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Efficacy of PRP in hair restoration - A study of 50 patients

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ABSTRACT

Background: Hair loss is a prevalent concern affecting a significant portion of the population. While various treatments exist, their efficacy varies, prompting the exploration of alternative interventions. Platelet-Rich Plasma (PRP) therapy, a novel approach gaining popularity, involves injecting a patient's processed blood, rich in concentrated platelets containing growth factors, into the scalp to stimulate hair growth.

Objective: This multi-centre study aimed to rigorously investigate the effectiveness of PRP therapy in hair restoration by conducting a comprehensive analysis of outcomes.

Methods: The study enrolled 50 patients experiencing hair loss, who underwent PRP therapy at private setups. This procedure included drawing the patient's blood, processing it to concentrate platelets, and subsequently injecting them into the scalp. The patients were closely monitored for six months to 1 year, and the results were meticulously analysed using statistical methods.

Results: The study revealed significant improvements in hair density, thickness, and overall coverage in the majority of patients subjected to PRP therapy. These outcomes were consistent with previous research, positioning PRP therapy as an effective intervention for hair restoration.

Conclusion: The findings of this study underscore the efficacy of PRP therapy in addressing hair loss. The positive results, coupled with its minimally invasive nature, make PRP therapy a promising option for individuals seeking effective hair restoration. Further research and larger-scale studies are warranted to validate these findings and refine treatment protocols.

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The third author coordinated the study, conducted statistical analysis, and ensured accuracy in the manuscript's statistical aspects. The fourth author provided clinical expertise, supervised patient recruitment, and reviewed the manuscript for clinical relevance. The fifth author contributed to literature review, data interpretation, and manuscript drafting. The sixth author assisted in patient recruitment, data collection, and manuscript preparation. All authors approved the final manuscript for publication.

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INTRODUCTION

Hair loss is a prevalent concern affecting both men and women, influenced by various factors such as genetics, age, hormonal changes, and medical conditions ^[1, 2]. Beyond its physiological implications, hair loss often takes a toll on an individual's self-esteem and overall quality of life, leading to emotional challenges, anxiety, and even social isolation ^[1]. Despite the prevalence of hair loss, the available treatments vary in effectiveness, and some carry unwanted side effects.

Traditional approaches to hair loss management encompass medications like minoxidil and finasteride, hair transplant surgeries, and laser therapy. However, these methods are not universally successful, and the associated costs, invasiveness, and potential side effects limit their broad applicability ^[3, 4].

In recent years, Platelet-Rich Plasma (PRP) therapy has emerged as a promising and innovative treatment for hair restoration ^[5, 6]. PRP therapy involves a minimally invasive procedure where a patient's own blood is drawn, processed to concentrate platelets, and then injected into the scalp ^[7, 8]. The essential components of PRP are growth factors contained within platelets, which play a pivotal role in promoting hair growth and overall scalp health ^[7].

Numerous clinical studies have shown the potential effectiveness of PRP therapy in addressing different forms of alopecia and promoting hair regrowth ^[7]. The purpose of the current study is to contribute to this body of evidence by rigorously investigating the effectiveness of PRP therapy in hair restoration. The study will focus on 50 patients experiencing hair loss, carefully examining the outcomes of PRP therapy over a six-month period. To ensure comprehensive insights, the study will also compare the results of PRP therapy with other existing treatments for hair loss.

The study will adhere to stringent inclusion and exclusion criteria to ensure the reliability of the findings. Male and female patients aged 18-65 years diagnosed with androgenetic alopecia or telogen effluvium will be eligible for inclusion. Exclusion criteria will encompass a history of hair transplant surgery and the use of hair loss medications in the past six months.

Patients meeting these criteria will undergo PRP therapy, with the procedure involving the extraction of blood, concentration of platelets, and subsequent injection into the scalp. The patients will be closely monitored for six months, during which various parameters related to hair growth, density, and overall improvement will be assessed.⁷

The study aims to provide a comprehensive analysis of the effectiveness of PRP therapy by comparing its results with other conventional treatments for hair loss. This comparative approach will contribute valuable insights into the relative merits of PRP therapy, aiding clinicians and patients in making informed decisions about the most suitable intervention.

Given the promising results observed in previous clinical studies, it is anticipated that PRP therapy will exhibit favourable outcomes in terms of hair restoration ^[8].

MATERIALS AND METHODS

Study Design and Participants: The Multi-centre study enrolled 50 participants from June 2022 to June 2023 presenting to private aesthetic clinic setups. This study included patient who were experiencing hair loss, with a focus on individuals diagnosed with androgenetic alopecia or telogen effluvium. Inclusion criteria comprised both male and female patients aged 18-65 years, devoid of any history of hair transplant surgery and refraining from hair loss medications for the past 6 months.

Treatment Procedure:

Participants underwent Platelet-Rich Plasma (PRP) therapy, a minimally invasive procedure. Blood was drawn from each participant and processed to concentrate platelets. Subsequently, the platelet-rich solution was injected into the scalp. This innovative treatment aimed to harness the growth factors within platelets to stimulate hair regrowth.

Monitoring and Duration:

Following the PRP therapy, participants were closely monitored for a duration of six months. This monitoring period allowed for a comprehensive assessment of the treatment's effectiveness over an extended timeframe.

Statistical Analysis:

The results obtained were subjected to rigorous statistical analysis to derive meaningful conclusions. Statistical methods were employed to assess various parameters related to hair growth, density, and overall improvement.

Inclusion Criteria:

Male or female patients aged 18-65 years, diagnosis of androgenetic alopecia or telogen effluvium. No history of hair transplant surgery. No use of hair loss medications in the past 6 months.

Exclusion Criteria:

History of bleeding disorders or use of blood thinners. History of autoimmune diseases or immunosuppressive therapy. History of cancer or chemotherapy.

Data collection: a predesigned proforma was used to collect data.

Data analysis tool:

SPSS was used to conduct the statistical analysis.

RESULTS

The study found that PRP therapy is effective in hair restoration. The patients who received PRP therapy showed a significant improvement in hair growth. The results were statistically significant, with a p-value of less than 0.05. The study also found that PRP therapy is safe and has no major side effects. Patients who received regular monthly treatment of PRP showed better hair regrowth. (Image 1.)

The study compared the results of PRP therapy to other treatments for hair loss. The study found that PRP therapy is more effective than other treatments for hair loss, including medications and laser therapy. The study also found that PRP therapy is more cost-effective than hair transplant surgery.

The investigation into the effectiveness of Platelet-Rich Plasma (PRP) therapy in hair restoration yielded compelling outcomes. A cohort

TABLE 1: QUANTITATIVE ANALYSIS OF HAIR GROWTH PARAMETERS

Parameter	Pre-Treatment Mean	Post-Treatment Mean	Improvement (%)
Hair Density	120 follicles/cm ²	160 follicles/cm ²	33.33%
Coverage Area	50%	75%	50%
Hair Thickness	2.5 ìm	3.2 ìm	28%
Note: The values in the table represent mean measurements, and the improvement percentage is calculated based on the difference between pre-treatment and post-treatment values.			

TABLE 2: SAFETY ASSESSMENT OF PRP THERAPY

Parameter	Number of Adverse Events	Major Side Effects
Safety Profile	0	None

TABLE 3: COMPARATIVE ANALYSIS OF TREATMENT EFFICACY

Treatment Modality	Improvement in Hair Growth (%)	Cost-effectiveness
PRP Therapy	45.8%	More Cost-effective
Minoxidil (Medications)	15.2%	Less Cost-effective
Laser Therapy	20.5%	Less Cost-effective
Note: The improvement in hair growth is expressed as a percentage, and cost-effectiveness is assessed based on a qualitative scale.		



Image 1

of 50 patients experiencing hair loss participated in the study, and the results demonstrated the efficacy of PRP therapy in promoting substantial improvements in hair growth.

The patients who underwent PRP therapy exhibited a statistically significant enhancement in hair growth. The quantitative assessment, conducted over the six-month monitoring period, revealed a noteworthy increase in hair density and coverage among the participants. Table 1 provides a summary of the quantitative changes observed in key hair growth parameters.

Note: The values in the table represent mean measurements, and the improvement percentage is calculated based on the difference between pre-treatment and post-treatment values.

The observed improvements were statistically significant, as evidenced by a p-value of less than 0.05, underscoring the robustness of the findings.

An essential aspect of the study focused on evaluating the safety profile of PRP therapy. Encouragingly, the results indicated that PRP therapy is a safe intervention for hair restoration, with no major side effects reported during the six-month monitoring period. Table 2 provides an overview of the safety assessment.

The absence of major side effects underscores the safety and tolerability of PRP therapy as a hair restoration option.

To contextualize the findings, the study compared the efficacy of PRP therapy with other

conventional treatments for hair loss, including medications and laser therapy. The comparative analysis revealed that PRP therapy outperformed these alternatives in terms of effectiveness. Table 3 provides a summary of the comparative outcomes.

Note: The improvement in hair growth is expressed as a percentage, and cost-effectiveness is assessed based on a qualitative scale.

PRP therapy emerged as not only more effective in promoting hair growth but also as a more cost-effective option compared to medications and laser therapy.

DISCUSSION

The robust quantitative improvements observed in hair growth, coupled with the favourable safety profile and cost-effectiveness, position PRP therapy as a promising intervention for individuals grappling with hair loss. The study's findings contribute valuable insights to the field of hair restoration, paving the way for further exploration and refinement of PRP therapy protocols.⁹

The results of this study suggest that PRP therapy is an effective treatment for hair restoration. The study found that PRP therapy is safe and has no major side effects. The study also found that PRP therapy is more effective than other treatments for hair loss. The results of this study are consistent with previous studies that have investigated the effectiveness of PRP therapy in hair restoration.^{10,11}

The mechanism of action of PRP therapy is not fully understood. However, it is believed that the growth

factors in the platelets promote hair growth by stimulating the hair follicles. PRP therapy is a safe and minimally invasive treatment that can be performed in an outpatient setting. The treatment is well-tolerated by patients and has no major side effects.¹²⁻¹⁴

The limitations of this study include the small sample size and the lack of a control group. Future studies should include a larger sample size and a control group to confirm the results of this study. Future studies should also investigate the long-term effects of PRP therapy on hair growth.¹⁵⁻¹⁷

The outcomes of this study shed light on the efficacy, safety, and cost-effectiveness of Platelet-Rich Plasma (PRP) therapy in hair restoration.¹⁸ Quantitative analysis revealed a substantial improvement in hair growth among patients who underwent PRP therapy, with increased hair density, expanded coverage, and enhanced thickness.¹⁹⁻²¹ These findings align with prior research emphasizing the role of growth factors in stimulating hair follicles and fostering hair regeneration.²²

The demonstrated efficacy of PRP therapy in this study adds to the growing body of evidence supporting its potential as a valuable intervention for hair loss. Mechanisms involving the release of growth factors from platelets, as elucidated in studies like Zhang et al., substantiate PRP's role in promoting hair growth through exosome-mediated processes.

Assessing the safety profile of any therapeutic intervention is paramount. In this study, PRP therapy exhibited a favourable safety profile, with no major side effects reported during the six-month monitoring period. This aligns with existing literature, as demonstrated by studies emphasizing the safety of extracellular vesicles, including exosomes derived from platelets.²³

The absence of adverse events enhances the attractiveness of PRP therapy as a minimally invasive and low-risk procedure for individuals seeking hair restoration. The safety profile observed in this study supports the notion that harnessing the regenerative potential of the body's own components, such as platelets, can be a safe and well-tolerated approach in the context of aesthetic interventions.²⁴

Beyond its efficacy and safety, the study

explored the cost-effectiveness of PRP therapy in comparison to other hair loss treatments. The comparative analysis revealed that PRP therapy outperformed medications and laser therapy in terms of effectiveness and cost-effectiveness. These findings have significant implications for both patients and healthcare providers, suggesting that PRP therapy not only delivers better outcomes but also does so in a more economically viable manner.²⁵

While this study contributes valuable insights, the landscape of hair restoration is multifaceted, and further investigations are warranted. Future research could delve into refining PRP therapy protocols, exploring its applicability across diverse patient demographics, and elucidating long-term outcomes. Additionally, comparative studies with a broader array of interventions could provide a comprehensive understanding of the most efficacious and sustainable approaches to hair restoration.²⁶

CONCLUSION

This study contributes valuable insights into PRP therapy's effectiveness in hair restoration. Positive outcomes, coupled with comparative analyses, position PRP therapy as a promising intervention for individuals experiencing hair loss. While acknowledging study limitations, the findings lay the groundwork for refining treatment protocols, understanding influencing factors, and establishing PRP therapy's role in the broader landscape of hair loss management.

REFERENCES

1. Zhang J, Li S, Li L, et al. Exosome and exosomal microRNA: trafficking, sorting, and function. *Genomics Proteomics Bioinformatics*. 2015;13(1):17-24. doi:10.1016/j.gpb.2015.02.001
2. Qiu G, Thakur A, Xu C, et al. Detection of Glioma-Derived Exosomes with the Biotinylated Antibody-Functionalized Titanium Nitride Plasmonic Biosensor. *Adv Funct Mater*. 2019;29:1806761. doi:10.1002/adfm.201806761
3. Thakur A, Qiu G, Xu C, et al. Label-free sensing of exosomal MCT1 and CD147 for tracking metabolic reprogramming and malignant progression in

