Peripheral Nerve Blocks Associated with Reduced Hospital Length of Stay and Increased Likelihood of Home Discharge After Pilon Fracture Fixation

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Background

- Peripheral nerve blocks have allowed earlier mobilization and shorter length of stay in the context of arthroplasty [1], [2]
- Early mobilization minimizes post-operative stiffness, post-traumatic arthritis, DVT, and pulmonary complications [3], [4]
- **Aim: Examine the effect of peripheral nerve blocks on hospital length of stay (LOS) and discharge location in patients with tibial plafond fractures**

Methods

- **Identified patients with pilon fractures from 2010-2020 using the PearlDiver Database**
- Stratified according to:
  - Fracture type (open vs. closed)
  - Nerve block type (sciatic vs. femoral)
  - Discharge locations (home vs. secondary facilities)
- **Univariate analysis**-demographics, comorbidities, and discharge location **(Table 1)**
- **Multivariate logistic regression**-adjustment factors with p-values <.2

Major Findings

- 16,204 patients sustained pilon fractures (2,313 open, 13,891 closed)
- 3,433 received sciatic nerve block, 2,981 received femoral nerve block
- **Reduced LOS with any form of nerve block (Table 2)**
- **Home discharge more likely with any form of peripheral nerve block (Table 3)**
  - More likely in patients with closed fracture and peripheral nerve block
  - No difference in nerve block location for open fractures
- **Multivariable analysis confirmed that patients with closed pilon fractures who received a peripheral nerve block had a higher likelihood of being discharged home (Table 4)**

Discussion

- Regardless of fracture severity, perioperative nerve blocks reduced length of hospital stay
- Patients with closed fractures were more likely to discharge home
- **Orthopedic trauma surgeons should consider providing peripheral nerve blocks to patients with pilon fractures**
- Minimizing LOS and need for skilled rehabilitation reduces adverse health outcomes, nosocomial infections, and healthcare costs.

Results

	Control		Peripheral Nerve Block		
	n	%	n	%	P-value
Total	15264		3678		
Age	47.314		46.982		**<0.001**
Male	7250	47.50%	1712	46.55%	0.309
Female	8014	52.50%	1966	53.45%	0.309
Charlson Comorbidity Index	1.579	0.01%	1.469	0.04%	**<0.001**
Congestive Heart Failure	1584	10.38%	263	7.15%	**<0.001**
Arrhythmias	4595	30.10%	1047	28.47%	**0.054**
Valvular Disease	1823	11.94%	371	10.09%	**0.002**
Pulm Circ Disorders	839	5.50%	168	4.57%	**0.027**
Peripheral Vascular Disease	2103	13.78%	432	11.75%	**0.001**
Rheumatoid Arthritis	1217	7.97%	293	7.97%	1.000
Hypertension	4851	31.78%	1086	29.53%	**0.009**
Paralysis	563	3.69%	78	2.12%	**<0.001**
Chronic Pulmonary Disease	4270	27.97%	986	26.81%	**0.162**
Hypothyroidism	2445	16.02%	602	16.37%	0.622
Chronic Kidney Disease	1693	11.09%	332	9.03%	**<0.001**
Coagulopathy	788	5.16%	168	4.57%	**0.151**
Fluid and electrolyte disorders	4733	31.01%	1083	29.45%	**0.058**
Blood loss anemia	647	4.24%	151	4.11%	0.753
Deficiency anemia	2029	13.29%	431	11.72%	**0.012**
Alcohol abuse	380	2.49%	90	2.45%	0.928
Drug abuse	2751	18.02%	760	20.66%	**<0.001**
Psychoses	1005	6.58%	201	5.46%	0.140
Depression	5609	36.75%	1445	39.29%	**0.004**
Obesity	2643	17.32%	652	17.73%	0.571
Smoking	3847	25.20%	1069	29.06%	**<0.001**
Diabetes Mellitus	3053	20.00%	652	17.73%	**0.002**

Table 1: Demographics and comorbidities amongst patients with pilon fractures

	Control		Sciatic Nerve Block			Femoral Nerve Block		
	Time (Days)	SE	Time (Days)	SE	P-value	Time (Days)	SE	P-value
All Fracture	7.059	9.931	6.021	5.885	**<0.001**	6.205	5.964	**<0.001**
Closed Fracture	6.637	10.076	5.800	5.543	**<0.001**	5.465	5.861	**<0.001**
Open Fracture	9.124	9.157	7.599	7.033	**0.0322**	8.595	7.395	**<0.001**

Table 2: ANOVA analysis comparing length of stay amongst patients who received peripheral nerve block vs. control

	Control		Sciatic Nerve Block			Femoral Nerve Block		
	n	%	n	%	P-value	n	%	P-value
All Fracture	1796	11.77%	334	9.73%	**0.003**	291	9.76%	**0.002**
Closed Fracture	1591	11.45%	278	9.76%	**0.007**	203	9.53%	**0.010**
Open Fracture	326	14.09%	61	9.69%	0.1427	48	11.48 %	0.1765

Table 3: Univariate analysis comparing rates of home discharge amongst patients who received a peripheral nerve block vs. control

	Sciatic Nerve Block				Femoral Nerve Block			
	Odds Ratio	Lower 95% CI	Upper 95% CI	P-value	Odds Ratio	Lower 95% CI	Upper 95% CI	P-value
All Fracture	0.845	0.805	0.887	**<0.001**	0.847	0.804	0.891	**<0.001**
Closed Fracture	0.831	0.784	0.881	**<0.001**	0.801	0.749	0.856	**<0.001**

Table 4: Multivariate analysis comparing rates of home discharge amongst patients who received a peripheral nerve block vs. control

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