INTRODUCTION

India does not have an organized system of prehospital trauma care and transport. Private hospitals are unwilling to take emergency cases. Government run primary and secondary care hospitals in India are still focused on vaccine preventable diseases, maternal child health, and at best provide the most basic first aid to trauma cases.

Resuscitation, specialist care, and operative facilities are lacking in these hospitals. Yet, these facilities are the only option available for providing initial care to a trauma victim.

Conventionally, trauma mortality is predicted using scores based on anatomical, physiological, or a combination of both types of criteria. Mechanism of injury is also included as a critical variable in the Revised Trauma
Score\textsuperscript{3} and Trauma Injury Severity score (TRISS).\textsuperscript{9} Studies have demonstrated several factors that predict mortality independent of the severity scores. These include age, sex, pre-existing pathologies\textsuperscript{4}, hypotension,\textsuperscript{6} number of units of blood transfused,\textsuperscript{7} serum lactate,\textsuperscript{8} base deficit,\textsuperscript{8} massive blood transfusion,\textsuperscript{9} early coagulopathy,\textsuperscript{10} early hyperglycemia defined as levels more than 200 mg/dl,\textsuperscript{11} iatrogenic mistakes,\textsuperscript{12} prehospital care,\textsuperscript{13} trauma center volume,\textsuperscript{14} and designation.\textsuperscript{15}

Trauma victims cared for at the primary and secondary hospitals in Uttar Pradesh are subsequently referred to the King George Medical University (KGMU) trauma center. The trauma center of KGMU is the only trauma center in the state of Uttar Pradesh and caters to the need of about 200 million. Such transfers of trauma patients delay critical time for appropriate definitive care and may be associated with adverse outcomes.

The objectives of the study were to identify predictors of 1 year mortality in trauma patients presenting at KGMU—a resource constrained setting which does not allow for full international standard of trauma care\textsuperscript{9}. The secondary objective was to describe interhospital referral and determine its effect on trauma mortality. We believe that this is the first study of this kind in India.

**MATERIALS AND METHODS**

This prospective observational study was conducted at KGMU trauma center. Approval for the study was obtained from the Institutional Ethics Committee. Adult injured patients without burns and more than 18 years of age presenting to the trauma center were included in the study, subject to written informed consent.

Two hundred and sixty patients were required for the necessary power using the thumb rule of 10 patients per variable studied; but to increase the representativeness of the sample, data was collected for 1 year. In order to check the representativeness of our sample over different days of a week, patients admitted on Mondays over a 1 year period and eight randomly selected Wednesdays and Saturdays were consecutively recruited to the study. Patients admitted on Wednesdays and Saturdays were to be included in final analysis to predict mortality if they were found to be clinically and demographically similar to patients admitted on Mondays. Consecutive recruitment for 24 hours beginning 8:00 am was employed on the days mentioned above.

All 572 patients were followed-up for mortality for a period of 1 year by means of post discharge hospital visits, or phone calls or home visits every month. Characteristic factors known\textsuperscript{6} to be associated with mortality were recorded in patients enrolled in the study, subject to written informed consent from the patient or his kin. Due to lack of an ongoing audit and record keeping at peripheral hospitals, there was no method to ascertain patients for iatrogenic mistakes other than missed injuries. Base deficit, serum lactate, and obesity assessment are not performed routinely during the course of treatment of every trauma victim and thus not included. Information regarding the patient’s socioeconomic status identified as below poverty line (BPL) was also collected.\textsuperscript{9}

Information about referral and interhospital transfer included details of the transfer process, training of the transfer personnel, and adequacy of the transfer. Data communicated to the trauma center from the referring hospitals was collected from the transfer records. This information was corroborated by the accompanying personals and relatives.

Data was collected using a standardized questionnaire in which item analysis had been done for inter- and intraobserver agreement. Predictors of 1 year mortality were identified using bivariate and logistic regression. Time trend analysis of mortality was done using actuarial survival analysis and Cox proportionate hazard model.

**RESULTS**

During the study period, 592 eligible patients were admitted to the KGMU trauma center. Of these, 572 consented to the study. Fifty-seven percent (327/572) of patients were referred admitted and 43% (245/572) were directly admitted patients. Patients were predominantly male (83.3%) with median age 38 years, median Injury Severity Score (ISS) 9, and mean Glasgow Coma Scale (GCS) 12.20 ± 4.1 (median 15). Mean time to admission was 54.22 ± 185.2 hours. The demographic and clinical characteristics as well as mortality of the patients admitted on different days of the same week were found to be similar [Table 1].