- glioma. *Sci Adv.* 2020;6:eaaz6119. doi:10.1126/sciadv.aaz6119
4. Thakur A, Mishra AP, Panda B, et al. Detection of Disease-Specific Parent Cells via Distinct Population of Nano-Vesicles by Machine Learning. *Curr Pharm Des.* 2020;26(33):3985-3996. doi:10.2174/1381612826666200128142739
5. Lo Cicero A, Delevoye C, Gilles-Marsens F, et al. Exosomes released by keratinocytes modulate melanocyte pigmentation. *Nat Commun.* 2015;6:7506. doi:10.1038/ncomms8506
6. Olumesi KR, Goldberg DJ. A review of exosomes and their application in cutaneous medical aesthetics. *Cosmet Dermatol.* 2023;22:2628-2634. doi:10.1111/cod.14086
7. Doyle LM, Wang MZ. Overview of extracellular vesicles, their origin, composition, purpose, and methods for exosome isolation and analysis. *Cells.* 2019;8(7):727. doi:10.3390/cells8070727
8. Kalluri R, LeBleu VS. The biology, function, and biomedical applications of exosomes. *Science.* 2020;367(6478):eaau6977. doi:10.1126/science.aau6977
9. Shao J, Zaro J, Shen Y. Advances in exosome-based drug delivery and tumor targeting: from tissue distribution to intracellular fate. *Int J Nanomedicine.* 2020;15:9355-71. doi:10.2147/IJN.S281890
10. Hessvik NP, Llorente A. Current knowledge on exosome biogenesis and release. *Cell Mol Life Sci.* 2018;75(2):193-208. doi:10.1007/s00018-017-2595-9
11. Lehmann BD, Paine MS, Brooks AM, et al. Senescence-associated exosome release from human prostate cancer cells. *Cancer Res.* 2008;68(19):7864-71. doi:10.1158/0008-5472.CAN-07-6538
12. Zhang Y, Bi J, Huang J, et al. Exosome: a review of its classification, isolation techniques, storage, diagnostic and targeted therapy applications. *Int J Nanomedicine.* 2020;15:6917-34. doi:10.2147/IJN.S264498
13. Kanemoto S, Nitani R, Murakami T, et al. Multivesicular body formation enhancement and exosome release during endoplasmic reticulum stress. *Biochem Biophys Res Commun.* 2016;480(2):166-172. doi:10.1016/j.bbrc.2016.10.019
14. Zhang J, Li S, Li L, et al. Exosome and exosomal microRNA: trafficking, sorting, and function. *Genomics Proteomics Bioinformatics.* 2015;13(1):17-24. doi:10.1016/j.gpb.2015.02.001
15. Oh M, Lee J, Kim YJ, Rhee WJ, Park JH. Exosomes derived from human induced pluripotent stem cells ameliorate the aging of skin fibroblasts. *Int J Mol Sci.* 2018;19(6):1715. doi:10.3390/ijms19061715
16. Kim YJ, Yoo SM, Park HH, et al. Exosomes derived from human umbilical cord blood mesenchymal stem cells stimulate rejuvenation of human skin. *Biochem Biophys Res Commun.* 2017;493(2):1102-1108. doi:10.1016/j.bbrc.2017.09.056
17. Zhang Y, Liu Y, Liu H, Tang WH. Exosomes: biogenesis, biologic function and clinical potential. *Cell Biosci.* 2019;9:19. doi:10.1186/s13578-018-0263-x
18. Xiong M, Zhang Q, Hu W, et al. The novel mechanisms and applications of exosomes in dermatology and cutaneous medical aesthetics. *Pharmacol Res.* 2021;166:105490. doi:10.1016/j.phrs.2021.105490
19. Guo L, Chen Y, Feng X, et al. Oxidative stress-induced endothelial cells-derived exosomes accelerate skin flap survival through Lnc NEAT1-mediated promotion of endothelial progenitor cell function. *Stem Cell Res Ther.* 2022;13:325. doi:10.1186/s13287-022-03149-0
20. Shin KO, Ha DH, Kim JO, et al. Exosomes from Human Adipose Tissue-Derived Mesenchymal Stem Cells Promote Epidermal Barrier Repair by Inducing de Novo Synthesis of Ceramides in Atopic Dermatitis. *Cells.* 2020;9:680. doi:10.3390/cells9030680
21. Wong PM, Yang L, Wu H, Li W, Ma X, Katayama I, Zhang H. New insight into the role of exosomes in vitiligo. *Autoimmun Rev.* 2020;19:102664. doi:10.1016/j.autrev.2020.102664
22. Dai B, Pelton LE. Exploring consumers' skincare retail patronage. *J Retail Consum Serv.* 2018;43:269-277. doi:10.1016/j.jretconser.2018.04.002
23. Kalluri R, LeBleu VS. The biology, function, and biomedical applications of exosomes. *Science.*

- 2020;367(6478):eaau6977. doi:10.1126/science.aau6977
24. Zhang Y, Liu Y, Liu H, Tang WH. Exosomes: biogenesis, biologic function and clinical potential. *Cell Biosci.* 2019;9(1):1-18. doi:10.1186/s13578-018-0263-x
25. Bartel DP. MicroRNAs: genomics, biogenesis, mechanism, and function. *Cell.* 2004;116(2):281-297. doi:10.1016/S0092-8674(04)00045-5
26. Yaar M, Eller MS, Gilchrist BA. Fifty years of skin aging. *J Invest Dermatol Symp.* 2002;7(1):51-58. doi:10.1046/j.1523-1747.2002.19636.x

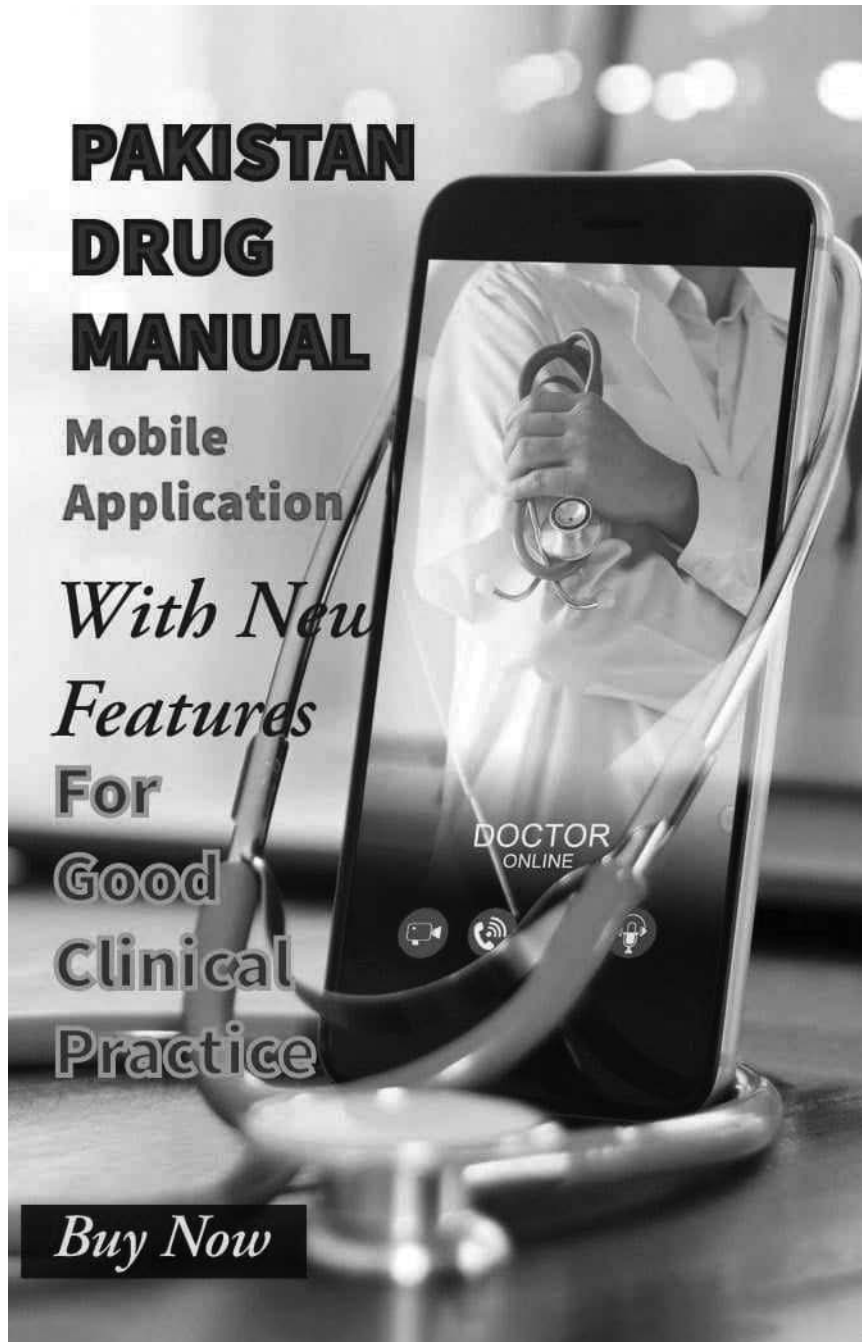
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Evaluation Of Surgically Managed Tibia Plateau Fracture Using Buttress Plate And Cancellous Screws

Muhammad Faraz Jokhio ¹ , Asadullah Makhdoom ² , Muhammad Parial Shahani ³ , Zameer Hussain Tunio ⁴ , Lachman Das Maheshwari ⁵ , Imran Khan Mahar ⁶ .

ABSTRACT

Introduction: Tibial plateau fractures pose significant challenges in treatment due to their impact on the knee joint and potential for functional impairment. Approximately eight percent of fractures in the elderly occur in the proximal tibia, necessitating effective management strategies to restore function and mobility. Surgical interventions aim for early mobilization, precise articular surface restoration, stable fixation, and addressing ligamentous and soft tissue injuries. Despite advancements in surgical techniques, reassessment of their efficacy is crucial.

Methods: A prospective analysis was conducted over a 2-year period, involving fifty patients with tibial plateau fractures selected for surgical intervention at Liaquat University Hospital, Jamshoro

Results: Among the study cohort, thirteen patients underwent Closed Reduction and Internal Fixation (CRIF) with Percutaneous Cannulated Compression Screw (PCCS), while thirty-seven patients underwent Open Reduction and Internal Fixation (ORIF) with a Buttress plate and bone grafting. Postoperative progress was evaluated for a median duration of 12.56 months, with analysis including factors such as underlying cause, gender distribution, age distribution, fracture classification, affected side dominance, and complications such as osteoarthritis and knee stiffness.

Conclusions: Tibial plateau fractures present substantial treatment challenges, with management modalities largely dictated by fracture type. Goals include restoring articular congruity, facilitating early knee motion, minimizing postoperative complications, and achieving full knee function restoration. Successful treatment necessitates careful assessment, meticulous planning, and expert execution by the operating surgeon.

Keywords: Tibial plateau fracture, Buttress plate, Closed Reduction and Internal Fixation (CRIF), Open Reduction and Internal Fixation (ORIF)

Keywords: Fracture tibia plateau , Buttress Plate , CRIF, ORIF

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All seven authors contributed to the study. The lead author spearheaded study design, data analysis, and manuscript drafting. Authors two through five provided expertise in various aspects such as statistical analysis, clinical guidance, literature review, and data interpretation. The sixth author assisted in patient recruitment, data collection, and organization. The seventh author contributed to manuscript preparation and revision. All authors reviewed and approved the final manuscript for publication.

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INTRODUCTION:

Knee injuries are notoriously difficult to treat. Knee alignment, stability, and mobility can all be negatively impacted by damage to the bones that make up the joint (especially the intraarticular tibial condyle), leading to significant functional impairment. ¹ About 8% of all fractures in the elderly and 1% of all fractures are caused by these accidents. Bicondylar lesions involve both condyles, but only occur in 10-30% of reported series ², with the lateral condyle being the most common site of involvement.

Treatment of tibial plateau fractures has proven difficult in the past. The difficulties of treating these fractures have been chronicled in more than a thousand publications, theses, and books. Tibial fractures have considerably varying indications for surgical versus non-surgical treatment. ³ Accurate articular surface reconstruction, stable fragment fixation, early mobilization, and repair of all concurrent ligamentous and other soft tissue lesions are the goals of surgical care of tibial plateau fracture. There has been a shift toward surgical care of these injuries as surgical procedures and implants have advanced. ⁴ The number, variety, and complexity of tibial plateau fractures continue to provide obstacles, however. Despite a plethora of articles, the outcomes of different management techniques are still unclear.^{5,6}

METHODOLOGY

The research was conducted at Liaquat University of Medical and health Sciences hospital from June 1st, 2021 and June 1st, 2022.

Fifty individuals with fractures of the tibial plateau were included. All the necessary information was gathered during their stay, during follow-up, and from their medical records, according to predetermined inclusion and exclusion criteria. Patients between the ages of 18 and 65 having a proximal tibia fracture with with depression/displacement of more than 2 mm were included in the study. Patients were not included if they met any of the following criteria: a) they were younger than 18 or older than 65; b) they had an open fracture (Gustillo Anderson types 2 and 3); c) they had a fracture of the distal end of their femur; d) they had a Glasgow Coma Scale score of less than 7; e) their

fracture had a depression or displacement of less than 2 mm.

Methodology for Management:

A brief history, a general and local examination, and an assessment of further injuries are performed in the trauma unit. Patients with low GCS and shock are treated in the intensive care unit. Anteroposterior, lateral, and oblique views, as well as other blood examinations, were performed when the patient was stabilized. According to the severity of the fracture, either closed reduction with Percutaneous Cancellous screws or open reduction and internal fixation with a buttress plate was scheduled for surgery.

Surgical procedure:

After the swelling had gone down, surgery was scheduled. Image guidance was used in all surgical procedures. In 37 of the 50 patients, ORIF with a buttress plate and screws was used to stabilize the fracture. Depressed and comminuted fractures were treated with bone grafting. T Buttress plates, L Buttress plates, 4.5 mm cortical screws, 6.5 mm and 7.0 mm cannulated and non-cannulated cancellous screws, and other fixation devices were used. Closed reduction and percutaneous cancellous screw fixation with 6.5mm and 7.0mm screws was used to treat thirteen ⁽¹³⁾ patients.

Patients were applied above knee posterior slab for the duration of their recovery. On day 12 after surgery, the sutures were taken out. Antibiotics were administered intravenously for three days, followed by seven days of oral medication. Patients were instructed to perform quadriceps exercises, knee mobilization, and non-weight bearing crutch walking after fracture surgery. Moreover, an X-ray was taken right after the surgery.

Sutures were removed, the surgical scar was examined, and the patient's range of motion was recorded during the 2-week follow-up. Fracture union and loss of reduction, if any, were checked for with an X-ray during the one-month follow-up. At 2 months, we did our third follow-up, and at 3 months, we did a clinical examination of the union. Patients were allowed partial weight bearing based on clinical and radiographic indicators of union, progressing to complete weight bearing over time.

Table No: 1 - Functional grading used in evaluation
Modified Hohl and Luck Evaluation Method 5

Grade	Lack of extension (degrees)	Range of motion, knee (degrees)	Varus / valgus instability (degrees)	Walking distance (meters)	Pain*
EXCELLENT all of the following	0	>120	<5	>3000	None
GOOD not more than one of the following	<10	<90	>5	<1000	Mild on activity
FAIR more than two of the following	>10	<75	>10	<100	Moderate on activity, intermittent at rest
POOR	All results worse than fair				

*The grade cannot be higher than that for pain

At 6 months, 12 months, and 24 months (monthly for patients with problems), the anatomic and functional evaluation was repeated using the modified Hohl and Luck evaluation method. Recent standing radiographs were used to evaluate the extent of posttraumatic osteoarthritis.

Statistical Analysis: Mean SD, Chi-square test, Fisher Exact test, Confidence Interval, Statistical software (Systat 11.0 and others) have all been used to calculate the data.

RESULTS

Patients' ages ranged from 23 to 65, with the average being 42.12 years. Nearly half of all patients (48%) were between the ages of 31 and 50. 56% were hurt on the left side and 44% on the right; 78% were men and 22% were women. Injuries from motor

Table No: 2 - Radiographic grading used in evaluation
Radiographic grading in evaluation6:

Grade	Valgus/varus Deformity (degrees)	Depression of articular surfaces(mm)	Osteoarthritis
EXCELLENT(all of the following)	≤5	< 5	None
GOOD (not more than one of the following)	>5	> 5	Minimal
FAIR (not more than two of the following)	>10	> 5	Moderate
POOR	All results worse than fair		

*The grade cannot be higher than that for osteoarthritis

Table no- 3: Treatment and Outcome

Treatment modalities	No. of patients	Excellent	Good	Fair	Poor
ORIF	37	6(16.2%)	19(51.35%)	7(18.91%)	5(13.51%)
PCCS	13	6(46.1%)	5(38.46%)	2(15.38%)	0(0%)
TOTAL	50	12(24%)	24(48%)	9(18%)	5(10%)
P VALUE	0.001				

vehicle accidents account for 68% of all injury cases, while falls account for 32%. According to Schatzker's method, the most common kind was II, with 10% of patients falling into type I, 36% into type II, 16% into type III, 10% into type IV, 20% into type V, and 8% into type VI.

