VOLUME-6 | ISSUE-2 | FEBRUARY-2017 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 78.46

STUDY OF EVALUATION OF ROLE OF DETAILED PREANAESTHETIC ASSESMENT ON OUTCOME OF PLASTIC SURGERY

Anaesthesiology

KEYWORDS: Preanaesthetic evaluation, Plastic surgery, Difficult airway.

Dr. Sarmila Guha (Banerjee)	M.D.(Anaesthesiology). Assistant Professor,Dept. of Anaesthesiology, Medical College, Kolkata-73.
Dr.Ujjwal Bandyopadhyay	M.D.(Pathology). Assistant Professor (Pathology). Calcutta National Medical college, Kolkata.
Dr. Kallol Banerjee	MS(Ortho). Associate Professor, Orthopedics. Calcutta National Medical College.

ABSTRACT

Preanaesthetic evaluation of a patient involves the assessment of information from the multiple sources, including medical records, patient interview, physical examination and findings from preoperative investigation. For plastic surgical procedure, preoperative assessment of anticipated difficult airway, co morbid medical condition of the patient helps us to formulate the plan of anaesthesia and conduct anaesthesia with pertinent information..Thus a detailed pre anaesthetic assessment may improves the outcome of a difficult plastic surgical procedure.

AIM:- An observational study of evaluation of pertinent 1) medical records 2) patient interview 3) physical examination of the patient admitted in plastic surgery ward waiting for reconstructive surgery in a Medical College of west Bengal. This study focussed on benefits of preoperative evaluation that extends from perioperative care, optimal resource utilisation to improved outcome and patient satisfaction.

METHOD:- The study conducted over a period of 6 month and included 200 patient aged 18-70 yrs of American Society of Anaesthesiologists (ASA) physical status I – III, some having comorbidities admitted in plastic surgery ward waiting for surgery.

RESULT:- After preanaesthetic assessment the outcome of the patient after surgery varies depending on the type of surgery, anaesthesia, comorbidities of the patient and management in postoperative period.

INTRODUCTION:----The cornerstone of an effective preoperative evaluation are the medical history and physical examination which should include complete account of all medication taken by the patient in recent past, all pertinent drug, history of allergy, and reaction to previous anaesthetic1. Additionally this evaluation should include any indicated diagnostic, imaging procedure, or consultation from other physicians[1].

The goal of preoperative evaluation are to reduce patient risk and morbidity associated surgery and coexisting diseases[2].The preoperative evaluation can identify the patient with specific characteristics that likely will influence the proposed anaesthetic plan. Optimisation of patient health status prior to surgery will increase the patient safety[1,2]. That is, armed with knowledge preoperatively the anaesthesiologist can formulate the plan and conduct anaesthesia that avoids the dangers inherent in patient disease states[2].

Furthermore, preoperative evaluation may reduce cost, and cancellation rates increasing resource utilisation[2].

In the setting of plastic surgery cases, particularly in repair of burn contracture involving face, neck, any growth in oral cavity or any deformity in face, neck region preoperative evaluation serves as a screening tool to anticipate and avoid airway difficulties[3]. The preoperative assessment will also help the anaesthetist to formulate the plan for anaesthesia in difficult airway cases

DATA COLLECTION:-- Data was collected from the outdoor ticket i.e medical records of the patient attending in plastic surgery outdoor that includes history of patient, examination finding and investigation reports. The adult patient aged between 18-70 years requiring surgery for restoration, reconstruction or alteration of body and treatment of burn contracture attended plastic surgery outdoor, referred to preanaesthetic outdoor by surgeon for preoperative evaluation and finally admitted in ward after fitness in PAC (Pre anaesthetic clinic)outdoor. During stay in hospital these patients were further evaluated by anaesthetist in charge of specialised operation theatre(O.T).Finally patients were posted for surgery after our opinion regarding fitness for operation.

