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ORIGINAL ARTICLE

Pattern and Management of mid Face Fracture in patient Reporting to Saidu College of Dentistry

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ABSTRACT

Background: Midface fractures are a major part of maxillofacial injuries because of their functional and cosmetic significance. Patterns of these injuries are region-specific, and information is scarce in Khyber Pakhtunkhwa, especially in Swat. The purpose of this study was to establish the pattern of midface fractures and the treatment modalities in patients reporting to Saidu College of Dentistry, Swat.

Methods: This descriptive cross-sectional study carried out in the Department of Oral and Maxillofacial Surgery, Saidu College of Dentistry, Swat.. A total of 156 patients aged 10–60 years with clinically and radiologically diagnosed midface fractures were selected using consecutive non-probability sampling. Fractures were classified into Le Fort I, II, III, zygomaticomaxillary complex (ZMC), nasoethmoidal, and orbital fractures. The treatment modalities were divided into conservative and open reduction and internal fixation (ORIF). Data analysis was done using SPSS version 22. Chi-square test and independent sample t-test were used to find the association, and $p \leq 0.05$ was taken as significance.

Results: Young adults were the predominantly affected age group, with a marked preponderance of males. Road traffic accidents were the primary cause. ZMC fractures were the most common type of fracture. ORIF was done in slightly more than half of the patients. There was no significant association between fracture type and gender or between fracture type and management type. However, fracture displacement was significantly associated with the type of ORIF ($p < 0.001$). Patients undergoing ORIF had significantly longer hospital stays compared to those managed conservatively ($p < 0.001$).

Conclusion: Midface fractures in this region are predominantly seen in young males and are mainly due to road traffic accidents. Fracture displacement is a key determinant of surgical intervention, whereas fracture type alone does not influence the choice of management.

Keywords: Midface fracture, Le Fort fracture, Maxillofacial Trauma, Road Traffic Accident, Zygomaticomaxillary Complex

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Introduction

Maxillofacial injuries are a major contributor to morbidity associated with injuries worldwide, and midface fractures are a serious subset of maxillofacial injuries (1).

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The pattern of midface fractures differs greatly from one region to another, depending on factors such as socioeconomic conditions, traffic laws, interpersonal violence, and trauma care facilities (2). Road traffic accidents are the most common cause of midface fractures in low- and middle-income countries, while interpersonal violence and sports injuries are more common in high-income countries. Young males between the ages of 15 and 24 years have been found to be the most commonly affected group in most studies, due to their higher exposure to high-risk activities and occupational hazards (3).

The midface is a central and complex part of the craniofacial complex. The midface anatomically includes the maxilla, zygomatic bones, nasal bones, ethmoid bone, and the orbital structures, which are all connected by a series of vertical and horizontal buttresses that give the face its shape and provide biomechanical support. Due to its prominent projection and thin bony structures, the midface is very vulnerable to trauma. Fractures of the buttresses give rise to characteristic patterns of fractures, including Le Fort I, II, and III fractures, and zygomaticomaxillary complex fractures, nasoethmoidal fractures, and orbital fractures (4). These fractures can give rise to malocclusion, diplopia, enophthalmos, airway obstruction, infraorbital nerve dysfunction, and facial asymmetry, thus affecting mastication, speech, vision, and psychosocial well-being (5).

The pattern of midface fractures varies greatly from one region to another. In regions where high-velocity road traffic accidents are common, complex fractures such as Le Fort II and III fractures and comminuted zygomaticomaxillary complex fractures are common (6).On the other hand, in regions where there is a higher incidence of interpersonal violence, there is a higher incidence of isolated orbital and nasal fractures (7). There are also differences based on age, with a different pattern in the pediatric and adolescent population due to the elasticity of the bones and the underdeveloped sinuses, and in the geriatric population due to fractures from low-energy falls. These epidemiological differences emphasize the importance of local data for the management of these conditions (8).

The management of midface fractures is founded on the two-fold principle of restoring function and achieving a satisfactory aesthetic result. The management strategies vary from the conservative approaches of observation, closed reduction, and maxillomandibular fixation for minimally displaced and stable fractures to open reduction and internal fixation (ORIF), which has been established as the gold standard for managing displaced, unstable, and functionally compromising fractures (9).

