



NewsLetter

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EDITORIAL

CATASTROPHIC INTRAOPERATIVE HAEMORRHAGE: A SURGEON'S NIGHTMARE & AN ANAESTHETIST'S DISTRESS

If the surgeon cuts a vessel and knows the name of that vessel, the situation is serious; if the anaesthetist knows the name of the vessel, the situation is irretrievable.

Maldwyn Morgan 1938, (Anaesthetist, London)

Catastrophic Intraoperative Haemorrhage is any surgeon's Nightmare & An anaesthetist's distress. Hemorrhage is the No. 1 killer in the operating room all over the world. Intraoperative critical events are found to occur in 6.85/10,000 anesthetic events. Hemorrhage is responsible for 33% of cardiac arrests and 47% of deaths. Massive hemorrhage can be defined as follows: (i) blood loss exceeding circulating blood volume within a 24-hour period, (ii) blood loss of 50% of circulating blood volume within 3-hour period, (iii) blood loss exceeding 150 ml/min, or (iv) blood loss that necessitates plasma and platelet transfusion. Some factors other than the volume or the speed of blood loss threaten surgical patient. Patient's ischemic co-morbidity, preceding anemia, delay of blood transfusion, and delay of blood supply may make hemorrhage critical regardless of blood loss. Human factors affecting hemorrhagic critical events include inappropriate judgments (27%), poorly developed skills (26%), delay of recognizing bleeding during endoscopic procedures (3%), and incorrect handling of surgical devices (3%). However, communication between surgeons and anesthesiologists seems to be poor in 34% of the cases. Details of anesthetic management factors responsible for critical events are hypovolemia just prior to bleeding (12%), shortage of supportive anesthesiologists (10%), delay in ordering additional blood products (9%), shortage of rapid infusion/transfusion apparatus (8%), delayed judgment to start blood transfusion (7%), and delayed addition of venous routes (5%). Maximal speed of blood loss exceeds 120 ml/min in about half of the cases of critical hemorrhage. Therefore maintaining multiple large-bore blood access is a prerequisite for saving a patient's life. A 16 G (grey) and 18G (green) IV cannula provide a maximal flow rate of 180ml/min, and 160 ml/min respectively.

Anesthesiologists should be cautious when controlling anesthesia depth. Hypotension induced by anesthetic drugs affect critical events in 1.9% of patients developing life-threatening hemorrhage. More importantly hypertension, bucking, and patient movement, which are manifestations of light anesthesia or shortage of muscle relaxants, are reported to induce hemorrhage. Therefore, maintaining adequate levels of anesthesia depth is important to avoid anesthesia-related or anesthesia-induced critical haemorrhage.

The time required for emergency delivery of blood products

from blood banks to OT seems to be between 30 and 45 min. Blood-type examination takes 9+/-7 min. Cross-matching takes 25+/-12 min. The time required for blood-type examination and cross-matching might be longer during nights or weekends. We should also consider the following points: (i) withdrawing blood samples from a patient and then transporting them to blood transfusion services will take about 15 min. Blood testing during nights or weekends by untrained staff can cause errors in blood-type judgment and in clerical work.

Anesthesiologists should also be cautious of complications caused by massive and/or rapid transfusion. Hypothermia and hyperkalemia, both of which might cause cardiac arrest, have been reported to complicate 2.9% and 1.2% of patients with massive hemorrhage, respectively. Mortality rate increases with increasing blood loss and with decreasing minimum intraoperative hemoglobin level. Therefore, a margin of safety in hemoglobin level should be considered in massive hemorrhage. In the British guidelines on massive hemorrhage, maintaining hemoglobin levels of more than 8 g/dl is recommended, while it is stated that the general indication of RBC transfusion is hemoglobin levels of less than 6 g/dl. We should also be aware that hemoglobin level is a poor indicator of blood loss in acute situations. Serum lactate levels (easily obtained by point of care ABG sampling) are useful in interpretation of Hb levels in the right perspectives. High lactate levels suggest haemoconcentration and hence false high Hb readings. If the S.lactate level is between 3-4 and Hb is 8gm%, the actual Hb could be just 6 gm%. The incidence of acute hemolytic reactions mainly due to major mismatch has also been reported to be 1/25,000-50,000 units.

