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FREQUENCY OF WOUND DEHISCENCE IN ADULTS UNDERGOING MIDLINE EXPLORATORY LAPAROTOMY IN A TERTIARY CARE HOSPITAL IN PESHAWAR

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ABSTRACT

BACKGROUND: TAbdominal wound dehiscence is a serious postoperative complication characterized by the partial or complete disruption of a surgical incision. Despite advancements in surgical techniques and perioperative care, its occurrence remains a challenge, particularly in emergency settings and among high-risk patient groups. Limited local data exists on its frequency and risk factors in the population of Peshawar, Pakistan.

OBJECTIVE: : To determine the frequency and associated risk factors of wound dehiscence among adult patients undergoing midline exploratory laparotomy in a tertiary care hospital in Peshawar.

METHODOLOGY: :This cross-sectional study was conducted in the Department of General Surgery, Hayatabad Medical Complex, Peshawar, from June 24, 2021, to December 24, 2021. A total of 193 patients aged 15–70 years who underwent elective or emergency midline exploratory laparotomy were recruited through consecutive non-probability sampling. Data on demographics, clinical variables, and wound outcomes were collected using a structured proforma. Wound dehiscence was classified as partial or complete. Data were analyzed using SPSS version 20. Chi-square tests were applied to determine statistical significance, with a p-value <0.05 considered significant.

RESULTS: Among the 193 patients, 57 (29.5%) developed wound dehiscence; 36 (63.2%) had partial and 21 (36.8%) had complete dehiscence. The mean age was 37.5 ± 10.4 years. A significant association was observed between wound dehiscence and increasing age (p = 0.000), higher BMI (p = 0.045), and type of surgery (emergency vs. elective). Longer hospital stay leads to less wound dehiscence (p = 0.000), with earlier discharges more commonly associated with this complication.

CONCLUSION; Overall, the study proved that peer learning is a highly effective teaching-learning strategy among nursing students and has remarkable benefits. Wound dehiscence was found to be a prevalent complication following midline exploratory laparotomy, particularly in older and overweight patients and those undergoing emergency surgery.

KEYWORDS: :Wound dehiscence, exploratory laparotomy, midline incision, surgical complication, BMI.

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INTRODUCTION

Abdominal wound dehiscence, often referred to as "burst abdomen" or wound disruption, is a serious postoperative complication characterized by the partial or complete separation of a previously closed surgical incision.[1, 2] This separation may occur with or without the extrusion of abdominal contents and typically manifests between the 6th and 8th postoperative days, a period during which tissue healing is still in its early and vulnerable stages.[3] Wound dehiscence not only poses a significant risk to the patient's recovery but also increases the burden on healthcare systems through prolonged hospitalization, repeated interventions, and elevated healthcare costs. The physical and psychological impact on patients and their families is substantial.[4] Although a range of surgical and patient-related factors have been implicated, wound dehiscence remains a multifactorial issue that demands a multidisciplinary approach to prevention and management.

Preventive strategies such as optimizing the patient's nutritional and metabolic status, ensuring strict aseptic techniques, adopting appropriate suture materials and methods, and ensuring skilled surgical intervention can significantly reduce the likelihood of this complication.[5] Despite notable advancements in surgical techniques and perioperative care, wound dehiscence continues to be reported with troubling frequency, particularly in high-risk populations and settings where emergency surgeries and late presentations are common.

Multiple factors have been identified as contributing to the risk of wound dehiscence. These include increasing age, the presence of comorbidities (such as diabetes mellitus or chronic pulmonary disease), emergency surgical intervention, malnutrition, intra-abdominal sepsis, infection at the surgical site, poor wound closure techniques, and the need for re-exploration surgeries.[6, 7] Additionally, delayed presentation to tertiary care hospitals is a frequent issue in resource-constrained healthcare environments, further complicating timely and effective intervention.

In the context of Pakistan, especially in tertiary care hospitals in Peshawar, there is a lack of updated local data on the incidence and risk factors associated with wound dehiscence following exploratory laparotomy. To date, few studies have systematically assessed this complication in both elective and emergency

settings, and a notable gap exists in the literature over the last five years. [8,9]

Given the clinical significance of wound dehiscence, its association with increased postoperative morbidity and mortality, and its economic and emotional toll, this study aims to address this knowledge gap by evaluating the frequency of wound dehiscence in adult patients undergoing midline exploratory laparotomy. The findings from this study will contribute to the evidence base necessary for improving surgical outcomes and establishing context-specific protocols for risk reduction and early intervention.

