

# P 2365 Post-operative vertebral osteomyelitis – a disease with distinct clinical and microbiological characteristics

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## Background 1

A relevant subgroup (10-14%) of patients with vertebral osteomyelitis (VO) has a history of spine surgery. Infection in these patients is often caused by coagulase-negative staphylococci (CoNS) and might be clinically different from native VO. However, clinical, microbiological and outcome characteristics of this disease entity have not been well studied as most trials either excluded these patients or are limited by a small cohort and short observation period.

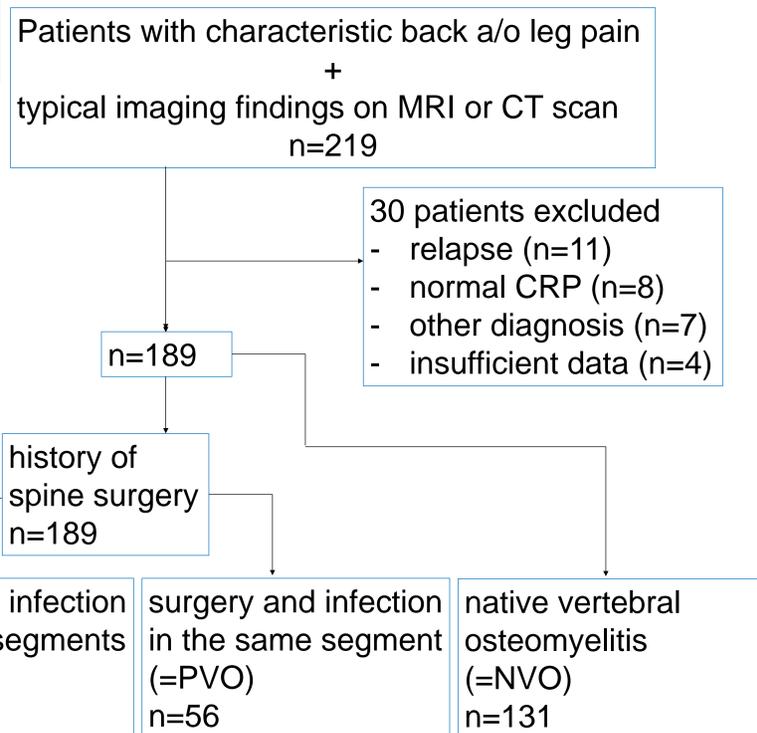
## Methods 2

Between 01/2008 and 06/2013 219 patients who presented to the Department of Orthopaedics at the University Hospital of Cologne with symptoms and imaging findings typical for VO were prospectively enrolled into the international registry Spine Tango and observed for a period of 2 years. All cases were reviewed by specialists in infectious diseases, clinical microbiology and orthopaedics to confirm the diagnosis. Survival was estimated by the Kaplan-Meier method. In addition, univariable and multivariable Cox regression models were fitted to estimate unadjusted and adjusted effect of surgery. Group comparisons between patients with or without prior surgery were performed using Fisher's exact test or Mann-Whitney-U test.

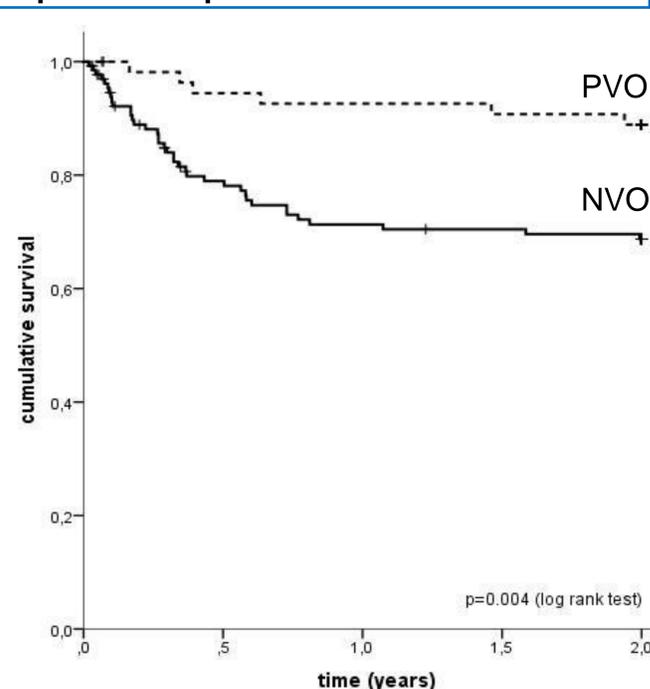
## Results 3

56 of 189 patients with confirmed diagnosis of VO reported a history of spine surgery in the same segment. Patients with native vertebral osteomyelitis (NVO) had a higher ASA<sup>1</sup> score (p=0.01), were more likely to suffer from comorbidities (p=0.003) and had *Staphylococcus aureus* identified as causative infectious agent in the majority of cases (34 vs. 18%, p=0.024). Infections caused by CoNS (20 vs. 4 %, p<0.001) and other bacteria of the skin flora were more prevalent in patients with post-operative VO (9 vs. 0%, p=0.002). After a median follow-up of two years, univariable Cox regression revealed that patients with NVO had a 3-fold increased mortality risk compared to patients with prior surgery (HR, 3.3, 95% CI, 1.4-7.9, p=0.006). The magnitude of the effect size remained stable in the multivariable model (HR 3.023, 95% CI 1.259-7.257 p=0.013), adjusted for ASA score and number of comorbidities. (<sup>1</sup>ASA = American Society of Anesthesiologists)

### Patient flow chart



### Kaplan-Meier plot for cumulative survival



## Conclusions 4

NVO and post-operative VO show distinct disease characteristics. Patients with NVO more often have comorbidities, have mainly *S. aureus* as causative pathogen and a 3-fold increased 2-year mortality risk compared to patients with post-operative VO.

### Multivariable Cox-Regression

	Hazard Ratio	95% CI for Hazard Ratio		p-value
		Lower	Upper	
native vertebral osteomyelitis vs. surgery and infection in the same segment	2.916	1.215	6.999	0.017
ASA score (continuous)	2.791	1.852	4.206	<0.001
number of comorbidities (reference: 0)				0.026 (overall p value)
1 vs. 0 comorbidities	1.985	1.022	3.854	0.043
>1 vs. 0 comorbidities	0.701	0.261	1.879	0.480