Advances in rigid fixation and imaging technology have significantly enhanced the precision and outcome of surgery. However, the management of midface fractures is also influenced by fracture patterns, age of the patient, associated systemic injuries, surgical expertise, and local resources (10). Thus, there may be variations in the trends of management among institutions and geographical locations. In Pakistan, there has been a documented predominance of maxillofacial trauma in urban tertiary care centers, with road traffic accidents being the primary etiological factor.

Swat has a distinct geographical, socioeconomic, and transportation profile that may affect the mechanism of injury and the healthcare-seeking behavior. The Saidu College of Dentistry is a major referral center for oral and maxillofacial trauma in this region and thus offers a suitable environment for the assessment of trends in fracture management.

In view of the evidence of global variability in the pattern of midface fractures and their management, and the lack of data available for

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the region of Swat/KPK, there is a need for a systematic assessment of the cases that present to this tertiary care center. It is important to generate this evidence in order to understand the local epidemiological features. Hence, the aim of this descriptive cross-sectional study is to identify the pattern of midface fractures, namely Le Fort I, II, III, zygomaticomaxillary complex fractures, nasoethmoidal fractures, and orbital fractures, and their management modalities (conservative management vs. open reduction and internal fixation) in patients aged 10–60 years.

Methods

This was a descriptive cross-sectional study carried out in the Department of Oral and Maxillofacial Surgery, Saidu College of Dentistry, Swat, Pakistan, a tertiary care referral hospital for Swat and the surrounding districts of Khyber Pakhtunkhwa. The study was performed over a period of six months after approval from the Ethical Review Board (ERB) of Swat Medical College, which was obtained on 23 January 2024, having ethical approval number 12/ERB/24.

The formula for calculating sample size was used to calculate the sample size required for the estimation of a single proportion using OpenEpi version 3.01 software. Given the reference proportion of 2.6% as the prevalence of palatal fracture, as previously estimated in the literature, and a confidence level of 95% and margin of error of 2.5%, the minimum sample size was calculated to be 156 patients(11). A non-probability consecutive sampling technique was used, where all eligible patients reporting to the department with midface fractures were sampled consecutively until the required sample size was attained.

Patients aged 10 to 60 years, presenting with clinically and radiologically confirmed midface fractures, were considered eligible for inclusion. The diagnosis was made after a comprehensive clinical examination and relevant radiographic studies, such as orthopantomogram (OPG), paranasal sinus (PNS) view, lateral cephalogram, and computed tomography (CT) scan, as indicated. Patients with isolated mandibular fractures that did not involve the midface, pathological fractures due to neoplastic or metabolic bone disease, incomplete clinical or radiographic data, or patients who refused to participate in the study were excluded from analysis.

On initial presentation, a thorough clinical examination was conducted by a consultant oral and maxillofacial surgeon. Demographic data such as age and gender were collected, as well as the mechanism of injury if known. Clinical examination involved assessment of facial symmetry, occlusion, maxillary mobility, eye function, infraorbital nerve sensation, and nasal deformity. A radiographic review was done to verify the presence and nature of the fracture. The fractures were classified into predetermined categories based on their anatomy: Le Fort I, Le Fort II, Le Fort III, zygomaticomaxillary complex (ZMC) fractures, nasoethmoidal fractures, and orbital fractures. In complex midfacial trauma or orbital fractures, the CT scan was regarded as the gold standard radiographic study to improve the sensitivity of diagnosis and minimize the risk of misclassification.

The two main outcome variables of the study were the type of midface fracture and the modality of treatment used. Treatment was classified as either conservative (including observation, pharmacologic management, closed reduction, or maxillomandibular fixation without surgical exposure) or open reduction and internal fixation (ORIF), which included surgical exposure of the fracture segments with fixation using devices. Treatment was based on departmental guidelines and included fracture displacement, functional impairment, aesthetic

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considerations, and patient condition. Age, gender, and type of fracture were considered explanatory variables in relation to treatment choice.