METHODOLOGY:

This cross-sectional study was conducted in the Department of General Surgery at Hayatabad Medical Complex, Peshawar. The study was carried out over six months, from June 24, 2021, to December 24, 2021. The sample size was calculated using the OpenEpi software for sample size determination. Based on a reported prevalence of wound dehiscence of 14.7%. [10]A sample of 193 patients was required to estimate the true population proportion with a 5% margin of error and 95% confidence interval. A non-probability consecutive sampling technique was employed to recruit patients meeting the inclusion criteria.

Patients between the ages of 15 and 70 years of both genders who underwent elective or emergency midline exploratory laparotomy were included in the study. Additional inclusion criteria were a body mass index (BMI) of less than 35 kg/m² (calculated as weight in kilograms divided by the square of height in meters), and the American Society of Anesthesiologists (ASA) physical status classification I or II. Only patients who completed the study follow-up were included. Patients were excluded if they had a history of previous laparotomies, expired before study completion, were unwilling to participate, or were classified as ASA grade III, IV, or V.

Ethical approval number 1037 was obtained from the institutional review board of Hayatabad Medical Complex on 18/01/2021.

Data Collection Procedure

After obtaining ethical approval from the hospital's ethical review committee and the College of Physicians and Surgeons Pakistan (CPSP) Research Evaluation Unit (REU), a total of 193 patients who met the selection criteria were enrolled. Written informed consent was obtained from each participant or their legal guardian. All procedures were performed under general anesthesia by a consultant surgeon in the Department of General Surgery. Each case was categorized as either elective or emergency based on the clinical indication for laparotomy. The patients were assessed daily for signs of abdominal wound dehiscence by the same surgical consultant until discharge. Wound dehiscence was classified as either partial or complete according to predefined operational definitions.

Patient information, including demographic and clinical data, was recorded on a predesigned data collection proforma. Efforts were made to ensure patient comfort throughout the study. The inclusion and exclusion criteria were rigorously adhered to to minimize selection bias and ensure the accuracy of findings.

Data Analysis

All data were entered and analyzed using SPSS version 20. Quantitative variables such as age, height, weight, ASA class, and BMI were summarized using means and standard deviations. Categorical variables such as gender, type of surgery (elective or emergency), and presence of wound dehiscence were expressed as frequencies and percentages.

Wound dehiscence was further stratified by age, gender, BMI, ASA classification, and indication for laparotomy to assess potential effect modifiers. Chi-square tests were applied to determine the statistical significance of associations, with a p-value of less than 0.05 considered significant.

RESULTS

This study included 193 patients who underwent exploratory laparotomy at Hayatabad Medical Complex, Peshawar. The mean age of the study population was 37.5 ± 10.4 years. The age distribution revealed that 28.0% of patients (n = 54) were between 20–30 years, 34.7% (n = 67) were aged 31–40 years, 26.9% (n = 52) were between 41–50 years, and 10.4% (n = 20) fell within the 51–60 years age group. Among these, 117 patients (60.6%) were male and 76 (39.4%) were female.

Of the total laparotomies, 132 (68.4%) were performed as emergency surgeries, while 61 (31.6%) were elective. The mean body mass index (BMI) of the cohort was 26.5 ± 3.6 kg/m². The most frequent surgical indication was intestinal or appendiceal perforation (47.2%), followed by intestinal obstruction (32.6%) and other causes requiring exploratory laparotomy (20.2%). ASA classification revealed that 121 patients (62.7%) were ASA grade I, and 72 (37.3%) were ASA grade II. The average hospital stay was 5 ± 2 days (Table 1).