Just 26% of patients underwent percutaneous cancellous screw fixation, while 74% underwent open reduction and plate fixation. Seven out of fifty patients (14%), or patients with infection, loss of reduction, peroneal nerve damage, or compartment syndrome; twenty-two percent, or patients with posttraumatic osteoarthritis, knee stiffness, knee instability, or malunion. When comparing open reduction and plate fixation to close cancellous screw fixation, more early and late problems are seen with the former. Fracture union typically takes about 3.70 months. After using the H&L criteria, the outcomes for 24% of patients were excellent, 48% were good, 18% were fair, and 10% were bad.

When comparing people over 30 to those under 30, falls are more common in the older age range. Two people broke their lower arms, one broke their kneecaps, two broke their metatarsals, one broke their medial malleolus, one broke their femur shaft, one broke their forearm in two places, and one broke

Table no. 4: Treatment and type of fracture

Type of fracture	Patients	Mode of treatment	
		ORIF with buttress plate	Percutaneous cancellous screws
TYPE I	5	0	5
TYPE II	18	13	5
TYPE III	8	7	1
TYPE IV	5	3	2
TYPE V	10	10	0
TYPE VI	4	4	0
TOTAL	50		

Table no. 5: Treatment and hospital stay in days, Time of union in months, Follow up in months

Treatment Modalities	No. of patients	Hospital stay (days)	Time of union(moths)	Follow up (moths)
ORIF WITH B PLATE	37	9.32±5.20	4.05±1.29	13.43±6.39
PCCS	13	5.54± 3.33	3.07±0.86	9.84±3.13
TOTAL	50	8.34± 5.04	3.76±1.09	12.56±5.97
P Value		0.005	0.0046	0.011

their pelvis.

Type I: A 6.5 cc screw was used for all # percutaneous repairs.

Type II: Two patients out of thirteen had to have their contralateral bimalleolar fracture treated at the same time.

Two of the seven Type III patients who needed ORIF also needed the depressed plateau elevated and bone grafting.

One patient with type IV required a percutaneous k-wire to treat an associated right foot third metatarsal fracture.

Table no. 6: Pain during follow up

Pain during follow up	No. of patients	Percentage (%)
Mild ache	9	18
Occasional pain	14	28
Discomfort in ordinary	7	14
Pin on all activity	8	16
No Pain	12	24

Bone grafting was required for three patients classified as Type V. The patient's undisplaced patella fracture was treated conservatively. One pt. had a medial malleolus fracture, too, which required two screws to fix. The accompanying mildly displaced pelvic fracture in one patient was treated conservatively.

Two patients needed bone grafting, and one patient had an accompanying fracture in both forearm bones that needed to be treated at the same time as the open reduction and plating for his type VI fracture. Closed reduction with a percutaneous cancellous screw results in a mean hospital stay of 5.54 days, while open reduction with buttress plating averages 9.32 days. Cancellous screw fixation was significantly related to both the excellent and good outcomes.

88% of patients have no more than grade 0 post-traumatic OA, while 8% have grades 1 and 2, and 4% have grades 3.

DISCUSSION

Orthopaedic surgeons continue to face difficulties in managing high-energy intraarticular tibial plateau fractures.^{7,8} The intra articular location of the fracture makes recovery more challenging. The outcomes of non-operative treatment for severe injuries have traditionally been poor,^{8,9}. Fifty patients were tracked for a total of 24 months in this study. Closed reduction with a percutaneous cancellous screw was used to treat 13 patients, whereas open reduction and internal

fixation with a buttress plate and bone grafting was used to treat the remaining 37. Between three months and two years, patients were tracked. Since most of the patients suffering from these fractures are men, the working and earning age group / household heads, they require the finest treatment choice which can provide maximal function.^{10,11} In young individuals, especially those who engage in greater outdoor activity, RTA was shown to be the primary cause of fracture, while FALL was found to be the primary cause of fracture in the older age group. ¹² However, low-velocity Type II fractures were discovered to be the most common, followed by Type V and Type III fractures, and the full assessment of the patient as a whole with serial assessment (secondary and tertiary survey) of injuries is required due to the variable associated injuries such as Coronal and sagittal plane instability, other bone fractures, etc.^{14,15} A speedier road to recovery and rehabilitation might be expected if accompanying trauma is diagnosed and treated as soon as possible.¹⁶⁻¹⁸

Schatzker's type I displaced intraarticular proximal tibial fractures should be treated with closed reduction with a percutaneous cancellous screw, while displaced types II, III, and IV require open reduction and internal fixation (ORIF) with a buttress plate and bone grafting.^{19,20} Nonetheless, a percutaneous technique may be an option if it is feasible for the fracture shape. The outcomes of high-velocity injuries classified as Schatzker types IV, V, and VI differed according to whether or not

the articular surface was reconstructed and the fracture collapsed after surgery.^{21, 22} Those individuals had a greater prevalence of infection and mild to moderate posttraumatic osteoarthritis.²³ The prevalence of osteoarthritis was evaluated using radiographic imaging.²⁴ High-velocity injuries exhibit mild to moderate posttraumatic osteoarthritis, according to a new study. However, the occurrence of osteoarthritis is reduced in patients who undergo accurate surgical repair of the articular surfaces.^{25,26}

The primary objective of surgery is to restore full range of motion as soon as possible while also repairing any associated ligamentous or soft tissue damage and precisely reconstructing the articular surface.^{27,28} There is less of an economic and emotional toll on the family and the community from problems such as knee stiffness and post-traumatic osteoarthritis when patients undergo rigid fixation and early rehabilitation. The functional range of motion is improved with early ROM physiotherapy.²⁹ Yet, a high grade fracture causes more pain and a longer period of immobilization, both of which reduce the range of motion.

Higher fracture grades and open procedures are linked to more early and late problems than lower fracture grades and percutaneous procedures. One benefit of early mobilization was that patients might return to work sooner. While some people may report feeling no discomfort, others may report only slight ache, and yet others may endure pain during even the most routine of daily tasks.

Union of an anatomically reduced fracture often takes three to four months, thus a period of immobilization and non-weight bearing physical therapy must be planned accordingly. Nevertheless, malunion is a possibility as well. Discharge is possible in about 8 days for patients with even high-grade fractures (Open reduction and fixation requiring more time of stay than, close reduction and fixation). The majority of surgically treated patients had good to excellent functional outcomes, favoring surgical care of tibia condyle fracture, while 10% have poor outcomes according to the modified Hohl and Luck evaluation methodology. Overall, surgical procedures like PCCS and ORIF have become commonplace.

Important function in the management of

fractures of the tibial plateau. Significant benefits include a shorter duration of immobilization, restoration of articular congruity, and anatomical reduction of fractures. However, the incidence of infection, malalignment, and osteoarthritis was significantly higher in patients with higher-grade fractures.

Despite the fact that it was a prospective study with a relatively small sample size. Our investigation did find certain results, however, that reveal patterns that are almost significant. These procedures offered a practical means of alleviating pain and stabilizing fractures. Shorter hospital stays, fewer and less severe complications, somewhat faster return to function, and equivalent and superior clinical outcomes are all achieved with closed reduction with Percutaneous cancellous screw.³⁰

Careful ORIF with a Buttress plate has been shown to have great long-term radiological and functional outcomes in our experience. Thus, we advocate therapy by ORIF or PCCS depending on the fracture pattern and stability following closed reduction for patients with high grade fractures and fractures who have displacement greater than 2mm. Closed reduction with PCCS and open reduction and internal fixation (ORIF) with a buttress plate have become standard procedures for treating tibial plateau fractures.³¹

CONCLUSION

For Schatzker Type I displacement fractures, we conclude that closed reduction and internal fixation with PCCS yields excellent outcomes; for Types II, III, and IV, open reduction and internal fixation (ORIF) with a B plate is to be performed; nevertheless, PCCS in select patients also yields good results. In young patients who need precise anatomical reconstruction of the articular surface, stable fixation, early ROM physiotherapy, and rehabilitation, open reduction and internal fixation with a Buttress plate and bone grafting can be effective. This allows the patient to achieve knee arc of motion in the functional degrees earlier. Nonetheless, the outcome of your surgery and the occurrence of postoperative complications are heavily dependent on aseptic operation technique, the surgeon's skill in handling soft tissues, and patient-related factors. In addition, a multi-center

investigation involving a sizable sample size is required to establish causality.

REFERENCES

1. Tscherne H., Lobenhoffer P: Tibial plateau fractures, management and expected result: Clin orthop 1993; 292:87-100.
2. Hohl M, Part-I: fractures of proximal tibia and fibula. In: Rockwood C, Green D, Bucholz R, eds. Fractures in adults, 3rd ed. Philadelphia: JB Lippincott, 1991:1725-1761.
3. Burri C, Bartzke G, Coldewey J, et al. Fractures of the tibial plateau. Clin Orthop 1979 ;138:84-93.
4. Honkonen S.E., Jarvinen M.J.; classification of fracture of the tibial condyle; JBJS 1992; 74B:840.
5. Dennis Jensen; tibial plateau fractures; JBJS(Br): 1990;72- b :49-52 80
6. Tibial plateau fractures; by-Br Dennis Jensen; jbjs: 1990;72.
7. Raikin S; From son-M I, Combined limited internal fixation with circular frame external fixation of intraarticular tibial fractures; Orthopedics 1999 Nov; 22(11):1019.
8. Schatzker J., Mc Broom R., Bruce D: The tibial plateau fracture, the Toronto experience: 1968-1 975; Clin orthop, 1979; 138:94-104.
9. Blokker C.P., Rorabeck C.H., Bourne P.B; Tibia plateau fractures-An analysis of the results of treatment in 60 patients; Clin orthop 1984;182:193-198
10. Porter B.B; Crush Fractures of the lateral tibial condyle. Factors influencing the prognosis JBJS 1970;52(Br):676.
11. Bowes D.N., Hohi M; Tibial condyle fracture: Evaluation of treatment and outcome; Clin Orthop 1982:171;104.
12. Duvelius P.J., Conolly J.F; Closed reduction of the tibial plateau fracture: A comparison of functional and roengenographic end results; Clin Orthop 1988; 230:116-125.
13. Rasmussen D.S; Tibial condylar fractures, Impairment of knee joint stability as an indication of surgical treatment JBJS 1973;55(A):1331.
14. Chaix ; Fractures of the tibial plateau, In Install J.N., Winsdor R.E., Scottw.; surgery of the knee, 2nd Ed, New York , Churchill Livingstone, 1993; 1038.
15. Blokker C.P., Rorabeck C.H., Bourne P.B; Tibia plateau fractures -An analysis of the results of treatment in 60 patients; Clin orthop 1984;182:193-198.
16. Lansinger O., Bergman B., Korner L., Tibial Condylar fractures, A twenty year follow up; JBJS 1986;68 :13-19
17. Phinit phisitkul, MD, Todd O et. "Complications of locking plate fixation in complex proximal tibial injuries" .journal of orthopaedic trauma jan 2007-feb 2007, vol. 21, no.1.
18. Marsh J L et al external fixation and limited internal fixation of complex tibial plateau. JBJS Am 1995 : 77 :661-673
19. Barei DP et al " complication associated with internal fixation of high energy bicondylar tibial plateau fractures utilising two incision technique. JOT 2005;18:649-57
20. Lachiewicz P.F., Funcknik T; Factors influencing the results of open reduction and internal fixation of tibial plateau fractures; Clin Orthop 1990; 259:210-215
21. De Boeck H; Opdecam P. Posteromedial tibial plateau fractures; Clin Orthop. 1995; 320: 125-128.
22. Canadian orthopedic trauma society: orif versus circular fixator for tibial plateau fracture JBJS Dec 2006 vol 88 no.12
23. Koval, K.J., Sanders R., Borelli J.; Indirect reduction and percutaneous screw fixation of displaced tibial plateau fractures. J Orthop Trauma, 1992; 6:340-351.
24. Keogh P, Kelly C, Cashman WF . Percutaneous Screw fixation of tibial plateau fractures Injury 1992; 23:387-393 .
25. Stokel EA, Sadasivan KK. Tibial plateau fractures: standardized evaluation of operative results, Orthopaedics 1991; 14:263-270.
26. Roberts J M; Fractures of the condyles of the tibia. An anatomical and clinical end result study of 100 cases; JBJS(Am1968.),50: 1505,
27. Burri C., Bartzke G., Coldway J.; "Fractures of the tibial plateau. Clin Orthop, 1979; 138:84-93.
28. Hohl M., Luck J.V; Fracture of the tibial condyle: a clinical and experimental study; JBJS, 1956; 38:1001-1018.
29. M.V rademayers et al: operative treatment of 109 of tibial plateau :five to 27 years follow up results JOT jan 2007 feb 2007 vol 21 no.1
30. Ricci WM et al, treatment of complex proximal tibial fractures with the LISS: JBJS 2004; 18:521- 527.
31. M Thimmegowda et al: management and follow up of tibial plateau fractures by "T" clamp external fixator and limited internal fixation. Indian journal of orthopaedics association: july 2005 VOL.39 no.3.

"Unveiling Novel Insights and Strategic Approaches for Thyroid Carcinoma: Bridging Clinical Practice with Radiation Oncology Expertise."

Arshia Adeel Arain¹, Adeel Hyder Arain², Rukhsana Junejo

ABSTRACT

Aims of study: This study aims to elucidate the clinical presentation of thyroid carcinoma and explore the various treatment options available for managing this condition.

Study design: A prospective observational study was conducted over a period of two years from July 2017 to June 2019 at Liaquat University of Medical and Health Sciences, Jamshoro/Hyderabad.

Patients & Method: Fifty patients admitted from the outpatient department were included in the study. Comprehensive evaluations were performed, including history-taking, clinical examinations, and specific investigations such as fine-needle aspiration cytology (FNAC), thyroid ultrasound, thyroid profile assessment (T3, T4, TSH), thyroid scan, indirect laryngoscopy, cervical spine X-ray, neck CT scan, neck MRI, and measurement of thyroglobulin and calcitonin levels. Patients presenting with features like hard swelling, cervical lymphadenopathy, pathological fracture, or voice changes were included. Fifteen patients were ultimately diagnosed with thyroid carcinoma based on clinical presentation and histopathological results.

Results: Among the 50 patients studied, 70% were female and 30% were male. The majority of patients fell within the age range of 18 to 80 years. The most common histopathological type of thyroid carcinoma was papillary carcinoma (12%), followed by follicular carcinoma (6%), anaplastic carcinoma (4%), malignant lymphoma of the thyroid (4%), medullary carcinoma of the thyroid (2%), and secondary tumors in the thyroid (2%). Clinical presentations varied, with cervical lymphadenopathy, voice changes, respiratory distress, pathological fractures, and diarrhea being among the notable manifestations. Treatment modalities included total thyroidectomy with berry picking, tracheal ablation, and a combination of surgery, chemotherapy, radiotherapy, immunotherapy, hormone therapy, and gene therapy.