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\textsuperscript{iii} Age, sex, preexisting chronic conditions, Injury Severity Score (ISS), referral from peripheral hospital, blood sugar level at admission, blood pressure at admission, coagulopathy at admission, massive blood transfusion (≥10 units of packed red blood cells) and missed injuries

\textsuperscript{iv} Below poverty line (BPL) for rural areas is based on the degree of deprivation in respect of 13 parameters, with scores from 0 to 4: Landholding, type of house, clothing, food security, sanitation, consumer durables, literacy status, labor force, means of livelihood, status of children, type of indebtedness, and reasons for migrations. For urban areas BPL status is based on degree of deprivation in respect of seven parameters: Roof, floor, water, sanitation, education level, type of employment, and status of children in a house. A BPL card holder in India is entitled to free healthcare in India.
During follow-up, 143 patients died (24.96%; three due to unrelated cause and hence excluded from analysis).

Documentation about date and time of injury (0%), referral time (13.71%), pulse rate (34.38%), and blood pressure (BP; 34.25%) was generally suboptimal in the facility notes accompanying the referred patient. Transit notes were not available in any of the patients. On arrival to KGMU, 71 patients had a GCS score of less than 8. Of these, none had been intubated in the referral hospital or on way. No patient had a systolic BP < 90 mmHg and a diastolic BP < 60 mmHg recorded on the transfer documents. Pupil size and reaction, and GCS score were not documented in any of the cases; including the 245 head trauma cases. Only 9/327 (2.79%) transferred patients had hard cervical immobilization. Only 22 referred patients arrived with Advanced Trauma Life Support (ATLS) approved intravenous infusion. The formal request for transfer to KGMU via physician-to-physician conversation was made in less than 1% of cases. Ambulances were used for transfer in 49 (15.12%) cases, while the rest were transferred using a non-ambulance vehicles.

Patients referred from peripheral hospitals had significantly lower GCS, higher ISS, higher time to admission to the KGMU trauma center, and longer duration of stay at the trauma center. Admission through referral was positively associated with possession of BPL card (P-value 0.0215). Referral from a peripheral hospital was not significantly associated with mortality (P = 0.203). Mortality was significantly associated with referred group on bivariate analysis for major trauma (ISS > 15; odds ratio (OR) = 18.94; 95% confidence interval (CI) 11, 33) and severe head injury (GCS < 9; OR = 11.81; 95%CI 6, 24). An interesting trend seen in our study is earlier and higher number of blood units transfused to the expired. However, the difference was insignificant. Only 10 patients in our study had hyperglycemia.

Of the 569 patients, GCS score was not recorded in 35 patients due to quadriplegia (26 patients) or injury to maxillofacial region (nine patients). Data on ISS was not recorded in two patients. Patients with incomplete data set were automatically excluded by the software used for multivariate analysis. Multivariate analysis of data on 533 patients using logistic regression and Cox proportionate hazard analysis identified age, ISS, GCS score, raised activated partial thromboplastin time (APTT), and systolic BP at admission to be valid predictors of mortality. Abnormal respiratory rate (>26 or ≤10) and presence of cervical spine injury were found to be significant predictors on logistic regression, but not significant on Cox proportionate hazard analysis. Bootstrapping of the logistic regression model and Cox proportionate hazard model identified age, ISS, APTT, and GCS score at admission to be significant predictors of 1-year mortality. However, systolic BP and cervical spine injury were found to be insignificant [Table 2].

Kaplan–Meier survival curve showed two distinct phases of mortality, namely within 6 days of sustaining injury and another after more than 6 days of sustaining injury [Figure 1]. Of the 140 deaths, 86 occurred within 6 days of sustaining injury, while 54 occurred after 6<sup>th</sup> day. Week-wise distribution of mortality is shown in Table 3.