Table 1- Demographics of the Sample Population

AGE	FREQUENCY	PERCENTAGE
20-30 years	54	28.0
> 30-40 years	67	34.7
> 40-50 years	52	26.9
> 50-60 years	20	10.4
GENDER		
Male	117	60.6
Female	76	39.4
BMI		
20.4-24.9	73	37.8
> 24.9-29.9	81	42.0
> 29.9-33	39	20.2
TYPE OF LAPAROTOMY		
Emergency	132	68.4
Elective	61	31.6
INDICATIONS		
Intestinal obstruction	83	32.6
Intestinal/appendiceal	91	47.2
perforation		
Other Causes	39	20.2
ASA Grade of the Sample		
ASA I	121	62.7
ASA II	72	37.3
Hospital Stay		
2-4 days	68	35.2
> 4-6 days	61	31.6
> 6-8 days	64	33.1

Wound dehiscence was observed in 57 patients, reflecting a frequency of 29.5%. Among these, 36 cases (63.2%) were classified as partial dehiscence and 21 (36.8%) as complete. Stratification analysis was performed to evaluate associations between wound dehiscence and various demographic and clinical factors (Table 2).

Table 2- Frequency and Type of Wound Dehiscence

Wound dehiscence	Frequency	Percent
Yes	57	29.5
No	136	70.5
Type of wound dehiscence		
Partial	36	63.2
Complete	21	36.8

The incidence of wound dehiscence increased with age. In patients aged 20–30 years, 10 out of 54 (18.5%) developed wound dehiscence, whereas in the 31–40 years group, 24 out of 67 (35.8%) were affected. Among individuals aged 41–50 years, 19 of 52 patients (46.5%) experienced dehiscence. Notably, the highest frequency was observed in the 51–60 years age group, where 16 out of 20 patients (80%) developed wound dehiscence. The association between age and wound dehiscence was found to be statistically significant ($p = 0.000$), indicating a strong correlation between increasing age and the risk of postoperative wound complications. Table 1 presents the distribution of wound dehiscence across the age categories (Table 3).

Table 3- Age-wise stratification of wound dehiscence

		Wound dehiscence		P value
		Yes	No	
Age	20-30 years	10	44	**0.001**
		18.5%	81.5%	
	> 30-40 years	24	43	
		35.8%	64.2%	
	> 40-50 years	19	33	
		46.5%	53.5%	
	> 50-60 years	16	4	
		80%	**20%**	

This result suggests that age is a significant risk factor for wound dehiscence after exploratory laparotomy. The trend indicates a marked increase in wound dehiscence rates with advancing age. It is plausible that this correlation may be attributed to age-related impairments in wound healing, comorbidities, or altered tissue response to surgical stress.

The relationship between body mass index (BMI) and wound dehiscence was evaluated by categorizing patients into three BMI groups: 20.4–24.9 kg/m², >24.9–29.9 kg/m², and >29.9–33 kg/m². Among patients with a normal BMI (20.4–24.9), 14 out of 73 (19.2%) experienced wound dehiscence. In the overweight category (>24.9–29.9), the frequency of wound dehiscence increased to 30 out of 81 patients (37.0%). For those in the obese group (>29.9–33), 13 out of 39 patients (33.3%) developed wound dehiscence.

The association between BMI and wound dehiscence was found to be statistically significant with a p-value of 0.045, indicating that elevated BMI is a potential risk factor for the development of postoperative wound complications (Table 4).

Table 4 - BMI-wise stratification of wound dehiscence

		Wound dehiscence		P value
		Yes	**No**	
BMI	20.4-24.9	14	59	**0.045**
		19.2%	80.8%	
	> 24.9-29.9	30	51	
		37.0%	63.0%	
	> 29.9-33	13	26	
		33.3%	**66.7%**	

These findings suggest a positive correlation between increased BMI and risk of wound dehiscence. Obesity and overweight are likely to impair wound healing due to factors such as poor tissue perfusion, increased intra-abdominal pressure, and altered inflammatory responses. These results support the need for enhanced perioperative management in overweight and obese patients undergoing laparotomy.

Duration of hospital stay was also assessed as a potential factor associated with wound dehiscence. Patients were grouped into three categories based on length of postoperative hospitalization: 2–4 days, >4–6 days, and >6–8 days. Among patients with shorter hospital stays (2–4 days), 26 out of 68 (38.2%) developed wound dehiscence. In the 4–6-day group, 14 out of 61 (22.9%) had dehiscence. However, in patients staying >6–8 days, only 5 out of 64 (7.8%) experienced wound dehiscence.