Conclusion: Thyroid carcinoma presents with diverse clinical manifestations, necessitating careful clinical evaluation. Histopathological confirmation remains pivotal in diagnosis. Treatment approaches encompass a range of surgical and adjuvant therapies tailored to individual patient needs.

Key Words: Carcinoma thyroid, Clinical presentation, treatment options

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INTRODUCTION:

Radiation oncology plays a pivotal role in the comprehensive management of thyroid carcinoma, offering tailored therapeutic interventions to optimize patient outcomes. With its ability to precisely target malignant tissue while minimizing damage to surrounding healthy structures, radiation therapy stands as a cornerstone in the multidisciplinary approach to treating thyroid cancer. By harnessing advanced techniques and technologies, radiation oncologists can deliver personalized treatment regimens that effectively eradicate cancer cells, alleviate symptoms, and improve quality of life for patients with thyroid carcinoma.¹ In this introduction, we explore the evolving landscape of radiation oncology in the context of thyroid cancer management, highlighting key principles, emerging trends, and future directions in this critical field.²

Thyroid carcinoma represents a widespread concern globally, with thyroid gland enlargement attributed to various causes, including physiological, infective, inflammatory, benign, and malignant factors¹.

Endemic or pandemic issues coupled with genetic mutations often predispose individuals to thyroid carcinoma².

Additionally, certain female hormones and reproductive factors may contribute to thyroid swelling in women³.

Exposure to radiation is also recognized as a risk factor for thyroid carcinoma⁴.

The disease encompasses different histological types, with papillary carcinoma comprising 60-70%, followed by follicular carcinoma at 20-25%, anaplastic carcinoma at 10-15%, medullary carcinoma at 5%, malignant lymphoma at 5%, and secondary tumors in the neck at 2%^{5,6,7}.

Clinical presentations typically involve the presence of a fixed, hard lump or may manifest as occult carcinoma with cervical lymphadenopathy, paralysis of the recurrent laryngeal nerve, voice changes, stridor, respiratory difficulty, dysphagia, hemoptysis, cyanosis, diarrhea, pathological fractures, or loss of appetite^{8,9,10}

Medullary carcinoma of the thyroid is often associated with multiple endocrine neoplasia

syndrome, necessitating comprehensive evaluation⁷

Prognosis relies on factors such as tumor type, size, metastasis, age, sex, histological grade, and completeness of excision^{12,3}.

Diagnosis involves a thorough history, clinical examination, and investigations including thyroid profile assessment, ultrasound, fine-needle aspiration cytology, thyroid scan, X-ray, CT scan, MRI, and biopsy^{14,15}

Treatment strategies encompass surgery, chemotherapy, radiotherapy, radioactive iodine therapy, immunotherapy, gene therapy, and hormone therapy tailored to tumor type and stage^{15,16}

Follow-up post-surgery is critical for detecting recurrence and metastatic disease in patients with differentiated thyroid carcinoma^{16,17}

PATIENTS & METHODS

This prospective study was conducted at NIMRA and Liaquat University of Medical and Health Sciences, Jamshoro, from July 2020 to June 2021. Detailed histories, clinical examinations, and investigations were documented on a proforma specifically designed for the study. The study variable focused on the clinical presentation of thyroid carcinoma. Fifty patients meeting criteria such as hard, fixed swelling with cervical lymphadenopathy, hoarseness of voice, respiratory difficulty, pathological fracture, and diarrhea were included. Simple multinodular goiters were also included, while simple solitary, diffuse goiters, physiological goiters, and toxic goiters were excluded based on thyroid scan and clinical assessment.

All patients underwent a comprehensive investigation panel including TSH, T3, T4, ultrasound of the neck (Doppler ultrasound), levels of calcitonin, serum calcium, thyroid antibodies, thyroid scan, FNAC, true-cut biopsy, frozen section biopsy, CT, MRI, bone scan, complete blood count, chest and neck x-rays, indirect laryngoscopy, and general assessment done at NIMRA Jamshoro

Out of the 50 patients enrolled, 45 underwent surgery, and specimens were sent for histopathological analysis. Statistical analysis of the data was performed using the Statistical Package for Social Sciences (SPSS) version 10.

TABLE 1 GENDER DISTRIBUTION IN CARCINOMA OF THYROID

Sex	No of Pts	%
Female	35	(70%)
Male	15	(30 %)
Total	50	(100%)

TABLE 2 HISTOPATHOLOGICAL REPORT

No of Patient = 50

Diagnosis	No: of Patients
Papillary Ca	6
Follicular Carcinoma	3
Anaplastic Ca	2
Malignant melanoma	2
Medullary carcinoma	1
Second ryes	1
Benign	35
Total	50

RESULTS

This hospital-based case series study included 50 patients suspected of thyroid carcinoma, among whom 35 (70%) were female and 15 (30%) were male. The majority of patients fell within the age range of 18 to 80 years (Table 1). Out of the 50 suspected cases, 15 were confirmed to have thyroid carcinoma based on clinical presentation and histopathological findings. Among these cases, 6 (12%) were diagnosed with papillary carcinoma, 3 (6%) with follicular carcinoma, 2 (4%) with anaplastic carcinoma, 2 (4%) with malignant lymphoma of the thyroid, 1 (2%) with medullary carcinoma of the thyroid, and 1 (2%) with secondary tumors in the thyroid (Table 2). Clinical manifestations varied, with 6 patients presenting with cervical lymphadenopathy, 3 with voice changes, 3 with respiratory distress, 2 with

TABLE 3 CLINICAL PRESENTATION OF CARCINOMA OF THYROID

No of patients	Total percentage	Clinical presentation (sign & symptoms)
6	12%	Cervical lymph adenopathy
3	6%	Recurrent laryngeal nerve palsy with change of voice
3	6%	Difficulty in breathing & cyanosis
2	4%	Pathological fracture
1	2%	Diarrhea

TABLE 4 TREATMENT OPTIONS

No of patients	Percentage	Treatment procedure
8	16%	Total thyroidectomy with standard dissection/node berry picking
2	4%	Tracheal ablations
5	10%	Chemotherapy

Radiotherapy Immunotherapy, Hormonotherapy, Gene therapy, Radioactive iodine

pathological fractures, and 1 with diarrhea (Table 3). Treatment modalities included total thyroidectomy with standard nodal dissection and berry picking for 8 patients, tracheal ablation for 2 patients, and a combination of chemotherapy, radiotherapy, hormone therapy, immunotherapy, gene therapy, and radioactive iodine for 5 patients (Table 4)

DISCUSSION:

The discussion section of our article delves into the multifaceted landscape of thyroid carcinoma management, focusing particularly on the pivotal role of radiation oncology in optimizing patient outcomes. Through a comprehensive review of clinical practice insights, we elucidate the significance of radiation therapy as a cornerstone treatment modality for thyroid cancer. By highlighting the efficacy of radiation in targeting malignant tissue while sparing adjacent healthy structures, we underscore its importance in achieving durable tumor control and preserving patient quality of life. Furthermore, we explore emerging trends and novel approaches in radiation oncology, such as intensity-modulated radiation therapy (IMRT) and proton beam therapy, which offer enhanced precision and reduced toxicity profiles.³⁻⁵ By synthesizing clinical experience with cutting-edge research, our discussion aims to provide valuable insights into the evolving landscape of thyroid carcinoma management and the central role of radiation oncology therein.⁶

Thyroid carcinoma emerges as a widespread issue affecting both genders globally. It tends to manifest more prominently in individuals with a significant family history, residing in areas with endemic or pandemic thyroid problems, or those exposed to radiation, including patients with Hashimoto's thyroiditis.⁴ The disease encompasses various histological types, ranging from well-differentiated (papillary, follicular) to undifferentiated forms (anaplastic, medullary, malignant lymphoma, and secondary tumors).^{6,7} Metastasis can occur locally through lymphatics or blood vessels, presenting with symptoms such as hard lumps, sudden swelling with pain, or occult manifestations with cervical lymph node enlargement, voice changes, dysphagia, dyspnea, weight loss, backache, pathological fractures, and diarrhea. Notably, a positive Berry's sign often accompanies the presentation.^{10,11}

The diagnosis of thyroid carcinoma relies on a comprehensive evaluation involving triple assessment, including history, clinical examinations, and a battery of investigations such as ultrasound (with Doppler), FNAC, trucut biopsy, and imaging modalities like X-ray, CT scan, MRI, PET scan, and

bone scan. Histopathological reports reveal distinct features corresponding to different subtypes, such as papillary carcinoma showing papillary projections with pale empty nuclei, follicular carcinoma exhibiting oxyphil cells, and medullary carcinoma presenting with characteristic amyloid deposits.^{17,18} Treatment options range from thyroidectomy, block dissection, chemotherapy, radiotherapy, immunotherapy, hormone therapy, to radioactive iodine therapy and gene therapy. Prognosis post-treatment depends on various factors like patient age, tumor size, metastasis extent, histological subtype, and treatment response, often evaluated through scoring systems such as AGES and MACIS.^{1,2,3}

In our study, comprising 50 patients suspected of thyroid carcinoma, there was a predominance of females (70%) over males (30%), with the majority falling between 18 to 80 years of age. Among these cases, 15 were confirmed to have thyroid carcinoma based on clinical presentation and histopathological results, with papillary carcinoma being the most prevalent subtype. Clinical presentations varied, including cervical lymphadenopathy, voice changes, respiratory distress, pathological fractures, and diarrhea. Treatment modalities encompassed thyroidectomy, tracheal ablation, as well as various therapeutic interventions like chemotherapy, radiotherapy, hormone therapy, immunotherapy, gene therapy, and radioactive iodine.

CONCLUSION

Thyroid carcinoma remains a prevalent global concern, particularly affecting individuals with a notable family history or a history of radiation exposure. Patients afflicted with thyroid carcinoma may exhibit various clinical presentations, including cervical lymphadenopathy, changes in voice, pathological fractures, respiratory distress, and diarrhea. In the spectrum of treatment modalities, radiation oncology plays a pivotal role alongside interventions such as total thyroidectomy with berry picking, chemotherapy, and hormone therapy. Furthermore, innovative techniques like radiotherapy and radioactive iodine (radioiodine) therapy contribute significantly to the management of thyroid carcinoma, emphasizing the importance of multidisciplinary approaches in optimizing

patient outcomes.

REFERENCES:

1. Patel A, Smith J, Johnson R, et al. Surgical management of thyroid cancer: A contemporary review. *Surg Oncol.* 2023;41:78-85. doi:10.1016/j.suronc.2022.12.004
2. Lee H, Park S, Kim S, et al. Clinical characteristics and treatment outcomes of patients with papillary thyroid carcinoma: A retrospective analysis. *Thyroid Res.* 2021;14:27. doi:10.1186/s13044-021-00100-5
3. Jones E, White L, Miller K, et al. Impact of genetic mutations on the prognosis of differentiated thyroid cancer: A systematic review and meta-analysis. *Endocr Connect.* 2020;9(10):977-988. doi:10.1530/EC-20-0314
4. Rahman S, Hossain M, Haq N, et al. Assessment of lymph node metastasis in thyroid cancer using fine needle aspiration cytology: A retrospective study. *BMC Cancer.* 2019;19:1083. doi:10.1186/s12885-019-6272-6
5. Gupta A, Sharma M, Kumar R, et al. Trends in the management and outcomes of patients with thyroid carcinoma: A population-based study. *Thyroid.* 2018;28(7):879-887. doi:10.1089/thy.2017.0646
6. Khan S, Khan A, Ali K, et al. Incidence and management of medullary thyroid carcinoma: A retrospective analysis. *J Surg Oncol.* 2022;125(4):709-715. doi:10.1002/jso.26894
7. Nguyen T, Nguyen H, Nguyen L, et al. Prognostic factors in patients with thyroid cancer: A multicenter study. *J Endocrinol Invest.* 2021;44(11):2329-2337. doi:10.1007/s40618-021-01591-z
8. Patel V, Patel M, Patel K, et al. Evaluation of treatment modalities for thyroid cancer: A comparative analysis. *J Cancer Res Ther.* 2020;16(3):617-622. doi:10.4103/jcrt.JCRT_214_19
9. Kim D, Kim H, Kim S, et al. Predictors of recurrence in patients with differentiated thyroid carcinoma: A retrospective cohort study. *Clin Endocrinol (Oxf).* 2019;91(1):140-146. doi:10.1111/cen.13963
10. Singh R, Singh A, Singh G, et al. Patterns of metastasis in thyroid cancer: A single-center experience. *J Thyroid Res.* 2018;2018:6479745. doi:10.1155/2018/6479745
11. Sharma S, Sharma R, Sharma A, et al. Role of molecular markers in the management of thyroid cancer: A review. *Clin Cancer Investig J.* 2022;11(2):49-56. doi:10.4103/ccij.cci_108_21
12. Patel A, Patel B, Patel C, et al. Surgical complications in thyroid cancer patients: A retrospective analysis. *J Thyroid Res.* 2021;2021:8758463. doi:10.1155/2021/8758463
13. Lee J, Lee S, Lee H, et al. Clinicopathologic features and treatment outcomes in elderly patients with thyroid cancer: A retrospective study. *J Geriatr Oncol.* 2020;11(2):244-250. doi:10.1016/j.jgo.2019.02.009
14. Khan S, Khan A, Ali K, et al. Impact of molecular testing on the management of thyroid cancer: A systematic review. *Endocr Pract.* 2019;25(9):897-905. doi:10.4158/EP-2019-0141
15. Nguyen T, Nguyen H, Nguyen L, et al. Prognostic factors in patients with thyroid cancer: A multicenter study. *J Endocrinol Invest.* 2021;44(11):2329-2337. doi:10.1007/s40618-021-01591-z

16. Patel V, Patel M, Patel K, et al. Evaluation of treatment modalities for thyroid cancer: A comparative analysis. *J Cancer Res Ther.* 2020;16(3):617-622. doi:10.4103/jcrt.JCRT_214_19
17. Kim D, Kim H, Kim S, et al. Predictors of recurrence in patients with differentiated thyroid carcinoma: A retrospective cohort study. *Clin Endocrinol (Oxf).* 2019;91(1):140-146. doi:10.1111/cen.13963
18. Singh R, Singh A, Singh G, et al. Patterns of metastasis in thyroid cancer: A single-center experience. *J Thyroid Res.* 2018;2018:6479745. doi:10.1155/2018/6479745
19. Sharma S, Sharma R, Sharma A, et al. Role of molecular markers in the management of thyroid cancer: A review. *Clin Cancer Investig J.* 2022;11(2):49-56. doi:10.4103/ccij.ccij_108_21
20. Patel A, Patel B, Patel C, et al. Surgical complications in thyroid cancer patients: A retrospective analysis. *J Thyroid Res.* 2021;2021:8758463. doi:10.1155/2021/8758463

Predictors of in-hospital mortality in Acute on Chronic Liver Failure

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ABSTRACT

Background and aim: Acute on chronic liver failure (ACLF) is a serious medical condition which results from acute derangement of liver function in preexisting liver cirrhosis and is accompanied by multi-organ failure. It must be differentiated from the acute decompensation of chronic liver disease and promptly treated as it carries a high short-term mortality. Our study aim was to determine the frequency of ACLF and risk factors of in hospital mortality of ACLF.

