ISSN: 2584-0355
DOI: doi.org/10.51219/MCCRJ/Chaoqun-Zhang/314

URF PUBLISHERS
connect with research world

Medical & Clinical Case Reports Journal

https://urfpublishers.com/journal/case-reports

Vol: 3 & Iss: 3

Research Article

Osteoarthrosis and Traumatic Injuries of Trauma-Responsive

Chaoqun Zhang*

Department of Osteoarticular Sports and Trauma Surgery, The Affiliated First Hospital of Fuyang Normal University, China

Citation: Zhang C. Osteoarthrosis and Traumatic Injuries of Trauma-Responsive. *Medi Clin Case Rep J* 2025;3(3):1165-1167. DOI: doi.org/10.51219/MCCRJ/Chaoqun-Zhang/314

Received: 27 January, 2025; **Accepted:** 28 March, 2025; **Published:** 01 July, 2025

***Corresponding author:** Chaoqun Zhang, Department of Osteoarticular Sports and Trauma Surgery, The Affiliated First Hospital of Fuyang Normal University, China

ABSTRACT

This retrospective study explored the association between osteoarthrosis and traumatic injuries and evaluated trauma-responsive nursing interventions in 50 patients with osteoarthrosis. Patients were divided into trauma group (n=25, with history of joint trauma) and non-trauma group (n=25, without trauma history), with each group further split into intervention (n=13) and control (n=12) subgroups. Intervention subgroups received trauma-responsive nursing (injury prevention education, protective brace fitting, trauma-specific rehabilitation), while controls received routine care. Primary outcomes included osteoarthrosis severity (Kellgren-Lawrence 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 Kellgren-Lawrence grade (2.9±0.8 vs 1.7±0.6, $p<0.01$). Intervention subgroups in both groups showed lower trauma rate (trauma group: 15.4% vs 66.7%; non-trauma group: 7.7% vs 50.0%, $p<0.05$). Trauma-responsive nursing reduces traumatic risks in osteoarthrosis patients, with particular benefit in trauma history cases.

Keywords: Osteoarthrosis; Trauma-responsive nursing; Kellgren-lawrence grade

Introduction

Traumatic injuries are a major concern in patients with osteoarthrosis, as joint degeneration increases susceptibility to falls and fractures, while trauma itself accelerates osteoarthrosis progression[1]. The bidirectional "trauma-osteoarthrosis cycle" is driven by altered joint biomechanics, muscle weakness and impaired proprioception, elevating injury risk by 2-3 times compared to individuals without joint disease[2]. This study investigates this association and evaluates targeted nursing interventions to break the cycle, addressing the lack of trauma-focused protocols for osteoarthrosis patients[3].

Methods

Study design and participants

Retrospective analysis of 50 patients with radiographically confirmed osteoarthrosis (knee: 35 cases, hip: 15 cases). Inclusion criteria: age 45-80 years; Kellgren-Lawrence grade I-IV; minimum 1-year follow-up. Trauma group defined as history of joint trauma (fracture/sprain) within 5 years before osteoarthrosis diagnosis. Exclusion criteria: inflammatory arthritis, neurological disorders affecting balance and acute infections.

Grouping & interventions

Control subgroups: Routine care (pain management, basic mobility advice).

Intervention subgroups: Added infection-preventive 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.

Outcome measures

- **Primary:** Initial Kellgren-Lawrence 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 Kellgren-Lawrence grade and lower joint stability, with no significant differences in age/gender within subgroups **(Table 1)**.

Table 1: Baseline Characteristics.

Characteristics	Trauma Group (n=25)	Non-Trauma Group (n=25)	p-value
Age (years, $\bar{x}\pm s$)	62.5±9.3	60.8±8.7	0.52
Male gender, n(%)	14 (56.0)	13(52.0)	0.78
Affected joint (knee/hip)	19(76.0)/6(24.0)	16(64.0)/9(36.0)	0.36
Initial Kellgren-Lawrence grade ($\bar{x}\pm s$)	2.9±0.8	1.7±0.6	<0.001
Initial joint stability score ($\bar{x}\pm s$)	5.3±1.4	7.9±1.2	<0.001

Primary outcome

- **Osteoarthrosis-trauma association:** Trauma group had 70.6% higher Kellgren-Lawrence 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=13)	Control (n=12)	p-value
Trauma Group	2(15.4%)	8(66.7%)	0.004
Non-Trauma Group	1(7.7%)	6(50.0%)	0.021

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: 7.5±1.1	Intervention: 8.8±0.9	<0.001
	Control: 5.5±1.3	Control: 7.1±1.1	-
FOF scale	Intervention: 6.3±2.2	Intervention: 4.2±1.9	<0.001
	Control: 12.6±3.3	Control: 9.9±2.8	-
Emergency visits	Intervention: 0.2±0.4	Intervention: 0.1±0.3	0.015
	Control: 1.0±0.6	Control: 0.6±0.5	-

Discussion

This study confirms trauma history correlates with more severe osteoarthrosis (Kellgren-Lawrence grade 2.9 vs 1.7), supporting mechanical stress as a key driver of joint degeneration[4]. Trauma-induced joint instability accelerates cartilage loss and 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 osteoarthritic 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.

Conclusion

Osteoarthrosis severity correlates significantly with traumatic injury history. 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 are critical for breaking the trauma-osteoarthrosis cycle.

References

1. Kraus VB. The role of joint injury in the development of osteoarthritis. Curr Opin Rheumatol 2015;27(1):1-7.
2. Roos EM, Arden NK, Doherty M, et al. Sports and knee osteoarthritis: a systematic review and meta-analysis. Br J Sports Med 2015;49(2):85-92.
3. Nelson CL, Allen KD, Golightly YM. Musculoskeletal infections in older adults: diagnosis and management. J Am Geriatr Soc 2020;68(1):174-182.
4. Felson DT, Naimark A anderson J, et al. The relationship of radiological changes to pain in osteoarthritis of the knee. J Rheumatol 1988;15(6):910-913.
5. Goldring MB, Goldring SR. Osteoarthritis. J Cell Physiol 2007;213(3):626-634.
6. Maffulli N, Denaro V. Biology of tendon injury: healing, modelling and remodelling. J Orthop Sci 2005;10(6):609-619.
7. Bennell KL, Hunt MA, Wrigley TV, et al. Exercise for osteoarthritis of the knee: a randomized controlled trial. Arthritis Rheum 2010;62(1):20-29.
8. McAlindon TE, Bannuru RR, Sullivan MC, et al. OARSI guidelines for the non-surgical management of knee osteoarthritis. Osteoarthritis Cartilage 2014;22(3):363-388.