To improve internal validity, all patients underwent evaluation by senior consultants in the department, and imaging results were analyzed together with clinical results to avoid information bias. Consecutive sampling helped to avoid the possibility of selective sampling during the study period. Data were collected using a structured and pre-designed proforma to avoid inconsistencies in data collection.

Data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 22. Continuous variables like age were analyzed for normality using the Shapiro-Wilk test. Variables that were normally distributed were expressed as mean ± standard deviation (SD), while those that were skewed were expressed using median and interquartile range (IQR). Categorical variables like fracture type and management type were expressed as frequency and percentage. Associations between categorical variables were tested using the Chi-square test. However, when the assumptions for Chi-square test were violated, especially in situations where expected cell frequencies were small, Fisher's exact test was used. A p-value of ≤ 0.05 was taken as significance, and all tests were two-tailed.

Results

A total of 156 patients with midface fractures were analyzed. The mean age of the patients was 32.49 ± 12.29 years (range: 11–60 years). The age group most commonly affected was 21–30 years (38.5%). There was a significant predominance of males, with 123 males (78.8%) and 33 females (21.2%), giving a male-to-female ratio of roughly 3.7:1. Most patients resided in rural areas (64.7%). Road traffic accidents were the most common cause (57.1%), followed by falls (16.7%) and assault (15.4%). The most common fracture pattern was zygomaticomaxillary complex (ZMC) fractures (35.9%), followed by orbital fractures (22.4%) and Le Fort II fractures (18.6%). The treatment modalities were almost equally distributed, with 80 patients (51.3%) undergoing open reduction and internal fixation (ORIF) and 76 patients (48.7%) treated conservatively. The demographic and clinical details are given in Table 1.

Table 1. Demographic and Clinical Characteristics of Patients (n = 156)

Variable	n	%
Gender		
Male	123	78.8
Female	33	21.2
Residence		
Rural	101	64.7
Urban	55	35.3
Age Group (years)		
10–20	23	14.7
21–30	60	38.5
31–40	30	19.2
41–50	29	18.6
51–60	14	9.0
Mechanism of Injury		
Road Traffic Accident	89	57.1
Fall	26	16.7
Assault	24	15.4
Sports	13	8.3
Firearm	2	1.3
Other	2	1.3
Fracture Type		
ZMC	56	35.9
Orbital	35	22.4
Le Fort II	29	18.6
Le Fort I	15	9.6
Nasoethmoidal	14	9.0
Le Fort III	7	4.5
Management		
Conservative	76	48.7
ORIF	80	51.3

Mean age: 32.49 ± 12.29 years

The distribution of fracture types was not significantly different between males and females ($\chi^2 = 2.367$, df = 5, p = 0.796), and there was no gender variation in fracture type distribution (Table 2). Also, while road traffic

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accidents were the main cause of fractures in most categories, the relationship between fracture type and injury cause was not statistically significant ($\chi^2 = 35.173$, df = 25, p = 0.085). A large number of cells had expected counts of less than five.

Table 2. Association Between Fracture Type and Gender

Fracture Type	Female n (%)	Male n (%)	Total	p-value
Le Fort I	4 (26.7%)	11 (73.3%)	15	
Le Fort II	4 (13.8%)	25 (86.2%)	29	
Le Fort III	2 (28.6%)	5 (71.4%)	7	
Nasoethmoidal	2 (14.3%)	12 (85.7%)	14	
Orbital	7 (20.0%)	28 (80.0%)	35	
ZMC	14 (25.0%)	42 (75.0%)	56	
Total	33 (21.2%)	123 (78.8%)	156	**0.796**

Chi-square = 2.367, df = 5

A highly significant association was found between fracture displacement and the treatment approach ($\chi^2 = 59.463$, df = 1, p < 0.001). In displaced fractures, 86.3% were treated with ORIF, while 75.0% of non-displaced fractures were conservatively managed. This result highlights the importance of displacement as a determinant for treatment (Table 3).