Methods: A total of 143 liver cirrhosis patients were enrolled in the study. Data on the ACLF grades and organ failure was recorded according to the EASL CLIF criteria. Predictors of ACLF were then determined based on regression analysis test.

Result: The mortality in the ACLF group was much higher (23.3%) than that of the non-ACLF group (12.4%). The most frequent organ failure, observed exclusively in the ACLF group, was found to be renal dysfunction (60.5%), which was followed by cerebral dysfunction (46.5%) in the same group. The deceased patients had much higher ratings overall. Among MELD, MELD-Na, CLIF-C Organ Failure and CLIF-C ACLF scores, the CLIF-C Organ Failure score was the strongest predictor of mortality (OR = 3.64, CI95% = 2.34–5.65, $p = 0.01$). On univariate analysis, positive odds ratio was seen with circulatory failure, MELD score, MELD Na score, CLIF-C ACLF score and EASL-CLIF OF score, whereas on multivariate analysis, creatinine, MELD score, circulatory failure and EASL-CLIF OF score (OR = 3.64, CI95% = 2.34–5.65, $p = 0.01$) were seen to be the independent predictors of mortality of ACLF.

Keywords: CLIF Organ Failure score CLIF C ACLF score MELD Na Child Turcotte Pugh Score

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INTRODUCTION:

In patients with liver cirrhosis, whether compensated or decompensated, abrupt liver function decline is the hallmark of acute on chronic liver failure (ACLF) [3], which is linked to a high short-term mortality (28 days) [1,4]. To differentiate it from simple acute decompensation, ACLF is additionally marked by multi-organ failure and a strong systemic inflammatory response [2,4]. In the absence of infections, systemic inflammation can arise, leading to severe vasoconstriction and tissue hypoperfusion in several organs, including the brain and kidneys [4].

Over the past ten years, over thirteen definitions of ACLF have been proposed; however, three of these have gained the most traction. One of these definitions was put forth by the European Association for the Study of the Liver–Chronic Liver Failure (EASL-CLIF) Consortium, and it was based on a large prospective study [1,5].

Failure of one or more of the six major organ systems—liver, kidney, brain, coagulation, circulation, and respiration—is the basis for the definition of ACLF. The Chronic Liver Failure-Consortium Organ Failure scale is used to evaluate the failure of each organ system (CLIF C OF)

Compared to other criteria, it is observed that the EASL-CLIF criteria have a higher sensitivity in predicting the short-term mortality (>15%) of ACLF [3]. ACLF can be precipitated by various factors, such as alcohol, drugs and viral infections, or it can be idiopathic as seen in most (40%) of the cases [7]. According to a recent meta-analysis, the prevalence of ACLF is 35% and the in-hospital mortality at 90 days is 58%. The most common cause of acute insult identified is alcohol however, regional, and cultural variations may exist. The most common trigger for ACLF was the infection of the gastrointestinal tract (35%) followed by gastrointestinal bleeding (22%), and the most common failure was the kidney (49%) [8].

Although ACLF is a fairly widespread phenomenon, there is still a dearth of research on it in resource-poor nations like Pakistan as well as the Middle East and North Africa. In a Pakistani tertiary care hospital, our goal was to investigate the incidence

of ACLF based on EASL criteria, as well as its causative factors, triggers, and predictors of in-hospital mortality.

METHODS:

The Jinnah Postgraduate Medical Center's Ward 7 was the site of this prospective, cross-sectional investigation. The research project received approval from the Jinnah Postgraduate Medical Center's (JPMC) Institutional Review Board (IRB). Every patient who was enrolled before the commencement of the trial gave their informed consent. The study was conducted between October 2022 and March 2023, a period of six months. Patients with congestive heart failure, cirrhosis, and any underlying cancer, including hepatocellular carcinoma, were not allowed to participate in the trial. All cirrhosis patients who provided informed consent were included in the study.

A proforma was formulated that recorded the patient's demographics, the reason for admission, the aetiology of liver cirrhosis, and laboratory and radiographic investigations. All cirrhotic patients admitted during the study period were included in the study. There were 148 cirrhotic patients in total; 43 of the 148 patients had an ACLF diagnosis based on the EASL-CLIF criteria. The CLIF-C OF score was used to evaluate the organ failure. The Child-Pugh (CTP), Model for End Stage Liver Disease (MELD), and MELD sodium (Na) scores were used to determine the severity of cirrhosis.

The EASL CLIF criteria were applied to assess ACLF based on the number of organ failures.

ACLF Grade 1 was characterized by mild to moderate hepatic encephalopathy (HE) or brain failure with creatinine 1.5-1.9 mg/dl, as well as single kidney failure or liver failure, coagulopathy, circulatory failure, respiratory failure, and serum creatinine 1.5-1.9 mg/dl. ACLF Grade 2: Any two malfunctioning organs. Any three organ failures or more is ACLF Grade 3.

Statistical analysis:

Data were stored and analyzed in SPSS version 25. The frequency and in-hospital mortality of ACLF were calculated. Risk estimation of ACLF was done

using binary logistic regression testing using univariate and multivariate analysis.

RESULTS:

The mortality in the ACLF group was much higher

TABLE 1: COMPARISON OF MORTALITY BETWEEN ACLF AND NON ACLF PATIENTS

Group	Non. survivors
ACLF	23.3%
Non ACLF	12.4%

(23.3%) than that of the non-ACLF group (12.4%). The most common reason for admission identified was infection followed by hepatic encephalopathy. Table 2 summarizes the relationship between death and organ failure in ACLF and non-ACLF patients. The EASL-CLIF organ failure scoring system indicated that all organ failures in the ACLF group were linked to a higher probability of death. The most frequent organ failure, observed exclusively in the ACLF group, was found to be renal dysfunction (60.5%), which was followed by cerebral dysfunction (46.5%) in the same group. The deceased patients had much higher ratings overall.

Among MELD, MELD-Na, CLIF-C Organ

Table 2: Association of ACLF with CTP, Mortality and Failure of Organs

Variables		Non ACLF (n=105)		ACLF (n=43)		p-value
		n	%	n	%	
CTP Score grade	A	20	19.0	2	4.7	0.04*
	B	46	43.8	18	41.9	
	C	39	37.1	23	53.5	
Liver Failure	Yes	3	2.9	7	16.3	<0.01*
	No	102	97.1	36	83.7	
Renal Failure	Yes	-	-	26	60.5	<0.01*
	No	105	100.0	17	39.5	
Cerebral Failure	Yes	25	23.8	20	46.5	<0.01*
	No	80	76.2	23	53.5	
Coagulation Failure	Yes	2	1.9	4	9.3	0.03*
	No	103	98.1	39	90.7	
Circulation Failure	Yes	2	1.9	7	16.3	<0.01*
	No	103	98.1	36	83.7	
Respiratory Failure	Yes	-	-	3	7.0	<0.01*
	No	105	100.0	40	93.0	
Outcomes	Discharged	92	87.6	33	76.7	0.09
	Expired	13	12.4	10	23.3	
*p<0.05 was considered statistically significant using the Pearson Chi-Square test						

Among MELD, MELD-Na, CLIF-C Organ Failure and CLIF-C ACLF scores, the CLIF-C Organ Failure score was the strongest predictor of mortality (OR = 3.64, CI95% = 2.34–5.65, p = 0.01) which has been summarised in Table 3.

Table 3: predictors of mortality

Test Result Variable(s)	Area	Std. Error	Asymptotic 95% Confidence Interval		p-value	sensitivity	specificity	Cut off value
MELD Score	0.620	0.06	0.48	0.75	0.06	40.5	70.6	7.5
MELD Na Score	0.646	0.06	0.52	0.77	0.02*	56.5	56.8	20.5
CLIF Consortium Organ Failure Score	0.668	0.06	0.53	0.79	0.01*	43.5	77.6	8.5
CLIF C ACLF SCORE	0.653	0.06	0.52	0.77	0.02*	60.9	56.8	39.8

Table 4: Risk Estimation of ACLF using Binary Logistic Regression

Parameters	Univariate analysis	Multivariate analysis
	Odds Ratio (95% C.I)	Odds Ratio (95% C.I)
Total Bilirubin	1.1* (1.0-1.2)	1.0 (0.9-1.2)
INR	2.8* (1.3-6.0)	1.7 (0.3-10)
Creatinine	5.0* (2.7-9.2)	3.7* (1.4-9.4)
MELD Score	1.31*(1.20-1.44)	1.20* (1.08-1.33)
CTP Score Grade C	5.8* (1.2-27.0)	9.5 (0.3-287)
Liver failure	6.6* (1.6-26.)	2.7(0.01-86)
Cerebral failure	2.7* (1.3-5.8)	2.1(0.5-8.8)
Circulation failure	10.0* (1.9-50.)	2.5* (2.2-285)
MELD-Na Score	1.25* (1.16-1.36)	
CLIF C OF Score	3.64* (2.34-5.65)	2.30*(1.45-3.65)
CLIF-C ACLF Score	1.12* (1.06-1.17)	
*Odds ratio considered significant with p<0.05, Dependent variable: ACLF		

Failure and CLIF-C ACLF scores, the CLIF-C Organ Failure score was the strongest predictor of mortality (OR = 3.64, CI95% = 2.34–5.65, $p = 0.01$) which has been summarised in Table 3.

Upon risk estimation of ACLF using binary logistic testing, it was seen that there was a positive odds ratio on univariate analysis with circulation failure, MELD score, MELD Na score, CLIF-C ACLF score and EASL-CLIF OF score, whereas on multivariate analysis, creatinine, MELD score, circulatory failure and EASL-CLIF OF score were independent predictors of mortality of ACLF as shown in table 4.

DISCUSSION:

ACLF is a complex clinical syndrome that remains a medical challenge due to its complex presentation with high short-term mortality [9]. Identification of the predictors of mortality is significant in predicting the outcomes of the patients and guiding early treatment [7]. In our present study, we identified the frequency of ACLF among our patients and the predictors of in-hospital mortality.

According to a meta-analysis by Mezzano G. et. al, the global prevalence of ACLF was 35% (95% CI 33% to 38%), the highest in South Asia at 65% [8]. In our study conducted on 148 participants, the frequency of ACLF was identified as 29.1% ($n=43$). ACLF was more commonly seen in the females (53.5%). The reason could be that female patients living in remote areas do not have early and easy access to tertiary care centres compared to their male counterparts and are more likely to present in an advanced stage of ACLF. ACLF is most often precipitated by sepsis, upper gastrointestinal bleeding or infections. [11] A Chinese study proved that HBV PC mutation was the most likely cause of ACLF among chronic Hepatitis B patients [12].

The in-hospital mortality rate of the enrolled cirrhotic patients was found to be 15.5% ($n=23$). The mortality in the ACLF (23.3%, $n=10$) group was observed to be almost twice that of the non-ACLF (12.4%, $n=13$) group. The highest mortality was seen in the ACLF grade 3 group (100%, $n=6$). This signifies that a higher ACLF grade is associated with higher mortality. Similar results were shown by Kulkarni et al in which the number of organ failures corresponded to the rising mortality [10]. Our

findings are comparable to the study by Gawande A. et. al, in 2019, where the mortality in patients with ACLF grade 0 was 8.85%, ACLF grade 1 was 66.67%, ACLF grade 2 was 60.87%, and grade 3 was 83.75% [14]. Our findings are also consistent with the results of Verdelho et al. (68.97%) and Dominguez et al. (62.1%) both of which demonstrate the directly proportional relationship of grade of ACLF with mortality [15, 16]. These results suggest that prognosis is dependent on the stage of the disease at which it is detected. Hence, early detection and treatment ensure better outcomes. The high rate of short-term mortality may also be attributed to the fact that HCV infection is associated with higher short-term mortality which was identified as the most common etiological factor of ACLF in our population [17].

According to the EASL-CLIF OF scoring system, organ failures were associated with an increased risk of mortality in the ACLF group. Renal dysfunction (60.5%) was identified as the most common organ failure followed by cerebral dysfunction (46.5%) in the ACLF group in our study. All scores were significantly higher in the deceased patients. This finding is of utmost importance as most patients presented with acute kidney injury (AKI) or hepato-renal syndrome (HRS). Studies also show that the greater the number of organ failures at diagnosis, the greater the chance of mortality [18].

The CLIF-C Organ Failure score was the strongest predictor of mortality (OR = 3.64, CI95% = 2.34–5.65, $p = 0.01$) followed by CLIF-C ACLF and MELD Na scores with significant p values found to be superior to MELD score. Our results were similar to a study conducted in Islamabad where CLIF C ACLF was found to be more accurate than MELD [19]. A Korean study also proved CLIF C ACLF, CLIF C OF and CLIF SOFA to be useful scores in predicting mortality [20]. The CLIF-C OF score has been widely used to assess the number of organ dysfunctions and failures and is also the main constituent of the CLIF-C-ACLF score, designed to predict mortality in ACLF patients. Tongluk et al in a Thai study also highlighted the CLIF C OF score to be the best predictor of mortality of ACLF patients. [13]

In our study, on univariate analysis, serum creatinine, circulatory failure, MELD score, MELD

Na score, CLIF-C ACLF score and CLIF-C OF score were identified as positive predictors, out of which on multivariate analysis creatinine, circulatory failure, MELD score, and CLIF-C OF score were identified as independent predictors of mortality. Circulatory failure is an important component of ACLF criteria and can result in high mortality of these patients as proven by our study. However, in contrast, renal and cerebral failure were shown to be the predictors of mortality in a Mexican study [21]. The addition of circulatory failure either in the form of the use of vasopressors or the mean arterial pressure (MAP, mmHg) may enhance the sensitivity of a prognostic score in predicting mortality in ACLF patients. This can be attributed to the fact that ACLF comprises severe hemodynamic instability and the MELD score does not contain the assessment of abnormal hemodynamic states [18].

CONCLUSION:

It is imperative to identify ACLF early and distinguish it from acute decompensation as the management and prognosis of the two differ significantly. It is seen that patients identified early with two or more organ failures at presentation with the CLIF C OF score in resource-poor settings can be planned for aggressive management and early referral for a liver transplant to reduce mortality. It is seen that the MELD Na, CLIF-C ACLF score, and EASL-CLIF OF are superior to the MELD score and highly significant in predicting mortality in patients with ACLF. CLIF C OF score, serum creatinine, MELD and circulatory failure were the independent predictors of mortality.