For clinical effectiveness we followed the following guidelines while attending these patients in clinic—1) guidelines based on procedure 2) on medical history 3) medication to discontinue prior to surgery 4) for preoperative fasting 5) cardiac evaluation 6) ASA physical status 7) history of sleep apnoea{ included under primary care physical condition} and also the guidelines for the patient—i.e preoperative smoking cessation.

MATERIALS AND METHODS:--About 200 patients aged between 18-70 yrs of ASA status I-III underwent plastic surgery procedure after PAC during 6 month period were included in our study.

During preoperative evaluation we first documented the condition for which surgery was needed. Usually the patient had burn contracture, malignant (ulceroproliferative) lesion in oral cavity, deformed ear after burn, ulcer in lower extremity, Gynaecomastia, Basal cell carcinoma lesion in face, lacerated wound after trauma, deviated nasal septum , nerve injury etc. The nature, extent, invasiveness of surgery, proposed plan of anaesthesia were explained to the patient during preoperative counselling. Any other medical problem or the disease the patient suffering from were assessed during preanaesthetic check up. The elderly patients generally had some comorbidities like chronic obstructive pulmonary disease(COPD),Hypertension(HTN),Ischemic heart disease(IHD),Type2 diabetes mellitus(T2DM)—these were revealed at the time of history taking.

Past history of intake of any important medicine, any illness, addiction, previous experience of surgery were recorded from the interview of the patient. From history we identified the patient having history of smoking, shortness of breath (COPD), past history of pulmonary Kochs and occupational exposure—those were at increased risk for postoperative complication. We aiso treated these patient and others having endocrine disorder (T2DM, Thyroid disease), cardiac problem with poor functional capacity (Metabolic Equivalent i,e,MET<4) to optimise their health status prior to surgery and reduce in perioperative and post operative period. In some cases we referred the patient to specialist for consultation and better management of co morbid medical condition.

We selected the patient of physical status upto ASA III. The patients having co morbidities after proper treatment and optimisation, were posted for operation. During preanaesthetic evaluation we advised

some routine and special investigation i.e complete haemogram, blood biochemistry, ECG,Chest X-ray etc. Special investigation:- Coagulation profile, serum electrolyte, Echocardiogram, Angiography ,USG,CT scan etc. From investigation we sometimes diagnosed some disorder in patient, about which the patient were unaware, those were revealed as a coincidental finding. After diagnosis of such disorder[e.g—DM,Thyroid disease,HTN,any electrolyte imbalance,Angina (from ECG) ,anaemia were treated accordingly. After optimisation of their physical condition by treatment they were selected for surgery.

Not only the investigation,we also performed physical examination to asses the patient preoperatively.During examination we assessed pulse, BP,effort intolerance. Lung,Heart and systemic examination were done during preoperative check up.We also performed detailed airway examination and planned for airway management.We should always have alternate plan(Plan B) if Plan A fails.

In plastic surgery we often preferred to 3 distinct choice: local anaesthesia,intravenous sedation(IV) or general anaesthesia(GA). In cases when small lump or for small wound revision the surgeon used local anaesthesia under our monitoring.Other surgical procedure like eyelift, liposuction of small areas like liplift, and scar revision. We conducted anaesthesia by using local anaesthesia and minimal sedation by giving the patient Diazepam or other anxiolytic agent in combination with medication.In these cases extensive preanaesthetic assessment not required,In cases of less invasive surgery involving limb,flap detachment and primary closure—total intravenous analgesia/inhalational anaesthesia were ideally performed in these patient. In plastic surgery where risk of bleeding is more,risk is minimised during IV sedation as compared to GA. Local infiltration with anaesthetic and adrenaline injection were applied by surgeon for better dissection and haemostasis.

In extensive plastic surgery procedure i.e facio-maxillary reconstruction,burn repair surgery,congenital defect repair, lower limb reconstruction,hand surgery,scar revision surgery--- our choice is either GA or regional anaesthesia(peripheral nerve block).For resection of malignant growth in oral cavity—plan of surgery was wide local exicision ,mandible resection and coverage of defect either by local or free flap.For this prolonged extensive surgery adequate preparation of the patient both physically and mentally was our duty to improve the outcome of surgery.