On logistic regression, mortality within 6 days of injury was found to be predicted by age, ISS, APTT, and GCS score at admission. Mortality after 6<sup>th</sup> day was found to be predicted exclusively by GCS score at the time of admission.

| Parameter                  | Monday                  | Wednesday               | Saturday                | P value  |
|----------------------------|-------------------------|-------------------------|-------------------------|----------|
|                            | N                       | Mean                    | N                       | Mean     | N                       | Mean     | 0.828   | 0.221          | 0.440   |
| Age                        | 378                     | 41.0±16.6               | 99                      | 41.1±15.5| 90                      | 40.0±16.1|         |               |          |
| ISS                        | 376                     | 12.8±7.6                | 99                      | 11.1±6.2 | 95                      | 12.6±7.4 |         |               |          |
| TRISS                      | 349                     | 7.0±13.3                | 97                      | 6.1±13.5 | 86                      | 4.7±9.1  |         |               |          |

| Parameter                  | Percentage              | N                       | Percentage              | N                       | Percentage              | N                       | P value  |
|----------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|----------|
| Mortality                  | 25.93                   | 378                     | 21.21                   | 99                      | 24.44                   | 90                      | 0.624    | 0.211          | 0.854   |
| Female/male                | 18.52                   | 70/308                  | 13.13                   | 136/86                  | 12.22                   | 117/90                  |          |               |         |
| Comorbidities              |                         |                         |                         |                         |                         |                         |          |               |         |
| Coronary artery disease    | 2.91                    | 11                      | 3.03                    | 3                      | 3.33                    | 3                      | 0.978    |               |         |
| COPD                       | 5.03                    | 19                      | 4.04                    | 4                      | 4.44                    | 4                      | 0.908    |               |         |
| Hypertension               | 3.97                    | 15                      | 5.05                    | 5                      | 6.67                    | 6                      | 0.530    |               |         |
| Renal disease              | 0.53                    | 2                       | 0.00                    | 2                      | 2.22                    | 2                      | 0.148    |               |         |
| Diabetes mellitus          | 2.91                    | 11                      | 2.02                    | 2                      | 2.22                    | 2                      | 0.854    |               |         |
| Respiratory rate ≤10       | 1.85                    | 7                       | 0.00                    | 0                      | 1                       | 1                      | 0.401    |               |         |
| Respiratory rate >26       | 79.89                   | 302                     | 85.86                   | 85                      | 85.56                   | 77                      |          |               |         |
| Referred/directly presenting| 18.25                   | 69                      | 14.14                   | 14                      | 13.33                   | 12                      |          |               |         |
| Systolic BP < 100          | 57.41                   | 217/151                 | 49.49                   | 49                      | 49.56                   | 59/41                   |          |               |         |
| Systolic BP ≥100           | 13.49                   | 51                      | 12.12                   | 12                      | 22.22                   | 20                      |          |               |         |

ISS = Injury severity score, TRISS = Trauma injury severity score, COPD = Chronic obstructive pulmonary disease, BP = Blood pressure
Various best possible cutoffs for the logistic regression model to predict 1 year mortality were diagnostically evaluated to estimate diagnostic values for 1 year mortality. The best cutoff was found to be 0.25. The results of diagnostic assessment at cutoff 0.25 are shown in Table 4.

**DISCUSSION**

This series of trauma patients validates previously reported predictors of mortality such as age, ISS, abnormal respiratory rate (>26 or ≤10) at admission, and increased APTT and GCS score at admission. However, our results do not validate systolic BP at admission and presence of cervical spine injury as valid predictors of mortality as these factors were found to be insignificant in the analysis.

We report higher age to be a significant predictor of mortality on logistic regression as well as Cox proportionate hazard model, which indicates that the effect of age on mortality lasts for 1 full year. We also found abnormal respiratory rate at admission to be positively associated with mortality on logistic regression. However, the same were not found to be positively associated with mortality on Cox proportionate hazard model. This is because the effect does not last beyond the first few days of injury, a finding which has been reported in literature.[16]

Systolic BP at the time of admission was found to be significant on logistic regression as well as Cox proportionate hazard model. However, it was found to be insignificant on bootstrapping, and thus it should not be treated as universally valid. Injury-induced...
hemorrhage accounts for the largest proportion of mortality within the 1st hour of trauma center care, causes 50% of injury-associated death within the first 24 hours of trauma care, and claims more lives than any other injury-induced pathology within the first 48 hours of care. A limitation of the study was that time to death since injury was not recorded in hours, and hence we are unable to comment on the value of hypotension in predicting mortality within 1 hour injury. Another notable limitation is that a significant number of injured died post discharge at their homes or at another hospital where the exact time of death was not available. Due to the software excluding patients with incomplete data sets, 26 patients of cervical spine injury with neurological deficit were excluded from multivariate analysis. A negative beta coefficient for cervical spine injury as reported by us is due to inclusion of cervical spine injury patients without neurological injury and hence a complete data set in the logistic regression model. Due to this selective exclusion of cervical spine injury with neurological deficit we are unable to comment on the role of cervical spine injury with neurological defect in predicting mortality.