The principal components of disaster medicine are summarized as CSCATTT: C for command, S for safety, C for communication, A for assessment, T for triage, T for treatment, and T for transport. To rapidly deal with critical bleeding in the operating room, effective communication among responsible staff is mandatory, especially between anesthesiologists and surgeons, between operating rooms and blood bank. When critical bleeding occurs, a commander, a person in charge, is appointed. Senior anesthesiologist or senior nursing incharge are candidates for commander. A commander comprehensively assesses hemodynamics, the hemostatic condition, and blood product supply system, and then consults the surgeon regarding the continuation of planned surgery or change of surgical procedure. A commander has to keep in mind the following points: prompt decision-making, concrete as well as concise instructions, following the rules of the game, watching for violations by medical staff, and confirmation of exact time recording. When the blood type is clear, but time is short, the cross-matching test is omitted, and the same ABO-type blood is used. When ABO-identical RBCs are not available, ABO-compatible, non-identical RBCs are

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OPEN PARTIAL LARYNGECTOMY IN SALVAGE SETTING- OFFERS SAFE ONCOLOGICAL OUTCOME WITH ANATOMICAL AND FUNCTIONAL PRESERVATION

Larynx and Hypopharynx cancers are one of the leading causes of cancer related deaths in India. According to GLOBOCAN 2020 data, annual incidence of larynx and hypo pharyngeal cancers in our country 1.26-8.18 per 1, and 00,000 population. Larynx and Hypopharynx are essential subsites for vital functions like speech, swallowing and respiration. Early stage cancers are treated with surgical and non -surgical modalities namely Tran's oral Laser microsurgery (TOLM) and Radiation therapy with comparable local control and survival. Intermediate stage tumours are treated with chemo radiation (CTRT). Radical surgery in form of complete removal of voice box – total laryngectomy is the treatment modality of choice for advanced stage cancers –T4.

CTRT has emerged as standard of care for early and intermediate stage cancers over the past decade. It is an effective non -surgical modality which cures cancer retaining the organ functions and tumours which do not respond to chemo radiation are salvaged by radical surgery in form of total laryngectomy or laryngopharyngectomy. Partial laryngectomies are an effective surgical modality offering effective oncological outcomes with preservation of function for selected cancers Giovanni Succo and Peretti from Italy were pioneers who popularized Open partial Laryngectomies (OPL) for larynx and hypopharyngeal cancers especially in salvage settings.

We at Rajiv Gandhi Cancer Institute and Research Center(RGCIRC) offered Open partial laryngectomies especially in salvage settings for patients who did not respond to primary chemoradiation and who had local recurrences following CTRT.

Between 2019 – 2022 ,Open partial and extended open partial laryngectomies as a surgical salvage was done for 10 patients . All patients received CTRT as a primary modality . Details tabulated in Table 1.

S NO	Age/Sex	Primary Site	Pre Salvage Treatment	Post Salvage Treatment	Flap Cover	Time for Tracheostomy Decannulation	Time for Oral Feeding post surgery	Disease Status (NED)
1	55 yrs/M	PPW	RT	OPL Robotic	Yes	2 months	4 months	since 1 year
2	52 yrs/M	PPW	CTRT	OPL	Yes	35 Days	2 months	since 3 years
3	60 yrs/M	PPW	RT	OPL	Yes	7 days	15 days	since 3 years
4	60 yrs/M	PFS	CTRT	Ext OPL	Yes	7 days	2 months	1.5 yrs
5	64 yrs/M	Epiglottis	RT	Ext OPL	No	15 days	4 months	3 years
6	55 yrs/M	Vallecula	CTRT	Ext OPL	No	9 days	4 months	7 months
7	60 yrs/M	Vallecula	CTRT	Ext OPL	Yes	10 days	6 months	Nodal recurrence 6 months post surgery
8	62 yrs/M	Vocal cord	RT	OPL	No	4 days	1 day	2 years
9	52 yrs/M	Epiglottis and PFS	CTRT	Ext OPL	Yes	11 days	1 month	1.5 years
10	56 yrs/M	PFS	CTRT	Ext OPL	Yes	6 days	1 month	2 years

PPW- PosteriorPharyngeal Wall
RT- Radiation therapy
CTRT- ChemoradiationTherapy
OPL- Open partial laryngectomy
Ext OPL- Extended OPL
NED- No evidence of disease

To conclude Open Partial Laryngectomies are an essential modality in the armamentarium of surgeons especially in salvage settings offering excellent oncological outcomes with preservation of function. Meticulous patient selection is the key for having satisfactory outcomes.

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WORLD NO TOBACCO DAY CELEBRATION

The 'World No Tobacco' day was commemorated on 31st May in RGCIRC, Rohini by the Department of Preventive Oncology with a series of events.