The association between hospital stay duration and wound dehiscence was statistically significant (p = 0.000), reflecting an inverse trend where wound dehiscence was more commonly observed in patients discharged earlier. This may be attributable to early wound failure leading to earlier identification and management, or may reflect a bias where uncomplicated cases require longer hospitalization for unrelated reasons (Table 5).

Table 5 - Hospital stay-wise stratification of wound dehiscence

		Wound Dehiscence		P Value
		Yes	No	
	2-4 days (68)	26	42	
		38.23%	61.77%	
Hospital Stay	> 4-6 days (61)	14	47	0.001
		22.95%	77.05%	
	> 6-8 days (64)	5	59	
		7.81%	92.19%	

These results suggest that patients who experienced wound dehiscence tended to require early intervention and were discharged sooner due to either surgical correction or clinical deterioration. However, this observation warrants cautious interpretation, as it may also reflect confounding factors such as type and severity of dehiscence, rather than a causal relationship between hospital stay length and the complication itself.

DISCUSSION

Wound dehiscence remains one of the leading postoperative complications, especially after abdominal operations with midline exploratory laparotomy. The present study revealed a significantly high rate of wound dehiscence (29.5%) in patients undergoing surgery at a tertiary care hospital in Peshawar. This figure is much higher compared to rates documented in some recent national and international literature, suggesting possible perioperative management, surgical, or optimization gaps in patient treatment in this particular setup.[8,11]

Hegazy et al, in a prospective observational study in Egypt, found that among patients who had abdominal surgery, 12.4% developed dehiscence, with peritonitis and wound infection as key risk factors.[12] Likewise, Kumar et al reported a frequency of 3% in an Indian population, with a majority found in emergency presentations.[13] The difference between these rates and the prevalence of 29.5% seen in our study could be due to a combination of reasons, like a greater percentage of emergency operations (68.4%) in our group, both partial and complete dehiscence being included, and financial constraints in the local environment.

The significant correlation between rising age and wound dehiscence (p = 0.000) seen in this study is consistent with earlier reports.[14-16] Old age is linked with impaired wound healing because of decreased collagen production, loss of vascularity, and compromised immune function. Studies have stressed that patients above the age of 50 years are particularly susceptible to wound complications because of these physiological changes.[14, 15] Additionally, Duan et al showed that age greater than 50 years notably escalated the dehiscence risk in patients undergoing laparotomy, particularly when combined with other risk factors like malnourishment or sepsis.[16]

The study also established a strong correlation between increased BMI and dehiscence (p = 0.045). Overweight and obese patients had greater frequencies of wound separation due to elevated intra-abdominal pressure, compromised tissue perfusion, and decreased oxygen tension in the adipose tissue. These results agree with a meta-analysis by Słabuszewska et al., which discovered that obesity almost doubles the risk of surgical site complications, such as wound dehiscence.[17] Moreover, other studies have also shown that even small rises in BMI are responsible for delayed healing of wounds and increased infection rates.[18-20] These findings emphasize the necessity of perioperative optimization of weight and prudent preoperative planning in obese patients.

One of the interesting results of this work was the negative correlation between hospital stay length and dehiscence rates (p = 0.000). Those who had shorter hospital stays (2–4 days) were at higher risk of developing wound dehiscence. This seemingly contrary trend may be because patients who experienced early complications like partial dehiscence were early identified and either readmitted or treated conservatively, which led to their shorter initial in-hospital stays. Or it could be that longer hospital stays were accompanied by more intensive monitoring and improved wound care, which prevented dehiscence. Another interesting feature of this study was the large percentage of partial wound dehiscence cases (63.2%), suggesting that most complications were identified early on and likely controlled without developing into complete dehiscence. As per the literature wound separation in the early stages often can be reversed by early conservative treatment, thus decreasing the rate of reoperation and minimizing morbidity.[21,22]

Finally, the majority of emergency operations (68.4%) in this group most certainly contributed to the high overall incidence of dehiscence. Emergency laparotomies are done under suboptimal circumstances, with minimal time for preoperative optimization and a greater risk of peritoneal contamination or septic shock. Various studies have found that emergency operations have a much greater risk of postoperative wound complications.[23,24]

The results of this study present international trends in risk factors for dehiscence of wounds age, BMI, and emergency surgeries albeit concerning local-specific challenges facing surgical care delivery in low-resource environments. The high prevalence of dehiscence calls for enhanced perioperative risk stratification, preoperative optimization of nutrition, and strict asepsis. Institutionalizing standardized wound care protocols and focused follow-up programs could reduce such risks and improve outcomes substantively.