A significant finding of the study is that after 6th day of injury GCS score at admission is the only significant predictor of 1 year mortality. GCS score within 4 hours of injury has been reported to predict 2 week mortality. In our study, 110 patients (78.5%) died within 2 weeks of injury and another 30 died after 2 weeks up to 16th week (87.14% mortality occurred within 3 weeks and 97.85% mortality occurred within 8 weeks). This suggests that the predictive value of GCS score at the time of admission extends beyond 2 weeks.

It has been reported that mortality prediction using GCS may not be very accurate due to presence of paralysis, use of sedating medications and coexisting injuries. In an organized system of trauma care with prehospital care incorporating advanced life support system protocols, use of paralytics in the field and during transport make the early post-resuscitation GCS unavailable. This trend in pre-hospital management may account for the results seen by Stocchetti et al., who described a subset of patients wrongly classified as severe. The same trend may explain significant correlation between GCS and 6-month Glasgow Outcome scale demonstrated between 1992 and 1996 and subsequent loss of correlation in the period 1997–2001. Very good predictive power as demonstrated in our study may be due to lack of prehospital care and lack of intubation facilities in peripheral hospitals and during transport.

We report lack of an association between sex and mortality in our study. This could be because we did not segregate female patients by age groups; and hence potential hormonal status, thereby resulting in the mixing of premenopausal, perimenopausal, and postmenopausal patients. Several studies that stratify patients by age and injury severity did find a gender-based survival advantage for premenopausal women with ISS > 15 and others documented a reduced incidence of sepsis and multiple organ dysfunction syndrome (MODS). Random blood sugar done at the time of admission and early blood transfusion were significant on bivariate analysis, but insignificant on multivariate analysis. This could be due to a very small number of patients with hyperglycemia at admission. In contrast to other studies, blood transfusion was not found to be significantly associated with mortality. This could be because none of the patients received massive blood transfusion.

One important findings of our study is the positive association between referral and BPL status. Possible explanations include BPL patients tending to primarily present at nearer hospitals (with subsequent referral) due to the patient’s lack of funds to hire transportation to another hospital, lack of knowledge of other health facilities, or selective referral of poorer patients by the peripheral hospital due to lack of adequate financial reimbursement for the services provided.

None of the 71 patients with GCS scores < 8 had airway protected by endotracheal intubation, contrary to current recommendations that seek to prevent hypoxia and hypercarbia, and thereby poorer neurological outcome from head trauma. This leads to a strong emphasis on ensuring airway protection during retrieval/transfer in the Indian settings. The lack of cervical spine immobilization and intubation may reflect the lack of suitably trained emergency department staff and/or lack of equipment at the referral hospitals. The choice of inadequate resuscitative intravenous fluids (other than Ringer lactate of normal saline which are recommended by ATLS Course) in 22 (5.94%) patients and the prevalence of untreated hypotension at arrival found in 106/317 (32.41%) referred patients without neurogenic shock may signify delayed recognition of shock states and under resuscitation in patients. However, this is a contentious issue as there is decent literature to suggest that relative hypotension may be actually helpful. The paucity of documentation of the patient’s clinical status, the time of injury, time of referral, rampant use of non-ambulance vehicles for transferring referred patients, and lack of transfer request was alarming. Our finding that admission and subsequent transfer from a peripheral hospital is associated with significant delay in admission to trauma center confirms the finding of other studies. A surprising finding of our study was lack of significantly higher mortality in the transferred group, despite the fact that it was more severely injured and presented significantly later to the trauma center when compared with the directly admitted group. The reason for this
could be a very high number of injuries that are neither
time critical nor affected by the place of treatment and
very low numbers of patients in subgroups (major
trauma, severe head injury, subdural hematoma (SDH),
and extradural hematoma (EDH)) where early treatment
at trauma center is known to be beneficial.

