

## Case Conference

Presenter: R1 李岱晃  
Supervisor: VS 王瑞芳  
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## Prognostic factor



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### Patterns of injury and functional outcome after hanging: analysis of the National Trauma Data Bank

Matthew J. Martin, M.D.<sup>a,b,c</sup>, Janie Weng, B.S.<sup>a,b</sup>, Demetrios Demetriades, M.D., Ph.D.<sup>a,b</sup>,  
Ali Salim, M.D.<sup>a,b</sup>

<sup>a</sup>Division of Trauma and Surgical Critical Care, Keck School of Medicine, University of Southern California, Los Angeles, CA, USA  
<sup>b</sup>Department of Surgery, Los Angeles County and University of Southern California Medical Center, 1200 N. State St., Room 10-750,  
Los Angeles, CA 90033, USA

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## Prognostic factor

Table 2  
Comparison of hospital survivors with nonsurvivors

Variable	Survived (N = 445)	Died (N = 118)	P
Age (y)	30.4 ± 13.1	31.2 ± 14.2	.57
Sex	368 M, 77 F	97 M, 21 F	.90
ISS	6.0 ± 8.7	14.7 ± 11.0	<.001
Base deficit	4.1 ± 6.6	8.9 ± 10.7	<.001
GCS	9.0 ± 5.1	3.3 ± 1.6	<.001
Systolic BP (mm Hg)	133 ± 31	124 ± 55	.02
Respiratory rate	14.9 ± 9.9	5.7 ± 8.8	<.001
Hospital stay (d)	5.2 ± 9.3	3.2 ± 4.8	.02

BP = blood pressure; GCS = Glasgow coma score; ISS = Injury Severity Score.

### Outcome of Cervical Near-Hanging Injuries

Shawwn D. Nichols, MD, Mary C. McCarthy, MD, Akpefare P. Ekeh, MD, Randy J. Woods, MD,  
Mbaga S. Wahuimbi, MD, and Jonathan M. Saxe, MD

**Background:** Cervical near-hangings are not rare, but have received little attention in the trauma literature. Increasing numbers of patients received from our local jail and detention centers prompted this study.

**Methods:** Seventeen-year review of a level I Trauma Center Registry identified 67 patients with cervical strangulation for study. Data were analyzed using the Mann-Whitney test to evaluate continuous predictors, and Fisher's exact test for categorical predictors.

**Results:** Ten of 67 patients died (14.9% mortality). Patients having a lower

Glasgow Coma Score (GCS) at the scene (3.5 ± 1.3 vs. 8.3 ± 5.0;  $p = 0.001$ ) and lower GCS in the emergency department (ED) (3.0 ± 0.0 vs. 9.0 ± 5.3;  $p < 0.001$ ) were more likely to die. Injuries consisted predominantly of neck abrasions and anoxic brain injuries (83% mortality). Laryngeal fractures and carotid arterial injuries were detected. No cervical spine fractures were seen, but subluxations were identified. Forty-two percent of the patients were in detention centers when the near-hanging incident occurred.

**Conclusions:** Cervical near-hangings are referred to the Trauma Service for

evaluation. Scene or ED GCS of 3 does not preclude neurologically intact survival, although mortality is high. In our study, the most useful prognostic factors were the need for airway control by intubation or cricothyrotomy, cardiopulmonary resuscitation, laryngeal fracture, and ED GCS, and cerebral edema on CT scans. Optimal evaluation includes head and neck CT and CT angiography of the neck. We plan to share these results with local authorities and encourage improvement in risk identification, with earlier involvement of mental health personnel.

J Trauma. 2009;66:174–178.

## Take Home Massage

- Detail Hx and PE
- Manegement
  - A: Airway + C-spine immobilization potential delay obstruction
  - B: prevent pulmonary complication
  - C: Take care of vascular injury
  - D: treat IICP, check GCS

## Thank You For Your Attention!!

台北當代藝術館 張涓 和平二號

Iserson KV. Strangulation: a review of ligature, manual, and postural neck compression injuries. Ann Emerg Med 1984;13:179–185

- MAJOR TRAUMA , OHCA WITH ROSC
- Imaging findings :
- CT of brain without contrast enhancement shows:
  - \* Effacement of the bilateral sulci/fissures and ventricular system. Blurring of the gray-white matter differentiation. Above findings are compatible with **brain edema**.
  - \* No definite acute intracranial hemorrhage.
  - \* Lesion, 0.8-cm with calcified nodule within left maxillary Sinus.

CT of neck, chest & abdomen with/without contrast enhancement shows:

- \* Smooth alignment of the C-spine. No definite bony fracture or epidural hematoma noted.
- \* No definite dissection or aneurysm formation in the bilateral neck vessels.
- \* Nodular and patchy opacities at LUL may be due to pulmonary hemorrhage or lung contusion. No definite pneumothorax or hemothorax.
- \* No pneumoperitoneum or hemoperitoneum.
- \* Mild fatty liver.
- \* Local ileus of the stomach and bowel loops with increased wall enhancement may be due to prior shock episode.
- \* A 3.2-cm hypodense lesion at right adnexa, R/O ovarian cyst or endometrioma.
- \* No definite bony fractures.

- Impression :
- 1. Severe brain edema. No definite acute intracranial hemorrhage.
- 2. No definite C-spine injury or neck vessel injury.
- 3. Suspect pulmonary hemorrhage at LUL.
- 4. No definite traumatic insult over intraabdominal solid organs.
- 5. Rt ovarian corpus luteal cyst or endometrioma.
- 6. Left maxillary sinus lesion. Benign nature is favored.

- **Fig. 1.**—33-year-old woman who attempted suicide by hanging. When interpreting imaging studies in trauma cases, it is useful to apply mnemonic developed for resuscitation: ABCD.
- **A**, Airway maintenance, Breathing, Circulation: CT angiogram shows fracture–dislocation of cricoid cartilage and severe obstruction of airway by soft-tissue swelling (arrowheads). Bilateral common carotid artery dissections are depicted as crescentic nonenhancement of abnormally round vessels (arrows). Patency of jugular veins and vertebral arteries is shown (asterisks). Soft-tissue emphysema caused by airway disruption is present.
- **B**, Disability: Digital subtraction angiogram of right common carotid artery shows subintimal dissection (arrow ).
- Downstream margin of subintimal hematoma shows irregularity toward bifurcation (arrowhead ), suggestive of clot and most likely source of emboli to right middle cerebral artery.