



**ORIGINAL RESEARCH PAPER**

**Forensic Science**

**Errors in Management of an Assault Case**

**KEYWORDS:** assault; massive blood transfusion; adverse event; negligence; system error.

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**ABSTRACT** Victims of assault suffer not only from the initial incident but also from the sequel of events which follow like shifting of victim from the site of incident to hospital, initial management at casualty, surgery, transfusions, and postoperative care. Doctors who are faltering in rendering proper care and treatment to the patient at any phase during their course of treatment are charged with negligence. Here we present a case of a victim with multiple stab injuries to chest and abdomen and subsequently died in the hospital after undergoing massive blood transfusion and surgical procedures. We discuss here whether there is medical negligence or adverse event or system error on the part of the treating doctors involved in treating this case. And also we like to emphasize the need for an expert team work, precautions to be taken for massive blood transfusion and a standard protocol to be followed in post-operative management.

**INTRODUCTION**

Violent crimes cause panic among people in the society, which require prompt and proper investigation in establishing justice. Victims of violent crimes with significant blood loss call for appropriate recognition and efficient management for a successful outcome. In some instances, there may be a need for massive blood transfusions. Massive blood transfusion has various definitions like:1

- Substitute one or more blood volumes within 24 hours.
- Ten units of whole blood or 20units of red cells, within 24 hours.
- Replacement of more than 50% of the blood volume in 3 hours in an adult.

Timely identification of cases which require massive transfusion in combination with aggressive surgical methods can lead to a decrease in early mortality.

Because of the rapid development of electronic media, there is an increase in awareness among people about patient's right. This trend is due to a recent increase in the number of litigation filed against medical professionals and claiming compensation for the suffering caused due to medical negligence. Everyone wants a safer health care system, but there are thousands of medical errors resulting in injuries to patients who may deserve compensation.2 Before labelling any case as medical negligence it is important for us to understand the difference between adverse event, medical negligence and system errors. Adverse events are harmful or undesirable outcomes that occur during or after the course of medical management but are not necessarily caused by it.3 Negligence is the failure to provide a standard level of care or the delivery of substandard care which injury or death to the patient.4 A system error is an occasional, simple human error, happening unintentionally.5 Here we discuss a case of a person who received a massive blood transfusion and other resuscitative measures after sustaining multiple stab injuries and succumbed to death.

**CASE REPORT**

A 35year old man referred to the casualty of tertiary care health

centre for further management from primary health centre with an alleged history of being stabbed multiple times by a known person after a scuffle. On general examination, he was pale with a pulse rate of 116 beats per minute, blood pressure of 80/60 mm Hg with reduced bilateral air entry. On local examination, there were multiple stab injuries with active bleeding seen over left axilla, the left lower costal margin, and the right lumbar region with protrusion of intestine coils.

The patient was taken for emergency surgery immediately, and intraoperative findings showed perforations in jejunum, ileum and transverse colon. After surgery, blood pressure didn't show any improvement and started on inotropes. Blood and its components transfused in the following manner: (Table 1)

**Table 1:** Blood components transfusion

Day	Packed Cells	Platelets	Fresh Frozen Plasma	Cryoprecipitate	Total
1 <sup>st</sup> day	10	6	8	-	24
2 <sup>nd</sup> day	5	5	8	10	28
3 <sup>rd</sup> day	4	3	4	-	11
4 <sup>th</sup> day	4	4	4	-	12
5 <sup>th</sup> day	2	-	-	-	02
6 <sup>th</sup> day	2	4	-	2	08
7 <sup>th</sup> day	1	4	-	-	05
8 <sup>th</sup> day	1	3	-	-	04
9 <sup>th</sup> day	1	3	-	-	04
	30	32	24	12	98

In spite of massive blood transfusion and timely surgery the deceased succumbed to death on the 10th day due to septicaemia following multiple stab injuries. Police Inquest was done and request to conduct post-mortem examination given. During the autopsy, abdominal cavity contained around 1,000 cc of blood clots with 500 ml of fluid blood. We also noted primary closure of jejunum, resection anastomosis of transverse colon (Figure 1) and ileostomy done.