An important finding in our study was a significantly
higher percentage of multisystem major trauma patients
and severe head injury patients in the referred group. An
important trend, though statistically insignificant seen
in our study was lower mortality in severe head injury
patients, subdural hematoma patients, and major trauma
patients in the directly admitted group.

CONCLUSION

This study showed that age, ISS, APTT, and GCS may be
considered as externally valid predictors of mortality in
the trauma patients. However, since bootstrapping only
provides limited estimates of external validity, there
is a need to test these factors against the well accepted
requirements of external validity namely population,
ecological, and temporal validity.

Studies focusing on GCS as predictor of mortality should
consider following patients up to at least 3 weeks and
preferably up to 8 weeks. Compared to the directly
admitted patients, referred admitted patients at the
KGMU trauma center present significantly late to the
trauma center, are more critically ill, have higher
percentages of multisystem major trauma and severe
head injury patients. However, mortality is similar in
both the groups.

Positive association of BPL status with referral as reported
by us needs to be further researched in order to find the
exact cause.

There is a need for a rational referral policy contributed
to and agreed by all service providers which must be
strongly enforced without delay. On the basis of evidence
generated by this paper and similar papers published
elsewhere our recommendations are that:

- All hospitals and interfacility transfer ambulances share a unified electronic medical record
- Evidence-based standard international guidelines should be adapted locally and disseminated to all
  healthcare providers who care for the traumatically injured
- All transfer of substantially injured patients should be accompanied by trained healthcare providers
- All vehicles involved with the transfer of injured patients should contain agreed upon basic equipment.
- Standardized communication with the receiving trauma facility should be mandated before patient transfer.