CONCLUSION

This study highlights a notably high frequency of wound dehiscence (29.5%) among patients undergoing midline exploratory laparotomy, especially in those who were older, overweight, or underwent emergency procedures. These findings reflect the critical need for targeted perioperative strategies, including risk stratification, optimization of nutritional and metabolic status, and meticulous surgical techniques. Enhanced postoperative monitoring, particularly within the first week may allow for early detection and management of partial dehiscence, reducing progression to complete separation and improving patient outcomes. Addressing these modifiable risk factors through standardized clinical protocols could significantly lower wound-related morbidity in surgical practice.

This study highlights the need for early identification and optimization of patients at risk for wound dehiscence, particularly the elderly and those with high BMI. Preoperative interventions such as nutritional support and control of comorbidities can help reduce complications. Surgical teams should ensure meticulous technique, appropriate suture use, and strict aseptic practices. Postoperative monitoring, especially during the first week, is crucial for early detection. Implementing hospital-based protocols for risk assessment and wound surveillance could further reduce dehiscence rates. Future multicenter studies are recommended to confirm these findings and guide broader clinical practice.

The study was limited to a single tertiary care center, which may affect the generalizability of results. The non-probability sampling method could introduce selection bias. Some relevant variables, such as nutritional status, diabetes, and wound closure techniques, were not analyzed separately. Additionally, the short follow-up period may have missed late-onset cases of wound dehiscence. Broader studies with longer follow-up and more comprehensive data are needed to validate and expand upon these results.

Conflict of Interest

The authors declare no conflict of interest related to this publication

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REFERENCES

1.Denys A, Monbailliu T, Allaeys M, Berrevoet F, van Ramshorst GH. Management of abdominal wound dehiscence: update of the literature and meta-analysis. Hernia. 2021 Apr;25:449–62. https://doi.org/10.1007/s10029-020-02257-9

2.Roberts DJ, Leppäniemi A, Tolonen M, Mentula P, Björck M, Kirkpatrick AW, et al. The open abdomen in trauma, acute care, and vascular and endovascular surgery: comprehensive, expert, narrative review. BJS Open. 2023;7(5):zrad057. https://doi.org/10.1093/bjsopen/zrad057

3.Teklemariam BT, Biyana CF, Asfaw SA. Determinants of postoperative abdominal wound dehiscence among patients operated in a tertiary hospital. Ethiop J Health Sci. 2022;32(4):739–46.

4.Gillespie BM, Harbeck EL, Sandy-Hodgetts K, Rattray M, Thalib L, Patel B, et al. Incidence of wound dehiscence in patients undergoing laparoscopy or laparotomy: a systematic review and meta-analysis. J Wound Care. 2023;32(8):S1–S10. https://doi.org/10.12968/jowc.2023.32.Sup8.S1

5.Ottolino P. Managing the open abdomen: selecting an appropriate treatment strategy. Adv Wound Care (New Rochelle). 2024;13(8):373–80. https://doi.org/10.1089/wound.2023.0056

6.Rosing T, Latifi R. Surgical decision-making in complex clinical scenarios in abdominal surgery. In: Latifi R, Rosing T, editors. Surgical Decision-Making. Cham: Springer; 2024. p. 123–35.

7.Ng ZQ, Weber D. Post-operative complications after emergency laparotomy. In: Latifi R, Rosing T, editors. Recent Strategies in High-Risk Surgery. Cham: Springer; 2024. p. 89–102.

8. Israr S, Farid A, Qaiser N, Akhtar K, Jalal A. Frequency of abdominal wound dehiscence/burst abdomen in patients of laparotomy. Pak J Med Health Sci. 2022;16(9):1234–7.