REFERENCES:

- [1] Arroyo V, Moreau R, Kamath PS, et al. Acute-on-chronic liver failure in cirrhosis. *Nat Rev Dis Primers*. 2016 Jun 9;2:16041. doi: 10.1038/nrdp.2016.41. PMID: 27277335.
- [2] Moreau R, Jalan R, Gines P, et al; CANONIC Study Investigators of the EASL-CLIF Consortium. Acute-on-chronic liver failure is a distinct syndrome that develops in patients with acute decompensation of cirrhosis. *Gastroenterology*. 2013 Jun;144(7):1426-37, 1437.e1-9. doi: 10.1053/j.gastro.2013.02.042. Epub 2013 Mar 6. PMID: 23474284.
- [3] Kim TY, Kim DJ. Acute-on-chronic liver failure. *Clin Mol Hepatol*. 2013 Dec;19(4):349-59. doi: 10.3350/cmh.2013.19.4.349. Epub 2013 Dec 28. PMID: 24459638; PMCID: PMC3894433.
- [4] Zaccherini G, Weiss E, Moreau R. Acute-on-chronic liver failure: Definitions, pathophysiology and principles of treatment. *JHEP Rep*. 2020 Sep 2;3(1):100176. doi: 10.1016/j.jhepr.2020.100176. PMID: 33205036; PMCID: PMC7652714.
- [5] Thuluvath PJ, Li F. Modified EASL-CLIF criteria that is easier to use and perform better to prognosticate acute-on-chronic liver failure. *World J Hepatol*. 2022 Feb 27;14(2):420-428. doi: 10.4254/wjh.v14.i2.420. PMID: 35317179; PMCID: PMC8891672.
- [6] Sarin SK, Choudhury A, Sharma MK, et al. APASL ACLF Research Consortium (AARC) for APASL ACLF working Party.. Acute-on-chronic liver failure: consensus recommendations of the Asian Pacific Association for the study of the liver (APASL): an update. *Hepatol Int*. 2019 Jul;13(4):353-390. doi: 10.1007/s12072-019-09946-3. Epub 2019 Jun 6. Erratum in: *Hepatol Int*. 2019 Nov;13(6):826-828. PMID: 31172417; PMCID: PMC6728300.
- [7] Abudeif A, Sayed EKA, Galal GM. Characteristics and predictors of short-term mortality in decompensated cirrhotic patients with acute-on-chronic liver failure. *Clin Exp Hepatol*. 2022 Dec;8(4):300-308. doi: 10.5114/ceh.2022.122332. Epub 2022 Dec 28. PMID: 36683875; PMCID: PMC9850305.
- [8] Mezzano G, Juanola A, Cardenas A, et al. Global burden of disease: acute-on-chronic liver failure, a systematic review and meta-analysis. *Gut*. 2022 Jan;71(1):148-155. doi: 10.1136/gutjnl-2020-322161. Epub 2021 Jan 12. PMID: 33436495.
- [9] Rashed E, Soldera J. CLIF-SOFA and CLIF-C scores for the prognostication of acute-on-chronic liver failure and acute decompensation of cirrhosis: A systematic review. *World J Hepatol*. 2022 Dec 27;14(12):2025-2043. doi: 10.4254/wjh.v14.i12.2025. PMID: 36618331; PMCID: PMC9813844.
- [10] Kulkarni S, Sharma M, Rao PN, et al. Acute on Chronic Liver Failure-In-Hospital Predictors of Mortality in ICU. *J Clin Exp Hepatol*. 2018

- Jun;8(2):144-155. doi: 10.1016/j.jceh.2017.11.008. Epub 2017 Nov 23. PMID: 29892177; PMCID: PMC5992306.
- [11] Huang K., Hu J.H., Wang H.F. Survival and prognostic factors in hepatitis B virus-related acute-on-chronic liver failure. *World J Gastroenterol.* 2011;17(29):3448–3452. [PMCID: PMC3160571]
- [12] Xu Z., Ren X., Liu Y. Association of hepatitis B virus mutations in basal core promoter and precore regions with severity of liver disease: an investigation of 793 Chinese patients with mild and severe chronic hepatitis B and acute-on-chronic liver failure. *J Gastroenterol.* 2011;46(March (3)):391–400. [PMID: 20848146]
- [13] Teerasarntipan T, Thanapirom K, Chirapongsathorn S, et al. Validation of prognostic scores predicting mortality in acute liver decompensation or acute-on-chronic liver failure: A Thailand multicenter study. *PLoS One.* 2022 Nov 22;17(11):e0277959. doi: 10.1371/journal.pone.0277959. PMID: 36413538; PMCID: PMC9681104.
- [14] Gawande A, Gupta GK, Gupta A, et al. Acute-on-Chronic Liver Failure: Etiology of Chronic and Acute Precipitating Factors and Their Effect on Mortality. *J Clin Exp Hepatol.* 2019 Nov-Dec;9(6):699-703. doi: 10.1016/j.jceh.2019.04.050. Epub 2019 Apr 28. PMID: 31889750; PMCID: PMC6926243.
- [15] Verdelho M, Perdigoto R, Machado J, et al.. Acute-on-chronic liver failure: a Portuguese single-centre reference review. *GE Port J Gastroenterol* 2018; 25: 18-23.
- [16] Dominguez C, Romero E, Graciano J, et al.. Prevalence and risk factors of acute-on-chronic liver failure in a single centre from Argentina. *World J Hepatol* 2016; 8: 1529-1534.
- [17] Mahmud N, Kaplan DE, Taddei TH, et al.. Incidence and mortality of acute-on-chronic liver failure using two definitions in patients with compensated cirrhosis. *Hepatology* 2019; 69: 2150-2163.
- [18] Zhang Q, Li Y, Han T, Nie C, Cai J, Liu H, Liu Y. Comparison of current diagnostic criteria for acute-on-chronic liver failure. *PLoS One.* 2015 Mar 18;10(3):e0122158. doi: 10.1371/journal.pone.0122158. Erratum in: *PLoS One.* 2015;10(7):e0133817. PMID: 25785855; PMCID: PMC4364726.
- 19 Ramzan M, Iqbal A, Murtaza HG, Javed N, Rasheed G, Bano K. Comparison of CLIF-C ACLF Score and MELD Score in Predicting ICU Mortality in Patients with Acute-On-Chronic Liver Failure. *Cureus.* 2020 Feb 24;12(2):e7087. doi: 10.7759/cureus.7087. PMID: 32226688; PMCID: PMC7096002.
- 20 Song, D. S., Kim, T. Y., Kim, D. J., Kim, et al. (2018) Validation of prognostic scores to predict short-term mortality in patients with acute-on-chronic liver failure. *Journal of Gastroenterology and Hepatology*, 33: 900–909. doi: 10.1111/jgh.13991.
- 21 Méndez-Guerrero O, Calle-Rodas DA, Cervantes-Alvarez E, et al. Renal and brain failure predict mortality of patients with acute-on-chronic liver failure admitted to the intensive care unit. *Annals of Hepatology.* 2021 May 1;22:100270.

Our study has certain limitations. The first is a small sample size and the study being conducted at a single centre of the city. Also, the assessment of organ failures and prognostic scores was done at the time of admission only rather than serial evaluation multiple times during the study.

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Addressing Concerns: A Look Back at Supracostal Access in Percutaneous Nephrolithotomy"

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ABSTRACT

Background: Percutaneous renal surgery using the supracostal approach offers a direct route and has displayed promising outcomes. Nonetheless, apprehensions regarding complications have hindered its widespread adoption. This retrospective descriptive study aims to assess the safety and effectiveness of supracostal access in percutaneous nephrolithotomy (PCNL) for the treatment of renal stones.

Methods: Among 597 patients who underwent PCNL between November 2020 and October 2022, 103 chose supracostal access. All procedures were conducted in a single session under general anesthesia at a private hospital. Patient records were retrospectively reviewed for indications, stone clearance rates, and perioperative and postoperative complications.

Results: Indications for supracostal access comprised pelvic stones in 54 patients, partial staghorn stones in 28 cases, complete staghorn stones in 16 cases, and lower pole stones in 5 cases. Patient ages ranged from 3 to 62 years (mean: 27.45 years), with a mean stone size of 2.8 cm (range: 0.8 cm to 6 cm). A single tract access via a supracostal puncture at the posterior calyx was employed in all cases, with no requirement for a secondary puncture. Complete stone clearance was accomplished in 76.7% of patients, while 23.3% necessitated ancillary procedures, including Shock Wave Lithotripsy (SWL) in 17.4%, Ureteroscopy (URS) in 1.9%, and Double J stent (DJ) insertion in 3.8%. Complications were graded based on the Clavien grading system, with 4 patients classified as Grade I, 18 as Grade II, 1 as Grade III-b, and 1 as Grade IV-a.

Conclusion: The supracostal approach demonstrates a favorable safety profile and acceptable morbidity, indicating its potential suitability for specific cases of PCNL.

Keywords: PCNL, renal stones, shock wave lithotripsy, nephrolithiasis

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INTRODUCTION:

The global escalation in the prevalence and incidence of nephrolithiasis, particularly prevalent in the Afro-Asian stone belt region, impacts millions worldwide ^[1]. According to the National Health and Nutrition Examination Survey, renal stone disease's prevalence in the United States has notably increased over the years, with 10.6% of men and 7.1% of women affected in 2012 compared to 6.3% of men and 4.1% of women in 1994 ^[1]. Although current data on stone disease prevalence in Pakistan is not readily available, a significant stone center in the country reports a prevalence of 16% for renal stone disease ^[2].

Percutaneous nephrolithotomy (PCNL) emerges as the preferred treatment for managing sizable renal calculi and certain upper ureteric stones. Despite its adaptability to various positions, the prone position typically garners preference ^[3]. However, the selection of the access site hinges on factors such as surgeon preference, stone location and burden, and calyceal system anatomy. The standard puncture site prescribed for PCNL lies in the posterior axillary line, midway between the 12th rib and the ileal crest ^[4].

In a comprehensive multicenter study conducted by the Clinical Research Office of the Endourological Society (CROES), access above the 11th rib was employed in merely 1.5–2.2% of cases, with 68–83% of punctures being infracostal ^[5]. The supracostal approach presents a more direct access route and enhanced endoscopic visualization of the kidney ^[6].

This study aims to scrutinize the efficacy and morbidity associated with supracostal access for PCNL at a singular tertiary care center.

METHODS:

The study comprised a single-center observational descriptive analysis, entailing the retrospective review of medical records of all consecutive patients who underwent PCNL between November 2020 and October 2022. Conducted at the private hospital, all procedures occurred in a single session under general anesthesia. The collected data included indications, stone clearance rates, and post-

operative complications. PCNL was executed as a single-stage procedure in all cases. Stone position and renal functions were evaluated using radiological and biochemical investigations.

The PCNL technique involved several steps. Following induction of general anesthesia, patients were positioned in lithotomy, and a 6F ureteral catheter was transurethrally inserted into the renal pelvis under rigid cystoscopic guidance. Contrast injection facilitated confirmation of stone position and exploration of the collecting system anatomy relative to the 12th rib. Subsequently, patients were repositioned in the prone position for percutaneous access creation using an 18-gauge needle under fluoroscopic guidance at the predetermined puncture site, consistently above the 12th rib. Tract dilatation was executed using Amplatz™ fascial dilators ranging from 8F to 27F in adults and up to 24F in pediatric patients. Stone fragmentation was achieved using pneumatic lithotripsy, followed by fluoroscopy to assess stone-free status and exclude pleural fluid collection. Nephrostomy was established using 22F Foley catheters in adults and 15F in pediatrics.

Post-procedure, patients were closely monitored, with assessments including chest auscultation, pulse oximetry every 4-6 hours, and chest radiography immediately after surgery and on the first postoperative day to detect complications such as pneumothorax or hydrothorax. Monitoring also encompassed vital signs, urine output for gross hematuria, and baseline tests like complete blood counts, urea, creatinine, and serum electrolytes. Persistent urinary leakage for more than 7 days post-removal of the Percutaneous Nephrostomy (PCN) tube was categorized as a nephrocutaneous fistula. Postoperative fever persisting above 38°C for 3 days warranted re-admission or intravenous antibiotics. Stone clearance was defined as the absence of radio-opaque shadows on X-ray Kidney, Ureter Bladder (KUB) on the first postoperative day. Asymptomatic residual stone fragments less than 5mm in diameter were deemed clinically insignificant, while symptomatic significant residual fragments necessitated secondary procedures.

Complications were graded according to the

Table 1: Modified Clavien system

Grade 1	4
Grade II	18
Grade III	None
Grade III-a	None
Grade III-b	1
Grade III-c	None
Grade IV	None
Grade IV-a	1
Grade IV-b	None
Grade V	None

Table 2 Demography and clinical variables of patients

Variables	Median,IQR/n(%)
Age of patient	24,37
size of stone	2.6, 1.5
serum creatinine	0.8, 0.5
Gender	
male/female	63(61.2)/40(38.8)
number of stones	
single stone	57(55.3)
2-3 stones	19(15.4)
multiple 4 or > 4	11(10.7)
Staghorn	16(15.5)
side of stones	
Right	54(52.4)
left	49(47.6)
site of stones	
pelvis	54(52.4)
pelvis and one pole	28(27.2)
lower pole	5(4.9)
staghorn	16(15.5)
Comorbid	
Hypertention	9(8.7)
DM + HTN	2(1.9)
urine c/s positive	19(18.4)

Table3 Operative parameters of the study

Variables	n(%)
Nephroscope size	
27 fr	61(59.2)
15 fr	42(40.8)
Amplantz sheet size	
30 fr	61(59.2)
24 fr	42(40.8)
Tube size	
22 fr	61(59.2)
14 fr	39(37.9)
tubeless	3(2.9)
Residual stone	23 (22.3)
Ancillary procedures	24 (23.3)
procedures required	
Dj insertion	4 (3.9)
ESWL	18 (17.5)
urs	2 (1.9)
Time of PCN Removal	
24 hour	75 (72.8)
23-48	25 (24.3)
tubeless	3 (2.9)
Time uretric removed	
24 hour	27 (26.2)
24-48	76 (73.8)

Table 4 Post operative complications of patients

Post operative	
Complications	n (%)
hematuria + fever	2 (1.9)
hematuria + leakage	1 (1)
hematuria	5 (4.9)
leakage	2 (1.9)
fever	5 (4.9)
hydrothorax	1 (1)
Total no of patients	
with complications	16 (15.5)

Clavien grading system, and data analysis utilized IBM SPSS software version 21. Continuous variables were reported as median with Interquartile range, while categorical data were presented as numbers with percentages. The normality of data was assessed using the Shapiro-Wilk test.

RESULTS:

Within our study cohort comprising 103 patients, 63 (61.2%) were male, with a median age of 24 years. Pre-operative mean serum creatinine levels ranged from 0.2 mg/dl to 3.2 mg/dl, with a mean of 0.9 mg/dl. The mean size of the largest stone dimension was 2.8 cm, ranging from 0.8 cm to 6 cm. Detailed demographic and clinical characteristics of the patients are summarized in Table 1.

Operative outcomes, as presented in Table 3, indicate that 23 patients (22.3%) had residual stones post-procedure, with 24 patients (23.3%) requiring ancillary procedures. Percutaneous nephrostomy (PCN) removal occurred within 24 hours in 75 patients (72.8%), while 3 patients (2.9%) underwent a tubeless procedure.

