# **Re-operation and complication rates**

## in acute lower limb amputations secondary to trauma

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### **Introduction**

Lower limb amputation is associated with significant morbidity and mortality. 13.9% of lower limb amputations in UK are secondary to trauma <sup>(1).</sup>

Reflecting the predominance of vascular or diabetic disease as a cause for amputation, much of the available literature excludes amputation secondary to trauma in the reporting of complications rates. As such, there is paucity of literature with respect to the demographics, incidence and complication rates in this population.

#### <u>Aim</u>

To describe the rate of complications, defined as:

Re-operation Infection (superficial or deep) Phantom limb pain Neuroma Contralateral limb osteoarthritis

in acute\* lower limb amputations secondary to trauma \*<6 weeks from index trauma

#### <u>Method</u>

A retrospective analysis of prospectively collected database (Rehapp) from a regional multidisciplinary amputee service at (Queen Mary's Hospital, Roehampton).

Clinical records were reviewed and outcomes coded using Excel. A multivariate regression analysis was performed using Stata Version 17.

e e at		3622	837	484			204
Excel. ata		Amputations	Amputations secondary to trauma	Lower limb amputations secondary to trauma		a se i	ower limb mputations econdary to trauma ncluded in final data
Res	ults				missing Dexclude		analysis

Number of amputations	204
Number of bilateral amputations	12
Number of amputees	192
Mean age at amputation (years)	33.43229
Mean follow up (months)	230.8073
Range (months)	2 - 734

18	% Female	
	82%	Male

Mechanism of injury	n=192	%
RTA	106	55.21%
Train	21	10.94%
Blast injury	19	9.90%
Unknown	16	8.33%
Firearms	12	6.25%
Workplace accident	12	6.25%
Assault	2	1.04%
Jump from height	2	1.04%
Fire/burns	1	0.52%
Degloving	1	0.52%

.8073	
- 734	

Outcomes	n=204	%
Re-operation	72	35.29%
Infection	53	25.98%
Re-operation + infection	31	15.20%
Change of amputation level	13	6.37%
Neuroma	21	10.29%
Phantom limb pain	79	38.73%
Contralateral osteoarthritis	12	5.88%

	Odds ratio	Standard error	p-Value
Gender	0.85	0.37	0.700
Age	0.98	0.01	0.032
Infection	3.89	1.52	0.001
Phantom pain	1.62	0.56	0.167
Neuroma	0.93	0.54	0.901

Patients with infection were at a 3.89 times increased risk for re-operation (p=0.001). Older age is

## protective, with each year increase in age associated with a 2% decreased risk for re-operation (p=0.032).

## **Conclusion**

Our data demonstrates that acute lower limb amputations secondary to trauma exhibit higher rates of re-operation and infection compared to those for vascular or diabetic amputees, with infection as a significant risk factor for re-operation.<sup>(2,3)</sup> Conversely, lower rates of neuroma and phantom limb pain are reported in lower limb amputations secondary to trauma when compared to non-traumatic amputations.<sup>(4,5)</sup> This first study to provide high quality data describing the incidence of complications in acute lower limb amputations secondary to trauma when compared to non-traumatic lower limb amputations for secondary to trauma when compared to non-traumatic amputations.<sup>(4,5)</sup> This first study to provide high quality data

<sup>1.</sup> Moxey PW, Hofman D, Hinchliffe RJ, Jones K, Thompson MM, Holt PJE. Epidemiological study of lower limb amputation in England between 2003 and 2008. The British journal of surgery. 2010 Sep;97(9):1348-53. Ploeg AJ, Lardenoye J-W, Vrancken Peeters M-PFM, Breslau PJ. Contemporary series of morbidity and mortality after lower limb amputation. European journal of vascular and endovascular surgery : the official journal of the European Society for Vascular Surgery. 2005 Jun;29(6):633-7.

<sup>2.</sup> Aulivola B, Hile CN, Hamdan AD, Sheahan MG, Veraldi JR, Skillman JJ, et al. Major lower extremity amputation: outcome of a modern series. Archives of surgery (Chicago, III : 1960). 2004 Apr;139(4):395-9; discussion 399.

<sup>3.</sup> Limakatso K, Bedwell GJ, Madden VJ, Parker R. The prevalence and risk factors for phantom limb pain in people with amputations: A systematic review and meta-analysis. PloS one. 2020;15(10):e0240431.

<sup>4.</sup> List EB, Krijgh DD, Martin E, Coert JH. Prevalence of residual limb pain and symptomatic neuromas after lower extremity amputation: a systematic review and meta-analysis. Pain. 2021 Jul;162(7):1906-13.