9. Rahman UA, Iftikhar MA, Miraj MZ, Butt MJ, Ahmed I, Yousaf H. Incidence of wound dehiscence and factors causing wound dehiscence in patients undergoing laparotomy in a newly established surgery department at a tertiary care hospital. Prof Med J. 2023;30(10):1230–4.

https://doi.org/10.29309/TPMJ/2023.30.10.7710

10. Ali M, Saeeda IM, Niamat-Ullah H. Frequency of abdominal wound dehiscence and role of wound infection as a major causative factor. Pak J Surg. 2014;30(1):4–8.

11.Mihalj M, Corona A, Andereggen L, Urman RD, Luedi MM, Bello C. Managing bottlenecks in the perioperative setting: optimizing patient care and reducing costs. Best Pract Res Clin Anaesthesiol. 2022 Aug 1;36(2):299–310.

https://doi.org/10.1016/j.bpa.2022.100675

12.Hegazy TO, Soliman SS. Abdominal wall dehiscence in emergency midline laparotomy: incidence and risk factors. Egypt J Surg. 2020 Apr–Jun;39(2):489–497. doi:10.4103/ejs.ejs_7_20.

13.Kumar R. Evaluation of risk factors of surgical wound dehiscence in patients after laparotomy. Eur J Cardiovasc Med. 2023;13(3):456–60.

14.Nasrallah AA, Mansour M, Heidar NFA, Ayoub C, Najdi JA, Tamim H, et al. Risk factors for wound dehiscence following radical cystectomy: a prediction model. Ther Adv Urol. 2021;13:17562872211038265.

https://doi.org/10.1177/17562872211038265

15.Jensen KK, Oma E, van Ramshorst GH, Nordholm-Carstensen A, Krarup PM. Abdominal wound dehiscence is dangerous: a nationwide study of 14,169 patients undergoing elective open resection for colonic cancer. Hernia. 2021;26(1):15–21. https://doi.org/10.1007/s10029-020-02350-z

16.Duan S, Zhang X, Jiang X, Ou W, Fu M, Chen K, et al. Risk factors and predictive model for abdominal wound dehiscence in neonates: a retrospective cohort study. Ann Med. 2021;53(1):900–7.

https://doi.org/10.1080/07853890.2021.1938661

17.Słabuszewska-Jóźwiak A, Szymański JK, Jóźwiak Ł, Sarecka-Hujar B. A systematic review and meta-analysis of wound complications after a cesarean section in obese women. J Clin Med. 2021;10(4):675. https://doi.org/10.3390/jcm10040675

18.DesJardins-Park HE, Gurtner GC, Wan DC, Longaker MT. From chronic wounds to scarring: the growing health care burden of under- and over-healing wounds. Adv Wound Care (New Rochelle). 2022;11(9):421–9.

https://doi.org/10.1089/wound.2021.0156

19.Frasca D, Strbo N. Effects of obesity on infections with emphasis on skin infections and wound healing. J Dermatol Skin Sci. 2022;4(3):45–9.

20. Cotterell A, Griffin M, Downer MA, Parker JB, Wan D, Longaker MT. Understanding wound healing in obesity. World J Exp Med. 2024 Mar 20;14(1):86898. https://doi.org/10.5493/wjem.v14.i1.86898

21.Brincat SD, Lunevicius R. The open abdomen: a comprehensive narrative review of the life-threatening condition. In: Lunevicius R, editor. Abdominal Hernia Surgery: Practice, Evidence and Advances. London: IntechOpen; 2025. p. 55–70. https://doi.org/10.5772/intechopen.1008568

22.Bellio G, Marcucci F, Vaccari F, Porta M, Cimino MM, Kurihara H. Emergency surgery damage control procedures: which, when and how? a narrative review of the literature. Ann Laparosc Endosc Surg. 2025 Apr 30;10:17. https://doi.org/10.21037/ales-24-21

23.Tolstrup MB, Jensen TK, Gögenur I. Intraoperative surgical strategy in abdominal emergency surgery. World J Surg. 2023;47(1):45–52. https://doi.org/10.1007/s0068-022-06839-9

24.Scott MJ, Aggarwal G, Aitken RJ, Anderson ID, Balfour A, Foss NB, et al. Consensus guidelines for perioperative care for emergency laparotomy: enhanced recovery after surgery (ERAS®) society recommendations part 2—emergency laparotomy: intra- and postoperative care. World J Surg. 2023;47(8):1895–911. https://doi.org/10.1007/s00268-023-07078-7

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