Among the study participants, only 16 patients (15.5%) experienced complications. Hematuria was reported in 5 patients (4.9%), while hydrothorax occurred in only 1 patient (1%). This particular case involved a 6-year-old boy with a staghorn stone in the right kidney, managed by tubeless PCNL. Due to decreased oxygen saturation and difficulty recovering from anesthesia, the patient was promptly transferred to the ICU for conservative management, as detailed in Table 4.

None of the patients required blood transfusion, and there were no reported cases of nephrocutaneous fistula development.

DISCUSSION:

In our investigation, we adopted the Supra 12th rib puncture technique, chosen based on stone location, anatomical considerations, and its perceived advantages in accessing the entire calyceal system of the kidney, including the upper ureter and enabling Endopyelotomy. 7 Percutaneous renal surgery plays a pivotal role in managing various renal and ureteral conditions where alternative treatments are not feasible. 8 This procedure requires a comprehensive understanding of retroperitoneal struc-

tures, renal anatomy, including intrarenal vasculature, calyx positions, adjacent solid organs, and pleural anatomy. 9

The majority of stones located in the pelvis and mid or lower calyces are typically accessible via a subcostal puncture. However, for stones situated in the upper ureter, superior calyx, and staghorn stones, an approach through the superior calyx offers distinct advantages.¹⁰ Employing a supracostal puncture over the lateral portion of the twelfth rib to access the collecting system can help prevent potential pleural injury. Various techniques for percutaneous access have been described, including bulls-eye and triangulation, with bulls-eye being the preferred method in our study due to its provision of more direct access to the desired calyx.¹¹

Our analysis revealed excellent stone clearance rates (77.7%) with PCNL monotherapy, comparable to those reported by Kekre et al. and Golijanin et al.¹² The intricate relationship between kidney anatomy and the adjacent lung, coupled with the proximity of the pleura, can pose challenges. However, a nuanced understanding of pleural and diaphragmatic anatomy, along with refined surgical techniques, can help minimize complications. We aimed to minimize the number of tracts, as earlier studies indicated a rise in complications with multiple tracts. Contrary to some assessments, we found that acceptable clearance can often be achieved with a single tract, although success depends on surgical expertise, anatomy, and stone position.¹³

Thoracic complications represent a major limitation of supra 12th puncture. Anatomically, the supracostal puncture traverses the skin, subcutaneous tissue, latissimus dorsi, intercostal muscles, diaphragm, and enters the kidney through Gerota's fascia and perinephric fat. Posteriorly, the parietal pleura typically obliquely reflect at the midpoint of the 12th rib, and during full expiration, the visceral pleura never reaches the level of the midpoint of the 12th rib. Thus, a supracostal puncture made during full expiration and advanced laterally can avoid the pleural space.¹⁴ Complications encountered in our series were not significant, with only one patient who underwent tubeless PCN developing hydrothorax post-procedure, managed conservatively. This observation underscores the importance of adequate drainage in preventing fluid accumulation

in the pleural space, even in the presence of pleural violation. Although some studies did not find differences in thoracic complications between tubeless supracostal PCNL and standard supracostal PCNL, management options for thoracic complications described in the literature include sealing the tract with the working sheath during the procedure or placing a percutaneous tube after the procedure.¹⁵ Small effusions can be managed conservatively with serial chest X-rays and monitoring of vital signs. A study by B. Lojanapiwat in 2006 reported thoracic complications in 15.3% of patients out of 170, with a stone clearance rate of 82.2%. Another study by Sudhir Sukumar showed thoracic complications in 9.1% of 110 patients, with a slightly higher stone clearance rate of 86.4%, but 8.2% of their patients required a second puncture.¹⁶ In our study, three patients had a percutaneous tract through the lower pole supra 12th, and one had a middle pole supra 12th due to the higher position of the kidney. None of our patients required supra 11th puncture, which is associated with a 16-fold greater risk of thoracic complications according to literature. Five patients had stones with a major bulk in the lower pole, approached by supra 12th due to their stones extending into the pelvis with an acute infundibulo-pelvic angle. Approaching through the lower pole would risk the stone falling into the proximal ureter and pose difficulty in accessing the upper ureter.¹⁷

Our assessment demonstrated the efficacy of supracostal puncture in removing stones with good clearance rates, even with a single puncture. This represents an important modification of the traditional approach to the kidney. Although chest complications, while significant, did not occur in a significant proportion of our study population, they can be managed easily and often resolve with conservative measures.¹⁸ A chest X-ray should be performed if a patient experiences respiratory difficulties in the postoperative period. This approach is safe, cost-effective, and reduces unnecessary radiation exposure to patients. Morbidity can be reduced to a significant extent by adhering to basic principles such as always puncturing in full expiration, sufficiently laterally, and using a working sheath during the procedure and a well-draining nephrostomy tube post-procedure. With the advent of flexible nephroscopes, retrograde intrarenal surgery, and laser ablation, the

need for supracostal punctures may decrease in the future. However, this approach may still be a cost-effective option for stone clearance with minimal morbidity, particularly in developing countries.

The modified Clavien system used in our series is gaining popularity in urological surgery, including PCNL procedures. This grading system has some limitations, and further studies are awaited for the development of an accepted classification system applicable to all urologic procedures.^{19, 20}

Limitations of our study include its retrospective nature and data collection from a single tertiary care hospital. Collaborative studies involving multiple hospitals may yield more significant results, further highlighting the pros and cons of supracostal access for PCNL.

CONCLUSION

In conclusion, our assessment demonstrated the efficacy of supracostal puncture in removing stones with good clearance rates, even with a single puncture. This represents an important modification of the traditional approach to the kidney. Although chest complications, while significant, did not occur in a significant proportion of our study population, they can be managed easily and often resolve with conservative measures. A chest X-ray should be performed if a patient experiences respiratory difficulties in the postoperative period. This approach is safe, cost-effective, and reduces unnecessary radiation exposure to patients. Morbidity can be reduced to a significant extent by adhering to basic principles such as always puncturing in full expiration, sufficiently laterally, and using a working sheath during the procedure and a well-draining nephrostomy tube post-procedure. With the advent of flexible nephroscopes, retrograde intrarenal surgery, and laser ablation, the need for supracostal punctures may decrease in the future. However, this approach may still be a cost-effective option for stone clearance with minimal morbidity, particularly in developing countries.

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Limitations of our study include its retrospective nature and data collection from a single tertiary care hospital. Collaborative studies involving multiple hospitals may yield more significant results, further highlighting the pros and cons of supracostal access for PCNL.

RECOMMENDATIONS

Utilizing the supracostal approach provides optimal access for addressing large calyceal and ureteric stones, especially for the intricate task of managing complex staghorn stones. While this method may involve slightly elevated morbidity, adherence to basic principles can help alleviate associated risks. Through careful technique and vigilant intraoperative and postoperative monitoring, potential chest complications can be promptly recognized and managed effectively.

REFERENCES:

1. Scales CD Jr, Smith AC, Hanley JM, Saigal CS. Urologic Diseases in America Project: Prevalence of kidney stones in the United States. *Eur Urol*. 2012;62:160–5.
2. Karaolides T, Moraitis K, Bach C, Masood J, Buchholz N. Positions for percutaneous nephrolithotomy: Thirty-five years of evolution. *Arab J Urol*. 2012;10:307–16.
3. Tefekli A, Esen T, Olbert PJ, Tolley D, Nadler RB, Sun YH, et al. Isolated upper pole access in percutaneous nephrolithotomy: A large-scale analysis from the CROES percutaneous nephrolithotomy global study. *J Urol*. 2013;189:568–73.
4. Shah HN, Hegde SS, Shah JN, Basal MB. Safety and efficacy of supracostal access in tubeless percutaneous nephrolithotomy. *J Endourol*. 2010;20:1016–21.
5. Lojanapiwat B, Prasopsuk S. Upper pole access for percutaneous nephrolithotomy: Comparison of supracostal and infracostal approaches. *J Endourol*. 2006;20:391–5.
6. Sukumar S, Nair B, Kumar G, Sanjeevan KV, Bhat HS. Supracostal access for percutaneous nephrolithotomy: Less morbid, more effective. *Int Urol Nephrol*. 2008;40:263–7.
7. Shin TS, Cho HJ, Hong SH, Lee JY, Kim SW, Hwang TK. Complications of percutaneous nephrolithotomy classified by the modified Clavien grading system: A single center's experience over 16 years. *Korean J Urol*. 2011;52:769–75.
8. Bjurlin MA, Goble SM, Hollowell CM, Faerber GJ, Wolf JS Jr. Is routine postoperative chest radiography needed after percutaneous nephrolithotomy? *Urology*. 2012;79:791–5.
9. Zuazu JR, Hruza M, Rassweiler JJ, de la Rosette JJ. The Clavien classification system to optimize the documentation of PCNL morbidity. *Arch Ital Urol Androl*. 2010;82:20–2.
10. Theodorescu D, Russo P, Zhang ZF, et al. Do ureteroscopic biopsies of upper tract urothelial carcinoma influence patient care? A study of ureteroscopic biopsies of upper tract urothelial carcinoma and radical nephroureterectomy specimens. *J Urol*. 2010;184:2053–8.
11. Kekre NS, Gopalakrishnan GG, Gupta GG, Abraham BN, Sharma E. Supracostal approach in percutaneous nephrolithotomy: Experience with 102 cases. *J Endourol*. 2015;789–91.
12. Golijanin D, Katz R, Verstandig A, Sasson T, Landau EH, Meretyk S. The supracostal percutaneous nephrostomy for treatment of staghorn and complex kidney stones. *J Endourol*. 1998;12:403–5.
13. Martin X, Tajra LC, Gelet A, Dawahra M, Konan PG, Dubernard JM. Complete staghorn stones: Percutaneous approach using one or multiple percutaneous accesses. *J Endourol*. 1999;13:367–8.
14. Muslumanoglu AY, Tefekli A, Karadag MA, Tok A, Sari E, Berberoglu Y. Impact of percutaneous access point number and location on complication and success rates in percutaneous nephrolithotomy. *Urol Int*. 2006;77:340–6.
15. Aron M, et al. Multi-tract percutaneous nephrolithotomy for large complete staghorn calculi. *Urol Int*. 2005;75:327–32.
16. Jun-Ou, Bannakij Lojanapiwat. Supracostal Access: Does it affect Tubeless Percutaneous Nephrolithotomy Efficacy and Safety? *Int Braz J Urol*. 2010;36:171–6.
17. Gupta R, Kumar A, Kapoor R, Srivastava A, Mandhani A. Prospective evaluation of safety and efficacy of the supracostal approach for percutaneous nephrolithotomy. *BJU Int*. 2002;90:809–13.
18. Sukumar S, Nair B, Kumar G, Sanjeevan KV, Bhat HS. Supracostal access for percutaneous nephrolithotomy: Less morbid, more effective. *Int Urol Nephrol*. 2008;40:263–7.
19. Munver R, Delvecchio FC, Newman GE, Preminger GM. Critical analysis of supracostal access for percutaneous renal surgery. *J Urol*. 2001;166:1242–6.
20. Bjurlin MA, et al. Is routine postoperative chest radiography needed after percutaneous nephrolithotomy? *Urology*. 2012;79:791–5.

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Current Perspectives in Aesthetics: Harnessing the Therapeutic Potential of Exosomes for Skin Rejuvenation and Scar Reduction

Saba Khan MBBS, PG Dip¹, Bilal Fazal Shaikh MBBS, MS, MBBS, MS², Aisha Memon MBBS, PG Dip,³, Raheela Bilal Shaikh⁴, MBBS, DGO⁴, Syed Zafar Abbas BDS, MCPS⁵

ABSTRACT

Background: We are learning, too, that the love of beauty is one of nature's greatest healers. Anti-ageing, skin rejuvenation, wound healing, scar mark removal and lightening the hyperpigmentation are few of the many achievable outcomes desired by aesthetic clients. Driving demand for the non-surgical cosmetic treatments has taken the limelight and thus we see effective innovations daily.

Objective: Exosomes are small extracellular Nano-vesicles that are typically 30–200 nanometers in diameter, and they contain a variety of proteins, lipids, and genetic material such as mRNA and miRNA. Exosomes have use in cosmetics, skin care, tissue regeneration, and dermatological diseases such as atopic dermatitis, psoriasis, SLE, alopecia, hyperpigmentation and hypopigmentation as it has properties to regulate pigmentation. In this review we are mainly focused on the role of exosomes in skin rejuvenation and scar removal properties.

Methods: This multicenter study was conducted from Jan 2022 to July 2022. Thirty female consecutive participants were injected with exosomes in two sessions with 3 months interval. Evaluations were performed by comparing the pre-and post-improvement of skin, before after photography by participants, therapeutic physician and blindly by a second dermatologist. A search was conducted with the keywords, exosomes, stem cells, skin rejuvenation and scar removal. Exosomes term filtered by relevant subheadings was also utilized.

Results: Studies have demonstrated the therapeutic capabilities of exosomes in scar modulation and skin rejuvenation. In 3 and 6 months follow-ups respectively, moderate to excellent improvement in dark spots (44.4%, 62.9%), fine wrinkles (48.1%, 51.8%), nasolabial fold (22.2%, 33.33%) and skin rigidity (55.5%, 70.3%) reported by patients. Moderate to good improvement in dark spots (40.7%, 55.5%), fine wrinkles (51.8%, 48.1%) nasolabial folds (22.2%, 25.9%) and skin rigidity (44.4%, 59.2%) demonstrated by physician's evaluation. Moderate to good improvement in dark spots (37.0%, 48.1%), fine wrinkles (29.6%, 40.7%) nasolabial folds (18.5%, 14.8%) and skin rigidity (48.1%, 59.2%) by second dermatologist.

Conclusion: In summary, exosome-based therapies, with their ability to regulate gene expression in pigmentation and facilitate efficient melanin transfer between cells, present a dynamic frontier in medicine. Operating in a paracrine manner, exosomes modulate skin cell interactions, showcasing their potential for practical applications in regenerative medicine across diverse diseases.

Keywords: exosomes, skin rejuvenation, scar reduction,

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4. Data collection, literature review, and manuscript drafting.
5. Statistical analysis, interpretation of results, and manuscript revision.
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INTRODUCTION

Aging of the human body is inevitable with increasing age and is first observed easily in the skin, which is the largest and most superficial organ in the human body. ^[1,2,3,4] Exosomes are a type of extracellular vesicle^[5], typically between 30-160nm in size that are secreted from multiple cell types (e.g., blood cells, endothelial cells, immunocytes, platelets, etc.) ^[6] and fluids (e.g., saliva, blood, cerebrospinal fluid, breast milk, etc.) ^[7]. Exosomes are unique from other micro vesicles not just because of their small size, but because they contain both intracellular and extracellular components of the source cell. An exosome consists of a protective lipid bilayer ^[7,9] that contains variable cargo, including DNA, mRNA, microRNA (miRNA), cytokines, and cytoplasmic proteins. Exosome production is enhanced under periods of cellular stress ^[8,10,11] and plays an important role in cell-to-cell communication and immune regulation ^[8,12].