During preanaesthetic check up in clinic after admission in the ward, we would take interview of the patient in detail to reveal history regarding present illness, addiction past illness,intake of medication, or any comorbidities. We explained them what will happen during the operation, nature and impact of operation, proposed plan of anaesthesia,care in postoperative period.We gave instruction them to stop smoking, alcohol drinking and other precaution that the patient should take before procedure.The patient may ask question about choice of anaesthesia and any other concerns during interview.

While doing physical examination we focussed on three areas of concern: heart, lung and airway. Heart, lung function were evaluated as surgery under general anaesthesia puts these organ systems under stress.

Assesment of airway was of utmost importance—because patient of plastic surgery were commonly had difficult airway i,e,laryngoscopy, mask ventilation,and intubation become difficult.As some of these have inadequate mouth opening, some have restricted neck movement,and some have lesion in oral cavity, deformity in mouth,palate for which we commonly experienced difficulty in airway management. Therefore we assessed airway meticulously and carefully -- took plan for anaesthesia after assessment6. Adequate preparation for airway management and alternative plan (if one plan fails)—all these things were scheduled during evaluation7. In oral cavity and neck cancer patient—common finding of malnutrition had been identified. Oral, neck cancer patient who received radiation often have rigidity of jaw, immobile cervical spine due to radiation fibrosis[6].

After examination, we prescribed some routine and special investigation during preoperative evaluation. Routine investigation includes (complete haemogram, blood biochemistry, urine for R/E, M/E,Chest X-Ray, ECG). Special investigation includes—Blood for LFT,Coagulation profile,electrolyte, ECHO, Angiography, CT, PFT,USG etc.After assessment some patients were detected having comorbidities like hypertension, COPD,Diabetes ,Thyroid disease,Angina,. We primarily treated them with medicine, but in uncontrolled cases we consulted other specialist to obtain additional information and their opinion regarding fitness of operation.

Ultimately patients were prepared for anaesthesia by gathering all information and after taking informed high risk consent from patient and party. We also explained the patient about treatment and all possible outcome, shortcoming i.e surgery often leads to disfigurement. In postoperative period, particularly in prolonged invasive surgery patient may need postoperative care in intensive care unit for mechanical ventilator support—all these information were conveyed to party during preanaesthetic check up.

Results :200 patients aged between 18-70 yrs of ASA physical status attending plastic surgery outdoor for restoration, reconstruction or repair of defect during 6 month period were selected for our study.

Among them 122 were male and rest were female patient.

Observations of our study are tabulated as follows:

Table 1: Patient distribution by sex.

Total number of patient	200
Male	112(56%)
Female	88(44%)

Table 1A : Age wise patient distribution

Total number of patient	200
Age less than 50yrs	142(71%)
Age 50 yrs or more	58(29%)

Table 2 :Patient distribution by ASA grading.

ASA grade I	78(39%)
ASA grade II	83(41.5%)
ASA grade III	38(19.5%)

Table 3 : Types of reconstructive surgery done

Types of reconstructive surgery done	No. of Patients
Breast reconstruction	22(11%)
Ear reconstruction	10(5%)
Burn contracture repair	36(18%)
Scar revision	05(2.5%)
Excision and repair of malignant lesion	42(21%)
Cleft lip and cleft palate	15(7.5%)
Liposuction	15(7.5%)
Repair of lacerated wound	30(15%)
Dressing,debridement and closure of ulcer	25(12.5%)

Table 4: patients with co morbidities

Patient with COPD,DM,CAD,HTN	65(32.5%)
Without co morbidities	135(67.5%)

Out of 200 patient,65 patients had some comorbidities like COPD,CAD,T2DM,HTN,Thyroid disorder. During preoperative visit we prepared them to optimise their health condition prior to surgery. In spite of that during operation they experienced some events in the form of unstable hemodynamics, arrhythmia, uncontrolled blood sugar value etc. 18 patients were shifted to CCU for post operative

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care.

