“Found Down” Compartment Syndrome

Experience from the Front Lines of the Opioid Epidemic

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INTRODUCTION

With the worsening of the opioid epidemic, there has been an increasing number of cases in which patients are “found down” following a drug overdose and develop a crush injury resulting in muscle necrosis, rhabdomyolysis, and elevated compartment pressures in a unique presentation of compartment syndrome. The purpose of the present study is to summarize our experience at a trauma center in a region with a high endemic rate of opiate abuse to provide guidance for the management of patients with “found down” compartment syndrome.

RESULTS

- 30 patients identified over 12 year period
- 25 had fasciotomy: **Avg 4.2 operations, 20% infection rate, 12% amputation rate**
- Lactate, CPK, and Cre levels did not correspond with muscle viability or return of function
- At initial debridement, **56% had muscle of questionable viability, but improved at subsequent operations in 28% of those patients**
- 4 patients had no motor or neurological function on initial examination, and none had meaningful return of function
- Of the 10 patients who had partial neurological deficits, over half (70%) had some improvement in ultimate function.

Table 1: Baseline Patient Demographics

Pt #	Age	Sex	Cause of Compartment Syndrome	Compartment(s) Released/Involved	Time Down	# Op	LOS
Group 1: Examenable, Incomplete Neuro Deficits							
01	31	M	Assault (?)	Leg	Unknown	3	14
02	22	M	Overdose, ETOH, Cocaine	Forearm, Gluteal, Thigh	Unknown	5	40
03	50	M	Overdose, ETOH	Thigh, Leg	Unknown	4	9
04	26	M	Overdose, Heroin	Thigh, Leg	Unknown	4	11
05	43	M	Overdose, Psych Meds	Gluteal, Thigh	Unknown	4	17
06	32	M	Overdose, Heroin	Gluteal, Thigh	< 7 hours	4	10
07	32	M	Overdose, Opiate	Gluteal, Thigh, Leg	Overnight	5	26
08	51	M	Overdose, Unknown	Upper extremity, Gluteal, Thigh	Unknown	3	12
09	53	M	Overdose, Methadone	Thigh, Leg	Unknown	5	26
10	46	M	Overdose, Heroin	Forearm, Hand, Leg	Unknown	3	16
11	31	M	Overdose, Heroin	Leg	Unknown	0	9
12	31	F	Overdose, Narcan	Gluteal	6-8 hours	0	5
Group 2: Examenable, Complete Neuro Deficits							
13	29	F	Overdose, Heroin and Cocaine	Thigh, Leg	11-12 hours	8	31
14	37	M	Overdose, Heroin	Bilateral Thigh, Bilateral Leg	Unknown	9	76
15	23	M	Overdose, Psychiatric meds	Leg	12 hours	4	14
16	55	M	Overdose, Unknown	Forearm, Hand	< 16 hours	3	14
17	43	F	ETOH withdrawal	Leg	Unknown	0	14
18	29	M	Overdose, Unknown	Arm, Forearm, Hand	Unknown	0	6
Group 3: Unexamenable / Intubated							
19	26	M	Overdose	Thigh, Leg	< 6 hours	5	35
20	53	F	Overdose, ETOH	Leg	< 6 hours	6	26
21	22	M	Overdose, Opioid	Forearm, Gluteal, Thigh, Leg	< 13 hours	10	30
22	70	M	DKA	Leg	Unknown	1	12
23	34	F	Overdose, Psychiatric meds	Leg	Unknown	2	12
24	36	M	Seizure / Withdrawal	Forearm	Unknown	4	18
25	43	F	Overdose, Methadone	Forearm	Unknown	2	10
26	31	M	Overdose, Heroin and Cocaine	Thigh, Leg	Unknown	4	33
27	27	M	Overdose, "Drug"	Gluteal, Thigh, Leg	Unknown	4	19
28	46	M	Overdose, Psychiatric meds	Deltoid, Arm, Forearm, Thigh	~10 hours	2	23
29	34	M	Overdose	Forearm, Hand	Overnight	2	22
30	22	M	Overdose	Gluteal	Unknown	0	12

Patients in italics (Pt #11, 12, 17, 18, 30) were treated nonoperatively

METHODS

- Retrospective review
- Patients found unconscious from OD
- Presentation exam concerning for compt synd
- Divided into 3 groups based on presentation:
 - Partial deficits
 - Complete deficits
 - Unexamenable
- Data extracted: operative findings, hospital course, laboratory values, and discharge functional status were compared between the groups.

CONCLUSIONS

- For patients who are “found down” following an opiate overdose with crush injuries with concern for compartment syndrome:
- Requires multiple operations
 - **High surgical complication rate**
 - Pts with **absent function are unlikely to gain function after fasciotomy**
 - **The risk-benefit ratio of fasciotomy in this patient population may be different from that for patients with traumatic compartment syndrome.**

Figure1: Resolution of the renal effects of rhabdomyolysis in this patient population as demonstrated by the percentage of patients with elevated creatinine, elevated CPK, and requiring hemodialysis.