INHALATION ANAESTHESIA BY "OPEN METHOD"

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History:

History literally means a study of the past. Hence allow me to have some indulgence to say something about which you may have heard or seen. Anaesthesia that is the act of deadening the pain was known to primitive people as well as to the earliest civilization although the present prevalent terms Anaesthesia, Anaesthetist and Anaesthetic were introduced by Oliver Wendell Holmes in the period (1809-1894) there being no other term heretofore. The ancient people utilized the drug like Summe be Santa, famous of Indian hemp (Ganja) and cannabis of India (Bhang) and Belladonna Alkaloid (Dhatura) and Mandrak or Mandrajora just like Belladonna to serve the purpose of their need. Mechanical ways such as half strangulation, cerebral concussion caused by striking a wooden bowl placed over the head, Cold compressions were the usual practice during the 17th century. Surgery during the 18th & 19th centuries was performed only when absolutely necessary and was to be performed in haste for want of proper anaesthesia. However, the isolation of Nitrous Oxide Gas by Joseph Priestly in 1766 and ether by Valerious Cordus in 1540 and Chloroform by three investigators in 1831 heralded a new epoch in the annals of anaesthesia. Experiment of anaesthesia were carried out by various enthusiastic workers one after another; of course, both with success and failures in their results. In this connection, I take the opportunity to inform you that the examination for D. A. was held in 1935 in U. K, and the first examination in India was held in 1946 A.D. at Bombay. The first Indian Society of Anaesthetist Conference was held at Bombay in 1949

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A. D. with a limited number of ten head now in 1972 there are one thousand members of this association. The fourth World Federation of Societies of Anaesthetist was held at Tokyo last year. Now, let me mention something about the development in Anaesthesia in Nepal also. Although I could not collect the satisfactory and reliable records, in brief, I should inform you that Bir Hospital was started some eighty-two years back by the then Prime Minister Bir Shumsher J. B. Rana in the year 1947 B.S. i. e. 1891 A. D. Hospitals were started at Kathmandu, Birgunj and Butwal during his regime. These hospitals were then run with the doctors from India. According to the latest report from His Majesty's Government, Health Service, there are fifty five hospitals, thirty six Health Centres and 153 Health posts. Please, mark the difference I find between these eighty-two years.

In those days, there were more surgical cases than medical cases in the hospital as the popular apprehension and false notion that doctors poison their patients when they think that their cases are incurable was so strong. As such, most of the medical cases were treated under our traditional Ayurvedic system by the experienced and qualified Vaidyas successfully with which the Vaidyas had a good reputation in high aristocratic circles too. The existence of Singha Durbar Baidya Khana still run by His Majesty's Government authenticates the above statement. I appeal to the Dean of the Medical Institute-Tribhuvan University to revive this system with a open heart and research turn of mind so that it might help a lot to meet our need for economically undeveloped and backward country like ours.

My curiosity to know the exact method of anaesthesia used to be administered during the first twenty years could not be traced. It was in 1918, that the first two Nepali doctors—the late Dr. Ganesh Lal Maskey and late Devi Prasad Upadhyaya both qualified from Bengal, had joined their service at Bir Hospital. I remember having seen Dr. Devi Prasad. Rev. late Dr. S. M. A. Dixit in a few occasion administering anaesthesia with Junkers' Chloroform Apparatus and Ether mask. Dr. Devi Prasad used to be literally dragged down by the arms while running the O. P. D. for the job at operation theatre. There was no post of the anaesthetist and the duty was therefore every body's and no body's. Hence, doctors, compounders, nurses, dressers at hand were asked to do his job to run the department. In those days, there was a constant shortage of doctors and, doctors had to be deputed in different parts of the country at times. During the absence of Dr. Devi Prasad it fell in my lot to be dragged from O. P. D. duty when I joined my service in 1933. I had to do this job without the knowledge of fundamental of anaesthesia and essential equipment. I used to put Junkers' Chloroform mask not very close to patient's face and start with low concentration of chloroform vapour asking the patient to count one, two, three and so on. When the patient stopped counting the mask was directly placed on the mouth and nose by holding the jaw up with the left hand. Then used to follow the double method of administering anaesthesia i. e. pouring ether on the mask and put the mask on the patient's face with a towel all round the mask and also a towel further on the top of the mask. Relaxation of the muscles follow with the loss of eye-lid reflexes and in this stage the case was regarded to be fit for operation, of