Table 5: Patients having malignant lesion

Total no. of patients having malignant lesion	42(21%)
No. of patients with malignant lesion who underwent microsurgery	18(9%)

Table 6:No. of patients with difficult intubation.

Total no. of patients with difficult intubation	27(13.5%)
Due to burn contracture of neck	15(7.5%)
Due to cancer of oral cavity distorting anatomy	12(6%)

Table 7:Airway management in difficult intubation patients

Permanent tracheostomy	7(3.5%)
Awake FOB	15(7.5%)
Blind nasal intubation	5(2.5%)

We also identified total 27 patients were supposed to have difficult airway during PAC(Pre anaesthetic checkup). We managed them by planning and performing – awake Fibreoptic bronchoscopy ,tracheostomy, and blind nasal intubation.

Table 8: Postoperative patient placement.

No. of patients shifted to ward	164(82%)
No. of patients shifted to CCU	36(18%)

Table 9: Cause of Post operative CCU shifting

Total No. of patients shifted to CCU	36(18%)
Of them,patients with co morbidities	18(9%)
Of them,patients undergone microsurgery	18(9%)

Table 10: Respiratory management of CCU shifted patients

Required mechanical ventilatory support	16(8%)
Did not required ventilator	20(10%)

Table 11 : Patient outcome in CCU in 1ST.24 hrs

No. of patients shifted to ward	20(10%)
Patients extubated after 24 hrs	8(4%)
Remained under ventilation support	8(4%)

Table 12 : Patients outcome in CCU after 48 hrs

Patients extubated and shifted to ward between 48-60 hrs	8(4%)
Patients extubated and shifted to ward between 48-60 hrs	5(2.5%)
Reintubation done in patients	3(1.5%)
No. of patients finally expired	8(4%)

Table 13 : Outcome of micro vascular surgery cases.

Microvascular surgery done in	18
Patient shifted to CCU after surgery	18(100%)
No. of patients expired after 48 hrs	5(27.7%)

The patient who underwent microsurgery, were usually malnourished, their health status deteriorated further after prolonged ,invasive surgery. So among 18 patients –5 patients expired after the surgery that involves massive blood loss, hemodynamic alteration etc. Mortality rate was 41%.observations are similar to that published in few papers in the past[8,9].

Fig:1A.1 (Pie Chart representation) Sex distribution of Patients

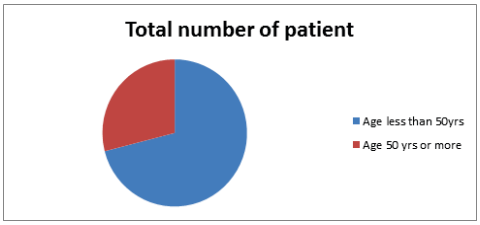


Fig:2.1 (Pie Chart representation)Patient distribution by ASA grading

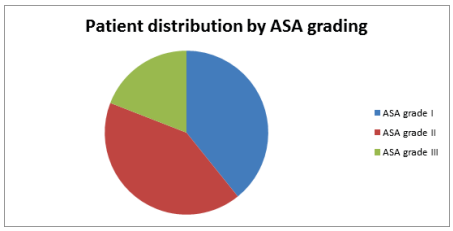


Fig:3.1 (Pie Chart representation) Types of reconstructive surgery done

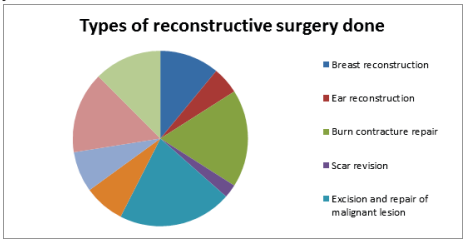


Fig:4.1 (Pie Chart representation) No. of patients with difficult intubation.

