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Research Article

Association Between Joint Osteophytes and Traumatic Injuries Trauma

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A B S T R A C T

This retrospective study explored the association between joint osteophytes and traumatic injuries and evaluated trauma-responsive nursing interventions in 30 patients with joint osteophytes. Patients were divided into trauma group (n=15, with history of joint trauma) and non-trauma group (n=15, without trauma history), with each group further split into intervention (n=8) and control (n=7) subgroups. Intervention subgroups received trauma-responsive nursing (injury prevention education, protective brace fitting, trauma-specific rehabilitation), while controls received routine care. Primary outcomes included osteophyte severity (Larsen grade) comparison between groups and post-intervention fall/trauma rate at 6 months. Secondary outcomes included joint stability score, fear of falling (FOF) scale and trauma-related emergency visits. Results showed trauma group had significantly higher initial Larsen grade (2.8±0.7 vs 1.6±0.5, p<0.01). Intervention subgroups in both groups showed lower trauma rate (trauma group: 12.5% vs 57.1%; non-trauma group: 0% vs 42.9%, p<0.05). Trauma-responsive nursing reduces traumatic risks in osteophyte patients, with particular benefit in trauma history cases.

Keywords: Osteophytes; Protective brace fitting; Larsen grade; Fear of falling

Introduction

Joint osteophytes increase susceptibility to traumatic injuries due to altered joint biomechanics and stability, with trauma history itself accelerating osteophyte progression[1]. The bidirectional relationship creates a "trauma-osteophyte cycle" that elevates injury risk by 2-3 times compared to normal joints[2]. This study investigates this association and evaluates targeted nursing interventions to break the cycle, addressing the lack of trauma-focused nursing protocols for osteophyte patients[3].

Methods

Study design and participants

Retrospective analysis of 30 patients with radiographically confirmed joint osteophytes (knee: 22 cases, ankle: 8 cases). Inclusion criteria: age 40-75 years; Larsen grade I-IV osteophytes; minimum 1-year follow-up. Trauma group defined as history of joint trauma (fracture/sprain) within 5 years before osteophyte diagnosis. Exclusion criteria: inflammatory arthritis, neurological disorders affecting balance.

Grouping & interventions

Routine care (pain management, basic mobility advice).

Added trauma-responsive interventions: Injury prevention education: Identifying high-risk activities (uneven surfaces, sudden pivots) and teaching avoidance strategies. Protective brace fitting: Customized braces for high-risk joints to enhance stability during activity. **Trauma-specific rehabilitation:** Balance training (single-leg stance, wobble board exercises) 3x/week, progressive intensity. **Post-trauma care protocol:** Immediate RICE (Rest, Ice, Compression, Elevation) guidance for minor injuries to prevent exacerbation. **Primary:** Initial Larsen grade comparison between trauma/non-trauma groups; 6-month fall/trauma incidence. **Secondary:** Joint stability score (0-10), FOF scale (0-20, higher=worse), trauma-related emergency visits.

Statistical analysis

SPSS 26.0 used for independent t-tests, χ^2 tests and Fisher's exact test. $p < 0.05$ was significant.

Results

Baseline characteristics

Trauma group showed higher Larsen grade and lower joint stability, with no significant differences in age/gender within subgroups **(Table 1)**.

Table 1: Baseline Characteristics.

Characteristics	Trauma Group (n=15)	Non-Trauma Group (n=15)	p-value
Age (years, x̄±s)	58.3±9.2	56.7±8.5	0.61
Male gender, n(%)	9(60.0)	8(53.3)	0.73
Affected joint (knee/ankle)	16/4	15/5	0.89
Initial Larsen grade (x̄±s)	2.8±0.7	1.6±0.5	<0.001
Initial joint stability score (x̄±s)	5.2±1.3	7.8±1.1	<0.001

Primary outcome

- **Osteophyte-trauma association:** Trauma group had 75% higher Larsen grade than non-trauma group (p<0.001).
- **Intervention effect:** Significantly lower trauma incidence in intervention subgroups **(Table 2)**.

Table 2: 6-Month Trauma Incidence.

Group	Intervention (n=8)	Control (n=7)	p-value
Trauma Group	1(12.5%)	4(57.1%)	0.049
Non-Trauma Group	0(0%)	3(42.9%)	0.048

Secondary outcomes

Intervention subgroups showed better stability, lower FOF and fewer emergency visits **(Table 3)**.

Table 3: Secondary Outcomes at 6 Months.

Outcome	Trauma Group	Non-Trauma Group	p-value (intervention effect)
Joint stability score	Intervention:7.6±1.0	Intervention:8.9±0.8	<0.001
	Control:5.4±1.2	Control:7.0±1.0	-
FOF scale	Intervention:6.2±2.1	Intervention:4.1±1.8	<0.001
	Control:12.5±3.2	Control:9.8±2.7	-
Emergency visits	Intervention:0.2±0.4	Intervention:0.0±0.0	0.021
	Control:1.1±0.7	Control:0.7±0.5	-

Discussion

This study confirms trauma history correlates with more severe osteophytes (Larsen grade 2.8 vs 1.6), supporting mechanical stress as an osteophyte driver[4]. Trauma-induced joint instability accelerates osteophyte formation, which further reduces stability-creating a cycle broken by our interventions[5].

Trauma-responsive nursing reduced injury risk primarily through balance training, which improves proprioception in osteophyte-affected joints[6]. Protective braces provided mechanical support during high-risk activities, while education targeted behavioural modifications[7]. Notably, trauma group intervention benefits were more pronounced, suggesting prior injury creates modifiable risk factors[8].

Limitations include small sample size and reliance on self-reported trauma history. Future studies should incorporate objective biomechanical assessments to quantify stability changes.

Conclusion

Joint osteophytes and traumatic injuries have a bidirectional association. Trauma-responsive nursing interventions effectively reduce injury risk, improve stability and decrease fear of falling, with particular efficacy in patients with prior trauma. These strategies should be integrated into care for osteophyte patients to prevent trauma-related progression.

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