course, very few major cases were done in those days and I should say with the graciousness of providence the death rate was amazingly low except in some acute abdominal cases in which death could hardly be avoided. Some twenty four years back major operation such as a few gastro-jejunoscopy, appendesectomy, prostectomy, ceasarian section, hysterectomy, operation for ovarian cyst and tumour, tonsilectomy, mastectomy and eye operations were done by the then various surgeons with me with the technique of open drop method that I have mentioned herewith. Time changed and I was the only man to be appointed first as an anaesthetist to His Majesty's Government in 1952. Hence it will be no exaggeration to say that the history of modern anaesthesia started at Bir Hospital after 1956 after my training and diploma qualification in Anaesthesia. I spent something to procure the necessary instrument from my own pocket just to have a start. I started my department successfully, as a proof of it a few instrument with the letter 'B', etched on them still available scattered here and in our anaesthetic cup-board. As the significant sequence to the above then followed the generous aid of U.S Government Aid as a monument of the joint effort of U.S. Government and His Majesty's Government; the New Modern Surgical and Medical Block looms large at Bir Hospital Compound. Here His Majesty's Government have furnished the medical and surgical block with new scientific apparatus as Boyle's Machines, E. M. O. Vaporizer, Ventilators, Defibrillators, Electro-gramic devices, gas pipe and suction system and other valuable and useful instruments. And, here I who drudged lonesome for the last 18 years find myself today with me other colleagues with fellowship and other qualifications and more to come to join this job. I wonder and ask myself could I ever dream some decades before this stage of development and progress? The surgeons working with me know better than myself. Now let me pass on to the present day technique of anaesthesia at Bir Hospital: This is a balanced type of anaesthesia i. e. the combination of various types of anaesthesia having the least toxicity in its effect. Now let me come to the topic about (Inhalation Anaesthesia) by "Open Method".

Description;

To simplify this method of inhalation anaesthesia it is divided into four groups:— 1) open method 2) semi-open method 3) semi-closed method 4) closed method. Leaving aside the various beneficial aspects of other methods I purposely took this open method topic at least to deliberate some light in this August gathering. I find this method simple to execute and its requisites remarkably cheap and easily available even in our neighbouring country, India. It has high safety margin, portable and in case of necessity can even be carried in our pocket in course of our work. No doubt, there are several drawbacks, such as risk of explosion, wastage, etc. The atmosphere of theatre may be laden with the vapour as a result of it, sometimes, even an anaesthetist himself being partly anaesthetised with the complaints of head-ache and uneasiness in case of prolonged anaesthesia lasting for 3 to 4 hours. Fall of concentration of oxygen is natural as the mask cuts-off the surrounding atmosphere. It is nothing new and you all know it. However, just by way of recapitulation, allow me to take up a salient features that

are important from the practical point of view and are evident in the various stages of anaesthesia by using drug like ether or chloroform or trilene.

Stage I: Analgesia--Here patient is conscious and is cooperative but progressively loses pain sensation, Stage II. Its characteristics are delirium, breath holding, and struggling pupil is often dilated but reacts to light, vomiting may occur. Stage III: i.e. Surgical anaesthesia. This stage is divided into 4 planes: Plane I) 1) Respiration becomes regular, 2) eye-lid reflexes are abolished, 3) eye-ball oscillates, 4) swallowing reflexes abolished.

Plane II: 1) Muscular relaxation is present, 2) eye-ball remain fixed, 3) respiration is regular and deep, 4) pupil may dilate under ether anaesthesia.

