

## Is there a role for CT imaging with rectal contrast in abdominal gunshot wounds? A retrospective review comparing CT imaging with IV contrast vs rectal contrast

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### Introduction

Gunshot wounds (GSW) can cause devastating injury and mortality in trauma patients. CT imaging with rectal contrast historically has been a useful tool to help identify potential colon/rectal injuries, however recent trends have shown less utilization of rectal contrast, in favor of IV contrast CT imaging alone. This study aims to identify the utility of CT imaging with IV contrast versus rectal contrast in patients with potential intraabdominal injury due to GSW

### Methods

Retrospective review 2017-2021

150 patients identified, 120 CT IV contrast, 30 CT Rectal Contrast

Identification of colon/rectal injury, enteric injury, missed injuries

### Results

CT IV contrast: Sensitivity 96%, Specificity 67%

CT IV Contrast PPV 79.1%, NPV 93.5%

CT Rectal Contrast: Sensitivity 85.7%, Specificity 42.8%

CT Rectal Contrast PPV 33.3%, NPV 90%

Proportion of missed injury for operative patients that underwent CT with IV contrast (3%) vs CT with rectal contrast (14%), not statistically significant (p=0.18)

### Figure 2 - Evaluation for Colon/Rectal Injury

	CT- IV	CT IV + Rectal
Sensitivity	84% [69.6%-98.4%] 95% CI	88.9% [68.4%-100%] 95% CI
Specificity	96.8% [93.33%-100%] 95% CI	90.5% [77.9%-100%] 95% CI
Positive Predictive Value	87.5% [74.3%-100%] 95% CI	80% [55.2%-100%] 95% CI
Negative Predictive Value	95.8% [91.83%-99.8%] 95% CI	95% [85.5%-100%] 95% CI

Table 2 Sub-group statistical evaluation for colon/rectal injury  
95% CI  
P Value < 0.01 for Specificity, Predictive Values

### Figure 3 - Comparison of management

CT IV		CT IV + Rectal
34.16%	Non-Op Management	43.33%
30.40%	No enteric injury at time of operation*	30%
13.33%	Missed enteric injury not identified on CT	16.67%
2.40%	Failure of non-op management	0%

### Discussion

The study suggests that CT imaging with IV contrast alone is sufficient in identifying enteric injury as well as ruling out enteric injury with better sensitivity and negative predictive value. When specifically looking at colorectal injuries, while CT with rectal contrast identified more directly, there were more injuries identified based on secondary findings that prompted operative intervention. While CT imaging with rectal contrast confidently identifies colon/rectal injuries, there are often secondary findings that will correctly prompt surgical exploration.

### References

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