REFERENCES

1. Baker SP, O’Neill B, Haddon W Jr, Long WB. The injury severity score: A method for describing patients with multiple injuries and evaluating trauma care. J Trauma 1974;14:187-96.
2. Osler T, Baker SP, Long W. A modification of the injury severity score that improves both accuracy and simplifies scoring. J Trauma 1997;43:922-5.
3. Champion HR, Sacco WJ, Copes WS, Gann DS, Gennarelli TA, Flanagan ME. A Revision of the Trauma Score. J Trauma 1989;29:623-9.
4. Meredith W, Rutledge R, Hansen AR, Oller DW, Thomason M, Cunningham P, et al. Field triage of trauma patients based upon the ability to follow commands: A study in 29,573 injured patients. J Trauma 1995;38:129-35.
5. Boyd CR, Tolson MA, Copes WS. Evaluating trauma care: The TRISS Method. Trauma Score and the Injury Severity Score. J Trauma 1987;27:370-8.
6. Heckbert SR, Vedder NB, Hoffman W, Robert K, Hudson LD, Jurkovich GJ, et al. Outcome after hemorrhagic shock in trauma patients. J Trauma 1998;45:545-9.
7. Malone DL, Dunne J, Tracy JK, Putnam AT, Scalea TM, Nepalitano LM. Blood transfusion independent of shock severity is associated with worse outcome after trauma. J Trauma 2003;54:898-905.
8. Callaway DW, Shapiro NL, Donnino MW, Baker C, Rosen CL. Serum lactate and base deficit as predictors of mortality in normotensive elderly blunt trauma patients. J Trauma 2009;66:1040-4.
9. Rangarajan K, Subramanian A, Pandey RM. Determinants of mortality in trauma patients following massive blood transfusion. J Emerg Trauma Shock 2011;4:58-63.
10. Hess JR, Lindell AL, Stansbury LG, Dutton RP, Scalea TM. The prevalence of abnormal results of conventional coagulation tests on admission to a trauma centre. Transfusion 2009;49:34-9.
11. Yendamuri S, Fulda GJ, Tinkoff GH. Admission hyperglycemia as prognostic indicator in trauma. J Trauma 2003;55:33-8.
12. Teixeira PG, Inaba K, Salim A, Rhee P, Brown C, Browder T, et al. Preventable mortality at a mature trauma centre. Arch Surg 2009;144:536-41.
13. Baxt WG, Moody P. The impact of rotocraft aeromedical emergency medical care service on trauma mortality. JAMA 1983;249:3047-51.
14. Nathens AB, Jurkovich GJ, Maier RV, Grossman DC, MacKenzie EJ, Moore M, et al. Relationship between trauma centre volume and outcome. JAMA 2001;285:1164-7.
15. DuBoise JJ, Browder T, Inaba K, Teixeira PG, Chan LS, Demetriades D. Effect of trauma centre designation on outcome in patients with severe brain injury. Arch Surg 2008;143:1213-7.
16. Bruijns SR, Guly HR, Bouamra O, Lecky F, Lee WA. The value of traditional vital signs, shock index, and age-based markers in predicting trauma mortality. J Trauma Acute Care Surg 2013;74:1432-7.
17. Kauvar DS, Lefering R, Wade CE. Impact of hemorrhage on trauma outcome: An overview of epidemiology, clinical presentations, and therapeutic considerations. J Trauma 2006;60 (6 Suppl):S3-11.
18. Risberg B, Medegård A, Heideman M, Gyzander E, Bundsen P, Odén M, et al. Early activation of humoral proteolytic systems in patients with multiple trauma. Crit Care Med 1986;14:917-25.
19. Timmons SD, Bee T, Webb S, Diaz-Arrastia RR, Hesdorffer D. Using the abbreviated injury severity and Glasgow Coma Scale scores to predict 2-week mortality after traumatic brain injury. J Trauma 2011;71:1172-8.
20. Stocchetti N, Pagan F, Calippi E, Canavesi K, Beretta L, Citera G, et al. Inaccurate early assessment of neurological severity in head injury. J Neurotrauma 2004;21:1131-40.
21. Balestrieri M, Czosnyka M, Chatfield DA, Steiner I, Schmidt EA, Smielewski P, et al. Predictive value of Glasgow coma scale after brain trauma: Change in trend over the past ten years. J Neurol Neurosurg Psychiatry 2004;75:161-2.
22. Wohlffmann CD, Franklin GA, Boaz PW, Luchette FA, Kearney PA, Richardson JD, et al. A multicenter evaluation of whether gender dimorphism affects survival after trauma. Am J Surg 2001;181:297-300.
23. Mustafa G, Huynh T, Sing RF, Miles WS, Norton HJ, Thomason MH. Gender-related outcomes in trauma. J Trauma 2002;53:430-4.
24. George RL, McGwin G Jr, Windham ST, Melton SM, Metzger J, Chaudhry IH, et al. Age-related gender differential in outcome after blunt or penetrating trauma. Shock 2003;19:28-32.
25. Offner PJ, Moore EE, Biffl WL. Male gender is a risk factor for major infections after surgery. Arch Surg 1999;134:935-8.
26. Oberholzer A, Keel M, Zellweger R, Steckholzer U, Trentz O, Ertel W. Incidence of septic complications and multiple organ failure in severely injured patients is sex specific. J Trauma 2000;48:932-7.
27. Croce MA, Fabian TC, Malhotra AK, Bee TK, Miller PR. Does gender difference influence outcome? J Trauma 2002;53:889-4.
28. Working Party of the Neuroanaesthesia Society and Association of Anaesthetists: Recommendations for the Transfer of Patients with Acute Head Injuries to Neurosurgical Units. London: Neuroanaesthesia Society of Great Britain and Ireland and the Association of Anaesthetists of Great Britain and Ireland; 1996.
29. Coulter IC, Brennan PM, Duthie G, Baxter A, McCabe AJ. Are we following the guiding SIGN when managing paediatric head injury? Surgeon 2011;9:83-7.
30. Peterson SR, Ad Hoc Committee on Rural Trauma. Interfacility Transfer of Injured Patients: Guidelines for Rural Communities. USA: American College of Surgeons Committee on Trauma; 2002. Available from: https://www.facs.org/~media/files/quality%20programs/trauma/publications/ruralguidelines.ashx.
31. Fatovich DM, Phillips M, Jacobs IG. A comparison of major trauma patients transported to trauma centers vs. non-trauma centers in metropolitan Perth. Resuscitation 2011;82:560-3.
32. Helling TS, Davit F, Edward K. First echelon hospital care before trauma center transfer in a rural trauma system: Does it affect outcome? J Trauma 2010;69:1362-6.

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