**Figure 1:** Transverse colon resection and end anastomosed with abdomen showing blood tinged fluid and blood clots

## DISCUSSION

Emergency management of assault cases plays a critical role in doctor's life. The clinical intelligence of the treating doctor has a vital role in the outcome of the case. Transfusion of blood components had a significant role in deciding the outcome of a case and had some core principles:<sup>1</sup>

- 1) Resuscitation carried out while the need assessed.
- 2) Evaluation of specific clinical or laboratory indications.
- 3) Patient's haemoglobin level is not the sole deciding factor.
- 4) Benefits should outweigh risks of transfusion.
- 5) Appropriate informed consent.

The basic strategy of blood transfusion is to:<sup>1</sup>

- 1) Restore blood volume to maintain tissue perfusion and blood pressure and never over burden the circulatory system with excess transfusions.
- 2) Any surgical source of bleeding identified and treated.
- 3) Coagulopathy corrected by the judicious use of fresh frozen plasma, platelet transfusion and cryoprecipitate (if fibrinogen is low).
- 5) Prevent hypothermia by pre-warmed blood component transfusion.

In this case most commonly followed ratio of massive blood transfusion that is packed cells: Fresh Frozen Plasma: Cryoprecipitate: 1: 1: 1 / 2: 1: 1 was not correctly followed. In suspected cases or when Disseminated Intravascular Complication (DIC) is anticipated, doctors should increase the number of cryoprecipitates and haemoglobin should not be the only criteria for transfusion. But here more importance was given to falling haemoglobin and corrected by transfusing more amounts of packed cells to make up a reasonable level of haemoglobin. They seem to have not prospectively evaluated as to why there was a rapid fall of haemoglobin level in spite of massive blood transfusion. There was no record of repeat USG, CT scan or re-exploratory surgery to rule out the possible source of a leak or bleed from the surgical site or a new region in this case.

This case here being analysed properly to find, whether there is medical negligence or adverse event or system error involved. Because there is a trend going on around the world to label such cases as medical negligence cases and treating physicians have to be well aware of these facts.

Adverse event versus Negligence versus system error: In this case, the patient had severe blood loss due to multiple stab injuries and given a massive blood transfusion. For example, if the patient develops an unforeseeable allergic reaction it is an adverse event, not negligence. In the above case scenario, it would have been negligence if the physician had failed to check the blood bag and to transfuse it on the wrong person. On the other hand system error is an occasional human error made unintentionally. Here the doctor's seem to be more worried about the decrease in

haemoglobin level than any other thing because the patient surgery was uneventful, and they wanted to improve haemoglobin just by transfusing blood components. And moreover, the cause of death in this patient is due to septicemia following multiple stab injuries and not due to complication of massive blood transfusion. We are labelling it as a case of system error because right organisations recognise the human error component and safeguard against it. Treating surgeon should have done proper assessment regarding the line of management and foreseeing possible complications should have discussed by forming a panel of doctors from Medicine and Transfusion Medicine.

All these precautions though may look minor or negligible but put together they can alter the whole path of management of the case and also the final prognosis. This case highlights the need for treating surgeons or physicians to take help or guidance from related and allied branches of medicine like transfusion medicine and radio diagnosis for a better and holistic management of such cases by using the updated and scientifically proven techniques in their respective fields.

## CONCLUSION

System errors are a widespread unavoidable human error, and significant focus should be given to bring about necessary systematic changes. More and more litigation against health professionals will make them conceal such errors rather than reporting, which will have adverse effects on patients, doctors and hospitals. A basic awareness of how medical negligence adjudicated in different judicial courts will lend a hand to doctor to practice his profession without unnecessary worry about facing legal action for supposed medical negligence. Teamwork will improve the quality of treatment and hospitals should take initiatives to prepare standard protocols and always have a multi-disciplinary approach to every case. The safest systems are those that acknowledge the human error and build in safeguards on a systemic level.

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