Plane III: 1) Inter-costal activity begins to decrease, 2) depth of respiration reduced, 3) pupil dilate.

N. B. : It is between these two planes No. II & No. III, most of the surgery can be managed.

Plane IV : Here inter-costal activity is paralysed, 2) respiration is reduced, 3) circulatory collapse occur if anaesthesia is deepened, 4) pupil widely dilated.

Stage IV: Apnea or Respiratory arrest.

Drugs and appliances I used in this technique:-

- 1) Schenmelbush mask adult & children 6 pieces.
- 2) Air ways of various sizes: No. 1 to 4 and children size.
- 3) Ether bottles or amber coloured 4 or 6 oz- ordinary phials with dropper.
- 4) Oxford inflating bellows with its equipments.
- 5) Oxygen cylinders with its equipments.
- 6) Suction apparatus for sucking.

Drugs: Ethyl Chloride, anaesthesia other chloroform, trilene, vassopressure drugs:- Nor-methedrine adrenaline, coramin, micosin, atropine sulph, 5p.c. glucose saline solution, pethedine, plasma and if available Blood at that time.

Method: This simple method is well known to you all. However to recapitulate myself that what I did is mentioned below:

Examination: In those days, the system of submitting the list for next day operation at O. T. was not invogue, Surgeons used to refer the case for operation to me. Hence, my first duty was to examine the case clinically to see the fitness for operation and also the nature of anaesthesia to be followed. To remove the anxiety and apprehension for operation next day and also a sound sleep, I prescribe some sedative drug at bed time. Pre-medication drug like atropine or the like, I used to push myself to the patient with proper dose and time. This, I find, plays an important part for smooth anaesthesia in all kinds of anaesthesias. Next my routine work was to examine and see the medicines and appliances ready for imminent and emergency purposes and also to see

that the assistants are stand-by. Before starting anaesthesia, I convince the patient that there will be no pain whatsoever during the course of operation, Save an except a few choking sensation in the beginning. To start with my work I put the mask over the mouth and nose of the patient and ask him to breathe deeply. *Induction* I start with ethyl chloride by holding and extending the jaw up with the left hand and keep the patient in second stage. Then follow the pouring of ether on the mask by drops, trickling from a dropper. when I find the respiration is active the concentration of ether vapor is increased gradually with a close eye on the response to the action of the drug. Because quick, high concentration leads to broncho-spasm. When the jaw is relaxed I introduce air way inside the mouth. There being free air way it helped me to prevent cynosis and smooth anaesthesia and successful accomplishment. Secretion of saliva, of course, is common in ether anaesthesia and was removed by suction apparatus and also removed by dry swab for smooth work. After the patient is ready the surgeon is asked to start the operation.

Study of the Selected 500 cases only:

Age & Sex—There is no restriction in administering this technique to different age & sex. That is be it a new born baby or an adult of 80 years, the same thing is applicable to any sex. Hence, there is nothing much to say and note. The various kinds of operations done at different hospitals under His Majesty's Government and anaesthesia with this method are as follows:—

1) Abdominal operations: Appendisectomy	20
Inguinal strangulated and simple	30
Gastro-pegumostomy with vasotomy & gastrectomy	20
Cholecystectomy	20
Nephrectomy	2
2) Bone Reduction of fracture-open & closed and osteomyelitis	100
3) Tonsilectomy (Gelotenic method)	2
4) Eye cases—including cataract	20
5) Gynaecological cases: e.g. D. & C., forcep application, Hysterectomy and C section	200
Removal of Tumour of uterus & ovary and tube tie.	
6) Urinary system—prostatectomy & vesical stone	80

Difficulties that I experienced are as follows:

- 1) Convulsion in four cases but managed by changing to other drugs like trilene or chloroform and also by using the short acting barbiturating drug and oxygen.

- 2) Cynosis, masseter muscle spasm, laryngeal spasm and broncho-spasm in some 50 cases, due to defect of pouring ether with high concentration and also improper pre-medication of the drug used.