Table 3. Association Between Management Modality and Fracture Displacement

Displacement	Conservative n (%)	ORIF n (%)	Total	p-value
No	57 (75.0%)	11 (13.8%)	68	
Yes	19 (25.0%)	69 (86.3%)	88	
Total	76 (48.7%)	80 (51.3%)	156	**<0.001**

Chi-square = 59.463, df = 1

On the other hand, no statistically significant relationship was found between fracture type and treatment modality ($\chi^2 = 2.562$, df = 5, p = 0.767). This indicates that the treatment options were not entirely dependent on the fracture types. The incidence of polytrauma was found to be 2.6%, and its relationship with mechanism of injury was not statistically significant ($\chi^2 = 3.090$, df = 5, p = 0.686).

The mean hospital stay was significantly longer in patients treated with ORIF (7.31 ± 1.97 days) than in conservatively managed patients (2.03 ± 0.89 days). The independent samples t-test revealed a highly significant difference between the two groups (t = −21.43, p < 0.001), with a mean difference of 5.29 days (95% CI: −5.77 to −4.80). These results are summarized in Table 4.

Table 4. Comparison of Hospital Stay by Management Modality

Management	n	Mean ± SD (days)	Mean Difference	95% CI	p-value
Conservative	76	2.03 ± 0.89	5.29 days	−5.77 to −4.80	<0.001
ORIF	80	7.31 ± 1.97			

Independent samples t-test

Discussion

The current study offers a detailed analysis of the epidemiological trends and treatment practices of midface fractures reported to a tertiary care dental facility in Swat. The results clearly indicate the dominance of young males in the third decade of life, road traffic accidents as the primary cause of injury, and zygomaticomaxillary complex fractures as the commonest type of fracture. Notably, while the type of fracture did not have a significant

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effect on treatment practices, fracture displacement was strongly and significantly associated with surgical treatment. Furthermore, patients undergoing surgical treatment had significantly longer hospital stays, which is indicative of the severity of injury and complexity of treatment.

The third decade of life, which is predominantly represented in the current study, has been supported by previous maxillofacial trauma epidemiological studies. This age group is the most economically productive and socially mobile, and as such, they are more likely to be exposed to the risks of road traffic accidents, occupational injuries, and outdoor activities. Similar trends have been observed in tertiary care facilities in Pakistan, India, and other developing countries, which support the theory of behavioral exposure rather than biological susceptibility(12,13).

The current study also supports the trends of male dominance in trauma injuries, which is in line with international and regional data (14). In South Asian settings, the sociocultural factors often result in men being at risk exposure positions such as commercial transport, motorcycling, and outdoor occupations. Additionally, risk-taking behavior and poor compliance with safety practices such as helmet and seatbelt use are also factors that contribute to the gender inequality (15). However, it is important to note that despite the higher incidence of fractures among males, the fracture patterns did not show any significant difference between the two genders, indicating that once trauma has occurred, the distribution of fractures is more dependent on the biomechanical forces rather than sex-related anatomical variations.

Road traffic accidents were found to be the main cause of injury, which is consistent with most studies conducted in developing nations (16). However, studies conducted in developed nations have shown that interpersonal violence is the main cause of midfacial fractures, which is consistent with the better regulation and enforcement of traffic laws. The likely persistence of RTAs as the main cause in this region may be due to a number of factors, including poor enforcement of road safety laws, increased use of motor vehicles, the use of two-wheeled transport, and the difficult mountainous terrain of Khyber Pakhtunkhwa.

The zygomaticomaxillary complex fracture was the most common type of fracture, followed by orbital and Le Fort II fractures. This is in keeping with what has been described in other tertiary care institutions (17). Anatomically, the zygoma is a prominent lateral structure that acts as a major buttress to the midface, making it extremely vulnerable to lateral force trauma. Biomechanically, RTAs tend to create oblique or lateral vectors of force transmission, which tend to preferentially affect the zygomatic complex and the orbital floor. The apparent preponderance of orbital fractures may also be related to enhanced sensitivity of diagnosis with routine CT scanning in modern trauma algorithms [13Le Fort III fractures, which are likely to occur due to high-energy trauma, were relatively less common, and this has also been found in similar studies (18).

