic shock patient came I last night, Ajay checked on him how his treatment is working, Patient was completely stable and out of any hemodynamic support. These Endoclast do miracles, It is a nanotech which targets endotoxin and regulates host response and when given with bactrix which is also nanotech designed specifically for a pathogen that target that specific organism and kill it. A patient of aspiration pneumonitis was also taken and was being treated with 'the sludge', a liquid which poured in lungs which binds to all particulate material, has some antibiotic, property and also supplies oxygen to patient, is not

absorbed in blood and remains in alveoli and is suctioned out. The patient was on road to recovery.

When cases finished and Mrs Neha came out of anaesthesia and was in post-op, she thanked Dr Ajay for painfree experience and motivation.

Ajay got back in his car. On his way, he closed his eyes and thought," As we have learnt to harness renewable energy, decreased global warming, and how this car runs on solar energy, we have decreased our carbon footprint, this world going on a good track and hope our future is brighter."

At night he lay on his bed with random thoughts of today's day coming to mind, finally switched off his mind saying 'it was a good day'.