



Introduction

General clinical practice of Otolaryngology has evolved rapidly over last two decades with the advent of new technology. One of the most extensive changes in the clinical practice in the past one year is the introduction of day case surgeries in addition to the new diagnostic techniques and surgical procedures. Such day case surgeries include grommet insertion and reduction of the fractured nose. Several hospitals are carrying out adenoidectomy, tonsillectomy and other forms of nasal surgeries and ear surgeries. The advancement in the surgical practices has led to changes in the clinical practices as well as safety measures. The technical advances in the field are led by molecular biology, optical fibers, computational aspects, microelectronics and metallurgy [1].

The complexity and the variability of the middle and inner ear anatomy required training on the cadaver temporal bone to avoid operative errors. The virtual reality programs with computational programming is becoming increasingly sophisticated and with widespread applications. This made it possible to make a virtual cadaver system for the purpose of training the medical students and

For the treatment of the recurrent otitis media tympanostomy and ventilating tubes were found to be efficacious. This has found to reduce the number of episodes of the acute otitis media and effective prophylaxis when compared to the conventional antibiotic therapy. Auditory processing with persistent middle ear effusions was a matter of concern due to anatomical differences in the central auditory pathways in association with auditory deprivation. Educational programs for the children with untreated middle ear based on visual sequential memory skills were found to be beneficial for the rehabilitative efforts. Tympanostomy tubes are effective in the treatment of the serous otitis media.

Even though hearing aids are available free of cost less than half of the people generally benefit from them. The advent of the new implantable hearing aids bypasses the use of auditory feedback with concomitant high frequencies. Endoscopic stapling diverticulotomy was found to be the safe treatment for most symptomatic pharyngeal pouches and this has reduced the time of the hospital stays. Endoscopic sinus surgeries showed subjective improvement in the patients over a long term. The use of the endoscopes inserted through the nose has reduced the morbidity and hospital stay for the patients requiring

orbital decomposition, daryocystorhinostomy and closure of the cerebrospinal fluid leak [3].

The head and neck surgery spans across different tissue types, function that include the hearing, balance, air infiltration, humidification, smell, facial animation, deglutition, breathing, vocal sounds, speech articulation. If any of these functions are affected then this could lead to other morbidities and even mortality. Traditional treatment strategies for the replacement of tissues include graft from other tissues, artificial materials and transplants. Incorporation of the grafts can incur donor site morbidity. Lack of customized grafts and lack of their availability of the grafts are some of the limitations. The use of the artificial materials can induce immune response and also pose the risk of infection. Such transplantations require the use of the immune suppressing drugs. Limitations are also posed by the lack of functional replacements. In such cases the use of the regenerative medicines restores the function of the cells, tissues and organs [4].

The current clinical research in otolaryngology is driven by information technology. The computational power and analytics and the communication science and the availability of the multidimensional data over the last two decades have influenced every aspect of life. The management of information via informatics has become essential. The advancements in the genetics and molecular biology has generated large amount of data. Next generation sequencing can potentially generate base pair sequence data of the entire genome within a matter of weeks. The microarray technology can generate gene expression data or the status of methylation of tens of thousands of genes, probe

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