

## INTRODUCTION

Damage Control Surgery (DCS) has decreased the mortality of severe patients with high probability of dying in the next few minutes. To decrease the delay in the decision and avoid the overuse of this procedure, indications for (DCS) have been investigated.

Predicting the need of DCS from preoperative variables without lab reports, would be a great tool for surgeon.

Specific predictors of damage control laparotomy (DCL) in penetrating abdominal trauma (PAT) have not been developed.

## OBJECTIVES

To find a mathematical model, based on clinical preoperative parameters, to be incorporated in electronic devices, to help surgeons in the decision process of DCL in PAT.

## METHODS

Retrospective study of all adult patients that required laparotomy for a penetrating injury from January, 2004 to December, 2015 at a Level I Trauma Center. Clinical variables upon admission were evaluated to determine their ability individually and collectively to identify the need for DCS, including: mechanism of injury, triage Revised Trauma Score (tRTS), Shock Index (SI) and Glasgow Coma Scale (GCS). Logistic regression analysis was performed to create the best predictive model.

## RESULTS

503 patients were included, 212 required DCS. The most common mechanism of injury was firearm wound (FAW) (86.5%). DCS was performed in 46.3% of the patients with FAW and in 19.1% of patients with stab wounds. Univariate analysis identified FAW, heart rate, systolic blood pressure, GCS, tRTS and SI as potential predictors (p<0.001). tRTS or SI alone showed a modest discriminative ability. The inclusion of GCS and FAW increased the discriminative ability of SI

## REFERENCES

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Table. Predictive models of DCL in PAT

Model	AUROC (95% C.I)
tRTS	0.632 (0.589 – 0.674)
tRTS + Firearm wound	0.659 (0.616 – 0.7029)
SI	0.674 (0.626 – 0.721)
SI + GCS	0.707 (0.660 – 0.753)
SI + GCS + Firearm wound	0.735 (0.691 – 0.778)

The final model (SI + GCS + FAW) had a good AUROC adequate calibration (p=0.291).

$$\text{Probability of DCL} = \frac{1}{1 + [e^{-(0.813+1.3738*\text{firearm}-0.2460*\text{GCS}+1.1711*\text{SI})}]}$$

Calculator of the probability of damage control laparotomy in penetrating abdominal trauma (GOT-SHOT)

Firearm  Stabwound

Heart rate: 110

Systolic blood pressure: 70

Glasgow coma scale: 9

Clear Calculate

Shock Index: 1.57

Probability: 88%

Screen of the application

## CONCLUSIONS

We have successfully created a preoperative predictive mathematical model that includes trauma mechanism, GCS and SI, that can be used in a mobile app to reliably predict the need for DCS.