Perhaps one of the most significant observations made in this study was the strong association between fracture displacement and surgery. This is consistent with the basic principles of maxillofacial trauma surgery, where anatomical reduction and rigid fixation are advocated to restore facial shape, occlusion, and orbital volume (19). The presence of displacement is known to influence both functional and aesthetic

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outcomes, and hence conservative management may be less optimal. Conversely, the absence of a significant association between fracture types and management suggests that the treatment of each patient was individualized based on clinical presentation and not merely on fracture types. This practice is in line with modern surgical thinking, which favors functional impairment, degree of displacement, ocular involvement, and derangement of occlusion over purely anatomical schemes (20). Thus, the results indicate the presence of good clinical practice rather than strict algorithmic management.

The significantly increased hospital stay among patients who underwent ORIF is in line with previous trauma studies. Surgical care involves operative planning, anesthesia, intraoperative fixation, and postoperative care, all of which contribute to increased inpatient stay (21). Furthermore, displaced fractures requiring ORIF may be associated with increased soft tissue injury and edema, delaying recovery. Although increased hospital stay may indicate appropriate management of more severe injuries, it also underscores the resource implications of surgical care in the context of a limited healthcare infrastructure. Implementation of enhanced recovery programs and optimal perioperative care may mitigate hospital stay without compromising patient outcomes.

The clinical significance of this study is especially relevant in the context of trauma planning in Swat and similar areas. The predominance of RTAs and ZMC fractures indicates the need for preparedness in the management of lateral midfacial fractures and the need for adequate surgical facilities for ORIF procedures. Preventive measures directed at road safety enforcement, helmet use, and public awareness could greatly alleviate the problem of midface trauma. Furthermore, trauma registries may enhance the epidemiologic understanding and inform evidence-based resource allocation.

Strength of Study

The current study has the benefit of systematic data collection, standardized radiologic analysis, and inclusion of comprehensive clinical variables, which offer a comprehensive perspective on the patterns of midface fractures in a defined population in a specific region.

Limitations of Study

However, some of the limitations of the study must be acknowledged. As it is a single-center study, generalizability may be limited. The cross-sectional design of the study does not permit any inference of causality, and long-term functional and aesthetic outcomes were not examined. Additionally, some of the subgroup analyses had small subgroup frequencies, which may have decreased statistical power.

Recommendations

Future studies should aim at multi-center trauma registries to improve generalizability and statistical power. Prospective cohort studies evaluating long-term outcomes of conservative versus surgical management would further improve the evidence base. Importantly, preventive strategies aimed at the dominant role of road traffic accidents should be given high priority at the community and policy levels to make a meaningful impact in reducing the incidence of midfacial trauma.

Conclusion

Fracture type did not have a significant influence on treatment decisions,

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Our findings highlight the significance of displacement-based planning in midface trauma and the need for surgical preparedness in the regional trauma centers.