There was free oral Screening with Tobacco Cessation Counseling followed by awareness lectures for public regarding Magnitude of the problem, harmful effects of Tobacco, importance of quitting tobacco etc. Program ended with an informative skit. Free health check coupons were distributed to the audience.

Global Tobacco epidemic kills 80 lakh people each year, more than 13.5 lakh in India alone. Big Tobacco industry allures our youth to the dangerous habit of tobacco use. We need to protect our future generations from the tobacco companies' tactics. These activities will go a long way in abdicating tobacco usage among the population.



CME WITH NAYYAR HOSPITAL, AMRITSAR



CME Programme was organized by RGCIRC in association with Nayyar Hospital, Amritsar, Punjab on Saturday, 3rd June 2023 at Hotel Radisson Blu, Amritsar, Punjab. Dr. Vaishali Zamre, Sr. Consultant & Chief of Breast Surgical Oncology Unit - 2, RGCIRC delivered a lecture on **Evolution of Breast Cancer Surgery** and Dr. Narendra Agrawal, Unit Head & Sr. Consultant, Hemato-Oncology, Leukemia and BMT, RGCIRC spoke on **Advances in Multiple Myeloma**.

CME WITH THE AGRA OBSTETRICAL & GYNECOLOGICAL SOCIETY



RGCIRC organized CME programme on oncology in association with The Agra Obstetrical & Gynecological Society on Saturday, 10th June 2023 at Hotel Holiday Inn, Agra, UP. Dr. Rupinder Sekhon, Sr. Consultant & Chief of Gynae Oncology Services, RGCIRC delivered a lecture on **Robotics Surgery in Gynae Oncology** and Dr. Leena Dadhwal, Sr. Consultant – Surgical Oncology, RGCIRC, South Delhi spoke on **Artificial Intelligence: An Additional Tool in Healthcare**.

The audience was thoroughly impressed by the insights shared and the depth of knowledge displayed by the speakers. The Agra Obstetrical & Gynecological Society team expressed their gratitude

towards the RGCIRC faculty and extended a warm welcome to them and other team members from RGCIRC and promised to continue their support for RGCIRC, highlighting the significance of collaboration and cooperation in advancing field of oncology.

Overall, the event was a great success, providing a platform for the dissemination of knowledge and the exchange of ideas in the field of oncology.



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transfused. When the patient's blood type is AB, A- or B-type RBCs should be considered prior to O-type RBC transfusion. Delayed hemolysis may occur several hours to 3 weeks after transfusion. Symptoms are severer, the earlier the reactions occur. When hemolysis develops, a febrile reaction and hemoglobinuria may develop. Warming blood products with the exception of PC is mandatory when the transfusion speed exceeds 50 ml/kg/hr. Complications due to massive and rapid transfusion include metabolic changes (citrate intoxication, hyperkalemia, and hypothermia), dilution coagulopathy, and circulatory or iron overload.

A commander and a surgeon should discuss and decide surgical procedures: accomplishment of scheduled procedures, change to the minimum procedures, bimanual compression of the bleeding point, temporary packing fibrin glue, clamps of the artery or the aorta, or damage control surgery or interventional radiological procedures like arterial embolization. Hypothermia, acidosis, persistent hypotension, and shortage of blood products are the absolute indications for damage control surgery. It is desirable that the hospital transfusion committee prepares hospital regulations on "actions to be taken against critical bleeding", and practices them in simulation. Establishing hospital actions enables a structured response against critical haemorrhage. In critical hemorrhage, a patient's life mainly depends on manpower and the availability of blood products. In terms of manpower, the quantity as well as the quality is important. Anesthesiologists, surgeons, radiologists, nurses, and technicians in the operating room and staff of blood transfusion services are all essential to save a patient's life. The survival rate after massive or critical hemorrhage might be higher in a hospital where surgeons can perform damage control surgery and radiologists can perform interventional radiology. Hemorrhagic mortality and morbidity in the operating room can be reduced by a systemic, not an individual approach.

In nutshell key action points in the management of bleeding catastrophes in the operating room include:

- Call for help, and request extra personnel.
- Activate a massive blood transfusion protocol.
- Communicate closely with the surgical team.
- Identify the source of bleeding, and try to achieve hemostasis as soon as possible, either temporarily or permanently.
- Obtain large, secure intravenous accesses and a rapid infusion system.
- Continuously monitor vital signs; consider invasive hemodynamic monitoring.
- Ensure the accuracy of the blood-checking process.
- Detect and treat complications of massive blood transfusion (eg, hypothermia, dilutional coagulopathy cardiac overload and hypocalcemia, hyperkalemia)



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