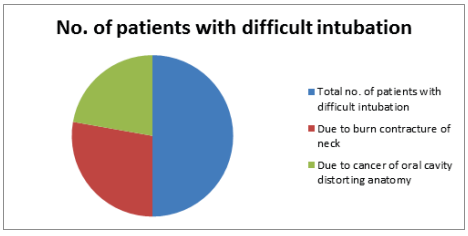


Fig:5.1 (Pie Chart representation) Patient outcome in CCU in 1ST.24 hrs

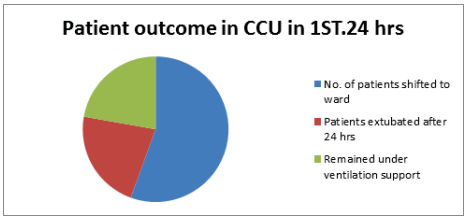


Fig:6.1 (Pie Chart representation)Patients outcome in CCU after 48 hrs

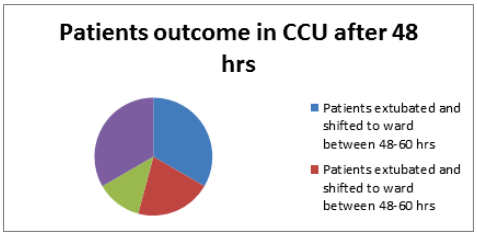
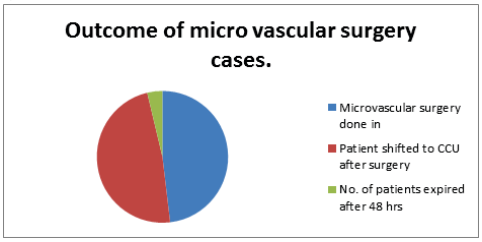


Fig:7.1 (Pie Chart representation) Outcome of micro vascular surgery cases.



DISCUSSION:--

We conducted anaesthesia in 200 patients for reconstructive surgery in a Govt. Medical College of Kolkata for 6 month period. Prior to

surgery we evaluated them through the process of preanaesthetic assessment by asking question, taking history, dong physical examination, and advising some laboratory investigation. Some patients were detected having some coexisting physical illness, their health status were optimised by treatment provided by us and also consultant before surgery. Some patients were found having difficult airway problem, we prepared ourselves in managing airway in these patients depending on nature and duration of surgery.

Prior booking of CCU bed is another strategy for positive outcome of long standing microsurgery cases specially with difficult airway and other comorbidities[8,9].

In some patients having neoplastic lesion even with poor physical status we provided anaesthesia with informed high risk consent, as a life saving procedure[4,5].

Despite paucity of literature published, observation in our present study are almost similar as seen by others in their study groups. In a study of risk assessment for and strategies to reduce peri operative pulmonary complication for patients undergoing non cardio thoracic surgery- post operative outcome and complications are similar as also we have observed in our short but elaborate observational study. In the present study we have followed the instructions of American college of physicians in many aspects of data collection and observation[7].

Among 200 patients we failed to save only 8 patient(only 4%) in spite of all thorough preoperative evaluation, preparation, peroperative and postoperative care in tertiary level hospital. After monitored anaesthesia care that begins from preanaesthetic evaluation we succeeded in improving the outcome of plastic surgery in our Medical College.

Conclusion :

After preanaesthetic assessment the outcome of the patient after surgery varies depending on the type of surgery, anaesthesia, comorbidities of the patient and management in postoperative period. The risk factors are being preoperatively assessed by us during preoperative check up.In our present study among 200 patients we failed to save only 8 patient(only 4%) which is similar with the outcome found in different other similar studies[8,9]. So it can be concluded that after monitored anaesthesia care that begins from preanaesthetic evaluation we have succeeded in improving the outcome of plastic surgery in our Medical College.

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