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References

1. Bataineh AB. The incidence and patterns of maxillofacial fractures and associated head and neck injuries. J Cranio-Maxillofac Surg. 2024;52(5):543–7. DOI: 10.1016/j.jcms.2024.03.015
2. Roşu A-M, Severin F, Roşu OC, Cobzeanu BM, Gherasimescu S, Sava FP, et al. Patterns and Characteristics of Midface Fractures in North-Eastern Romania. Medicina (Mex). 2023;59(3):510. DOI: 10.3390/medicina59030510
3. Amponsah AA. Incidence and Etiology of Maxillofacial Injuries from Road Traffic Accidents in Africa: A Multi-Country Analysis. Int J Dent Sci Res. 2025;159–200.
4. Gómez Roselló E, Quiles Granado AM, Artajona Garcia M, Juanpere Martí S, Laguillo Sala G, Beltrán Mármol B, et al. Facial fractures: classification and highlights for a useful report. Insights Imaging. Springer; 2020;11(1):49.
5. Roşu A-M, Severin F, Roşu OC, Cobzeanu BM, Gherasimescu S, Sava FP, et al. Patterns and characteristics of midface fractures in North-Eastern Romania. Medicina (Mex). MDPI; 2023;59(3):510.
6. Shivakotee S, Menon S, Sham M, Kumar V, Archana S. Midface fracture pattern in a tertiary care hospital–A prospective study. Natl J Maxillofac Surg. Medknow; 2022;13(2):238–42.
7. Taniike N, Maeda K, Yamamoto S, Komachi H, Yuasa H, Sukegawa S. Resorbable versus Titanium Plates in Adult Midfacial Fractures: A Systematic Review and Meta-analysis: A Systematic Review and Meta-analysis for Clinical Practice Guidelines for the Management of Oral and Maxillofacial Trauma in Japan 2025. J Oral Maxillofac Surg Med Pathol. Elsevier; 2025;
8. Hurkat A, Pendem S, Selvarasu K, Krishnan M. Changing trends in central midface fracture – A proposal for revised classification and holistic management. J Oral Maxillofac Surg Med Pathol. 2024;36(2):171–7. DOI: 10.1016/j.ajoms.2023.07.003
9. Hsieh T, Peterson A. LeFort and Complex Midface Fractures. Facial Plast Surg Clin. Elsevier; 2025;33(3):351–64.
10. Schütz P, Andersson L. Mid-and Upper-Face Fractures. Oral Maxillofac Surg. Wiley Online Library; 2025;806–58.
11. Shivakotee S, Menon S, Sham ME, Kumar V, Archana S. Midface fracture pattern in a tertiary care hospital – A prospective study. Natl J Maxillofac Surg. 2022;13(2):238–42. DOI: 10.4103/njms.njms_378_21
12. Nguyen CTH, Hoang HT, Van Nguyen T, Tran CM, Dao KQ. Analyzing the Burden of Midface Fractures Due to Road Traffic Accidents in Vietnam: An Epidemiological Approach. Dent Traumatol. Wiley Online Library; 2025;41:S34–40.
13. Liang L, Wang TT, Wilken N, Warburton G, Caccamese J, Lee C. Is treatment at a level 1 trauma center associated with better outcomes in adults with isolated midface fractures? J Oral Maxillofac Surg. Elsevier; 2025;
14. Aydin A, Revend L, Revend D, Giese M, Schuck O, Roj S, et al. Face First: The Role of Age and Sex in the Epidemiology of Facial Fractures. Dent J. MDPI; 2025;14(1):4.
15. Diab J, Moore MH. Patterns and characteristics of maxillofacial fractures in

DOI: https://doi.org/10.59736/IJP.24.02.1084.

women. Oral Maxillofac Surg. Springer; 2023;27(3):459–68.
16. Nawi MAA, Noor NFM, Shaari R, Khaleel AK, Lazin MAM, Sulaiman IM, et al. The patterns of facial fractures in traumatic brain injury (TBI) patients using ordinal regression: a retrospective study of five years. AIMS Neurosci. 2022;9(3):345.
17. Makkad AS. Management of zygomatico maxillary complex fractures among Indian patients. Bioinformation. 2023;19(1):120–5. DOI: 10.6026/97320630019120
18. Kambalimath DH, Kambalimath HV, M.V.V. S, V. AK, T.G. R, Deepak RM. Retrospective Analysis of Management of Zygomatic Complex Fractures. The Traumaxilla. 2023;5(1–3):20–6. DOI: 10.1177/26323273231172739
19. Arun S, Nayak SS, Chithra A, Roy S. Outcomes of Non-surgical Management of Zygomaticomaxillary Complex Fractures. J Maxillofac Oral Surg. 2023;22(3):634–40. DOI: 10.1007/s12663-023-01863-1
20. Mijatov S, Mijatov I, Brajković D, Rodić D, Golubović J. Surgical Management of Isolated Zygomaticomaxillary Complex Fractures: Role of Objective Morphometric Analysis in Decision-Making. Craniomaxillofacial Trauma Reconstr. 2025;18(4):50. DOI: 10.3390/cmtr18040050
21. Canton G, Marchetti A, Trobec B, Andreotti G, Buoite Stella A, Deodato M, et al. Surgical wound complications in ankle ORIF patients: a predictive analysis on a single-center retrospective cohort of 287 patients. Eur J Orthop Surg Traumatol. 2026;36(1):75. DOI: 10.1007/s00590-025-04649-y.

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All the authors agree to take responsibility for every facet of the work, making sure that any concerns about its integrity or veracity are thoroughly examined and addressed.	