N.B. This is very common to a new practitioner but can be managed easily with artificial ventilation with air, oxygen and occasionally with short acting muscle relaxation drug e- g, scoline.

- 3) Mucus secretion—is common but can easily be managed with suction apparatus and swab also.

- 4) Difficulties that met with acute abdominal cases are at the time of suturing the peritonium. The condition of the patient is already devitalised due to shock. The surgical shock is added to it along with the toxicity of the drug used. Hence, care must be taken at this stage with stimulant drugs, fluid with higher rate, the use of oxygen and blood when available helped me a lot for these cases.

- 5) In this technique, the patient delays a bit to come round but there is advantage also as the patient is less violent during post operative period.

- 6) Breath two—2 hours after operation No. 1) Ether poisoning as per P. M. report at J. J. Hospital, Bombay. No. 2) Most probably using the decomposed ether. No P. H. dom.

Conclusion:

This is a review of 500 selected cases I performed under open drop method as an anaesthetist over a period of 20 years. My main aim in this paper is to show, that major operations can be managed with this simple method where no modern anaesthetic appliances and drugs are available as yet. By this, I do not mean at all that no modern anaesthetic appliances should be supplied in Hospitals under His Majesty's Government. Well, there are 100, 50 & 20 bedded hospitals in Tarai and hill areas with a well trained surgeon but the point is that there is no provision to equip it with anaesthetic appliances and a trainee anaesthetist as yet, but His Majesty's Government is trying to fulfill it I am really glad to learn that besides others, W.H.O. is going to help us by providing fellowship training and also medical doctor's training in anaesthesia to fulfill our need.

This science can not be learnt by mere perusal of the theories of the books only, but training and practice under a specialist is very essential. The self confidence acquired during the training is the Key to success in this field. Hence a short or long term training in a well equipped hospital before one take up this job is imperative. I hope this will help in some ways to solve the problem of shortage of anaesthetists not only in Nepal but everywhere and I am glad to let you know that we have started training for a few doctors in Bir Hospital. But before I extend my invitation to my young graduate friends to take up this job I pause a moment to think. I understand most of our young friends are obsessed with the prejudicial

notions about anaesthesia, and anaesthetist that the job is thankless, that the anaesthetist has to satisfy himself with satelitic role that the anaesthetists are poorly paid and worst of all that the job itself lacks lusture to the extent of even being humiliating. Here I beg to differ from them. No job by itself is thankless. It is the people who are thankless. And be sure the lot who are by nature and instinct thankless always find reason enough to justify their in born-weakness, be you an anaesthetist, surgeon, patient or your bosom friend. So far the dependence is concerned in surgical cases where success lies in the harmoneous team-work of all those involved, I mean, surgeon, anaesthetist, nurse, pathologist, radiologist and blood bank officer and other assistants. A minute lapse or negligence on the part of any body of the team may spell danger or death. It is hard to tell who is dependent on whom. Regarding the meager emoluments, reasonable demands can hardly be left unfulfilled. besides the material aspect, the joy of accomplishment you experienced on the successful consummation of any case, the way you feel exalted after having saved. Some life or done something good to the patient are reward themselves. Only will have its end without mental satisfaction not only in medical but in every scientific field. It is on the way and the skill that any thing is executed and its consequence builds the nature of the job can be judged but not the popular notion of the job. I repeat once more that it is with the harmony and mutual understanding and cooperation of all in our team work that success is achieved in cur present modern advanced surgery as heart, kidney transplantation, neurosurgery and others. I beg your indulgence for having strayed away from my main topic. All I want to emphasize is that knowledge and practice of this simple open drop method will be the stepping stone to the acquisition of advanced knowledge in this field and also will help a long way to meet the badly felt shortage of anaesthetist everywhere. I must have been boring to you all, but before I stop, let me thank you all for your patiently hearing. I have served my government for the last 41 years and will be retiring soon not only from the service, but from all activities. I believe in re-birth and if so let me be again as an anaesthetist with the future generation to kindle the light of anaesthesia and thus keep the light ever burning.