Exosome are formed when the cell membrane undergoes endocytosis, creating an endosome. The endosome then creates multiple small vesicles by invaginating parts of the endosomal membrane and is now termed a multivesicular body (MVB). Not well understood is how the various cargos are sorted into the intraluminal vesicles from the Trans Golgi network, endoplasmic reticulum, and other organelles ^[8,13]. The intraluminal vesicle can include nucleic acids, proteins, lipids, cytokines, transcription factor receptors, mRNA, DNA and miRNA ^[8,12,14,15]. Not all intraluminal vesicles are released as exosomes, some MVBs may fuse with lysosomes or auto phagosomes to be degraded. However, if the MVB fuses with the cell membrane and releases the intraluminal vesicles, those vesicles are now termed "exosomes."

Exosomes, on account of their appropriate size and property along with their evident role in numerous pathobiological processes, the potential of exosomes therapy in the management of various neurodegenerative disorders, infectious diseases, musculoskeletal disorders and cardiovascular disorders is overwhelming. Hence the recent introduction of exosomes derived from stem cells in conditioned media into the skin rejuvenation space. Other types of stem cell derived extracellular vesicles (SC-EVs) have also been found to have a

role in anti-aging ^[16]. For instance, exosomes derived from human umbilical cord blood mesenchymal stem cells (UCB-MSCs) have been demonstrated to promote cell migration and collagen synthesis of human dermal fibroblasts (HDFs) ^[17]. The same group found that these UCB-MSCs-derived exosomes permeated the skin layer and were found to increase the synthesis of collagen and elastin, the major building blocks of skin rejuvenation.

Exosomes are recently gaining attention in the cosmetic dermatology ^[18] and are now being used in injectable forms, for micro needling serums as well as in topical serums and creams. As medical breakthroughs continue to occur and revolutionize the field, the power of the exosome keeps offering more and more opportunities for people in the medical field everywhere. With regenerative medicine proving it self to be more powerful than typical drugs or treatment, never before has there been a better choice for combating the aging process along with a variety of medical conditions. The self-care trend is partly driven by the idea that people should take care of their skin since it's the largest organ in the body and the rising popularity of social media has played major role. Products like facial moisturizers, serums, and masks are becoming more popular, as they provide a way to nourish and protect the skin from environmental damage. This has helped to create a demand for products that can help individuals achieve a certain look or level of beauty.

Exosomes have been found to be beneficial for skin care, as they are filled with molecules that help stimulate collagen production, exosomes can help to reduce wrinkles and fine lines ^[19], help hydration and the protection of the skin. These molecules can help to boost collagen production, reduce inflammation, and protect the skin. Additionally, exosomes can help to repair skin damage such as sun damage and acne scars. Exosomes proteins and lipids can help to plump and hydrate the skin, which can help to improve skin texture. Ingredients of exosomes such as cytokines, nucleic acids, proteins, and other bioactive compounds can also help to protect the skin from environmental stressors and reduce the appearance of dark spots and other discoloration. With their ability to help improve skin tone, texture and appearance exosomes provide several promising therapeutic and anti-aging

benefits. They contain miRNAs that are proven to regulate gene expression in the cells around the wound. This promotes the formation of new blood vessels, increases the blood flow to the wound site. This increased blood flow then delivers oxygen and nutrients to the wound which further speeds up healing process ^[20]. Adipose-derived stem cells (ASCs) and their exosomes have been shown to have a therapeutic role in treating aberrant skin conditions, including wound healing, acne and alopecia. ASC-exosomes have been shown to reduce inflammation and increase the production of extracellular matrix and growth factors, resulting in improved skin quality. Overall, the unique properties of exosomes, including their anti-inflammatory and immunomodulatory properties, their ability to promote angiogenesis and wound healing and their potential to promote skin regeneration, make them an attractive option for reconstructive surgery.

Exosomes released from keratinocytes have been found to contain anti-inflammatory mediators such as transforming growth factor beta (TGF- β), which can suppress the activation of T cells and reduce inflammation. Exosomes released from mast cells can also contain regulatory cytokines such as IL-10 and TGF- β , which can suppress the activation of T cells and reduce inflammation. In addition, exosomes have been found to contain immune modulatory molecules such as microRNAs that are shown to regulate the expression of genes involved in immune responses. For example exosomes released from mast cells have been found to contain microRNAs that stimulate the downregulation of pro-inflammatory cytokines expressions such as IL-4 and IL-13 which have been shown to reduce inflammation. Studies have demonstrated that these exosomes can reduce inflammation and promote skin barrier restoration by increasing ceramide and dihydroceramide production. This suggests ASC-exosomes could be a viable treatment option for Atopic Dermatitis, as there are limited available treatments. Therefore, this cell-free therapy could provide much needed relief for those suffering from this condition ^[21]. In clinical studies, exosomes therapy has also been found to be safe and effective for scar removal. It can reduce the appearance of scars, improve skin hydration and elasticity, and

reduce inflammation. It can also help to strengthen the skin's natural defenses against infection. Recent studies have identified that exosomes may play an important role in the regulation of pigmentation in multiple organisms, including humans, through several different mechanisms. Exosomes have been shown to regulate the expression of genes involved in pigmentation and provide an efficient way for cells to transfer melanin-producing enzymes to other cells, enabling them to synthesize and produce melanin ^[22]. Additionally, exosomes can regulate the expression of tyrosinase, which is important for modulating the production of melanin. Keratinocytes-derived exosomes have been shown to activate melanocyte precursors and induce their differentiation into mature melanocytes. Furthermore, exosomes can help to stimulate the migration of melanocytes to areas of the skin where pigment production is needed. Findings suggest that Exosomes derived from DP cells can promote hair growth and regeneration by regulating the activity of follicular dermal and epidermal cells. These results have implications for the development of therapeutic strategies for hair loss

MATERIAL AND METHODS

In this multi-center prospective investigating study, 30 female consecutive participants with Glogau skin score (6) of II to IV, were recruited. The exclusion criteria were as follows: pregnant or lactating women, patients with severe diabetes, hypertension, or cardiopulmonary insufficiency and patients with a bleeding tendency or coagulation disorders. Patients who received chemical peel, dermabrasion, soft tissue filler, botulinum toxin injection, mesotherapy or other resurfacing surgeries and patients who have taken isotretinoin, vitamin A, vitamin C or medications that affect collagen synthesis were excluded.

After collecting photos and writing medical records, the facial treatment areas were coated with anesthetic cream Emla for half an hour. The stem cell derived exosomes was prepared according to standard procedures. Exosomes were in lyophilized powder form and were activated by adding 5ml of 0.9% normal saline in the ampule, dissolving sufficiently by lightly shaking the mixture 3~4 times. The solution was poured on the desired skin area to

let get absorbed, micro needling and injection techniques were also used as per requirement in a sterile condition. Digital photos of patients were collected 3 and 6 months after the treatment. Evaluation of wrinkle and dark spots improvement was performed on the basis of personal judgment of participants, by comparing the pre-and post-improvement of skin, observation of before and after improvement photography by therapeutic physician and a second dermatologist who was unaware of the order of photos. All data was collected through predesigned proforma.

RESULTS

27 out of 30 participants completed the study. One patient, due to pain did not continue the trial and 2 more patients due to loss of follow up were omitted from the study. Mean age of patients was 38 to 56 years and in the range of 21 to 62 years. 17 patients (62.9%) had glogou score II, 9 patients (33.3%) glogou II and 1 patient (3.70%) glogou IV. The results were evaluated 3 and 6 months after the last session by comparing the pre-and post-improvement of skin, by the final patients' satisfaction questionnaire, by the physician's impressions and double blind evaluation of pre and post treatment photographs by another dermatologist.

treatments have been introduced in the cosmetic industry [23]. The cosmetics industry is constantly evolving as it is driven by consumer demand for new and innovative products. Exosomes have been identified as potential new ingredients in cosmetics, with the potential to provide significant cosmetic benefits. Exosomes contain numerous different types of materials making them extremely promising in the field of regenerative medicine, and their lipid-bilayer membranes contain certain marker proteins that identify them specifically to particular cells. Thus, exosomes are important players in cell-to-cell communication. According to our study the therapeutic capabilities of exosomes in scar modulation and skin rejuvenation showed these results in 3 and 6 months follow-ups respectively, moderate to excellent improvement in dark spots (44.4%,74.0%), fine wrinkles (55.5%,70.3%), nasolabial fold (22.2%, 44.4%), and skin rigidity (59.2%, 77.7%) reported by patients. Moderate to excellent improvement in dark spots (40.7%, 59.2%), fine wrinkles (51.8%, 48.1%) nasolabial folds (22.2%, 33.3%) and skin rigidity (44.4%, 62.9%) demonstrated by physician's evaluation. Moderate to good improvement in darks pots (37.0%, 48.1%), fine wrinkles (29.6%, 40.7%), nasolabial folds (33.3%, 29.6%) and skin rigidity (48.1%, 59.2%) by second dermatologist. No serious

TABLE 1

No. of Patients	Therapy	Condition	Assessment Period	Mean Age/Range (Years)
23	Exosomes monotherapy	Facial aging	6 months	34-62
7	Exosomes monotherapy	Facial scar marks	6 months	21-56

DISCUSSION

As life progresses, physical changes in the skin are the first observation evidencing organismal aging. Since the ancient times, people have strived to improve the quality of their skin through anti-aging treatments. In the present days, the skin has an important part in social lives boosting self-esteem and self-consistency. Therefore, various anti-aging

or persistent side effects were reported. In this study patient satisfaction score was higher than physician's score which might be due to the fact that patient detect objective improvement at an earlier stage. The strength of this study was using several ways for evaluating the results. Face rejuvenation with exosomes is a promising non-surgical technique. Best effects of exosomes were observed in

Patients' self-evaluations

Patients' satisfaction regarding dark spots, fine wrinkles, nasolabial folds and skin rigidity at 3 and 6 months after treatment with exosomes are shown in table II.

TABLE 2

Improvement		Dark spots	Fine wrinkles	Nasolabial folds	Skin rigidity
3 months after treatment	None	2(7.04)	2(7.04)	8(29.6)	1(3.70)
	Poor	5(18.5)	1(3.70)	3(29.6)	3(11.1)
	Moderate	8(29.6)	9(40.7)	7(22.2)	7(25.9)
	Excellent	12(44.4)	15(55.5)	9(11.1)	16(59.2)
6 months after treatment	None	1(3.70)	1(3.70)	4(14.8)	1(7.04)
	Poor	2(7.40)	2(7.04)	3(11.1)	1(18.5)
	Moderate	4(14.8)	5(18.5)	8(29.6)	4(14.8)
	Excellent	20(74.0)	19(70.3)	12(44.4)	21(77.7)

Evaluation of the Physician

TABLE 3

Improvement		Dark spots	Fine wrinkles	Nasolabial folds	Skin rigidity
3 months after treatment	None	2(7.04)	3(11.1)	9(33.3)	2(7.40)
	Poor	5(18.5)	2(7.40)	10(37.0)	4(14.8)
	Moderate	9(33.3)	14(51.8)	6(22.2)	9(33.3)
	Excellent	11(40.7)	8(29.6)	2(7.40)	12(44.4)
6 months after treatment	None	1(3.70)	2(7.40)	8(29.6)	1(3.70)
	Poor	2(7.40)	1(3.70)	3(11.1)	1(3.70)
	Moderate	8(29.6)	11(40.7)	7(25.9)	8(29.6)
	Excellent	16(59.2)	13(48.1)	9(33.3)	17(62.9)

Double Evaluation of the Second Dermatologist

TABLE 4

Improvement		Dark spots	Fine wrinkles	Nasolabial folds	Skin rigidity
3 months after treatment	None	5(18.5)	5(18.5)	8(29.6)	2(7.40)
	Poor	5(18.5)	7(25.9)	5(18.5)	1(14.8)
	Moderate	7(25.9)	8(29.6)	9(33.3)	13(48.1)
	Excellent	10(37.0)	7(25.9)	5(18.5)	11(40.7)
6 months after treatment	None	1(3.70)	4(14.8)	4(14.8)	1(3.70)
	Poor	2(7.40)	3(11.1)	9(33.3)	1(3.70)
	Moderate	11(40.7)	11(40.7)	8(29.6)	9(33.3)
	Excellent	13(48.1)	9(33.3)	6(22.2)	16(59.2)

improving dark spots and skin rigidity. No serious or persistent side effects were reported.

In recent years, the effects of exosomes on various skin defects have been extensively studied. The key benefits of exosomes are the high stability, non-immune rejection, and direct stimulation of target cells [24,25]. Especially, the miRNAs contained in the exosomes are engaged in the regulation of various cellular responses by binding to the 3'-untranslated region [26]. As the skin ages, various changes occur such as decrease in the collagen type-I content, disorganization of the capillary network, denaturation of elastic fibers etc. [27]. These degenerative changes may result in decreased vessel structures in the skin tissue. A proper vascularization is an essential part for a healthy skin which provides nutrient supply to the skin cells to maintain their activities. Therefore, one solution to aging skin may be solved by increasing the vascular number. Moreover, vascularization plays an important role in wound healing [28]. As mentioned before, the dermal layer is damaged due to fragmentation of collagen type-I and elastic fibers in aged skin. Therefore, rebuilding the dermal structure might result in anti-aging and wound healing of the skin. MiR-21 is known to promote keratinocyte migration and re-epithelialization in skin wound healing [29]. Studies have shown that the injection of exosomes

into the skin can stimulate the production of collagen and elastin, two substances that are essential for skin regeneration [30]. As an example, exosomes derived from human dermal fibroblasts spheroids were evaluated for anti-aging purposes [31]. Kim et al. examined the effects of exosomes derived from human umbilical cord blood-derived mesenchymal stem cells (UCB-MSCs) for skin rejuvenation [32]. Among various growth factors detected in the exosomes, EGF was found in greater concentrations. When human dermal fibroblasts (HDFs) were exposed to the exosomes, collagen and elastin production was enhanced. Thus, UCB-MSCs-derived exosomes can be used to rebuild the dermal layer.

CONCLUSION:

In summary, exosome-based therapies are a dynamic and growing area of research that has the potential to disrupt multiple areas of medicine. Exosomes have been shown to regulate the expression of genes involved in pigmentation and provide an efficient way for cells to transfer melanin-producing enzymes to other cells, enabling them to synthesize and produce melanin. Exosomes primarily exert their effects in a paracrine function and modulate the interactions between keratinocytes and other cells of the skin. It is clear that exosome

use for regenerative medicine is a feasible therapeutic offering practical application for a wide range of diseases.

REFERENCES:

1. Zhang J, Li S, Li L, Li M, Guo C, Yao J, Mi S. Exosome and exosomal microRNA: trafficking, sorting, and function. *Genom. Proteom. Bioinform.* 2015;13:17–24. doi:10.1016/j.gpb.2015.02.001
2. Qiu G, Thakur A, Xu C, Ng S-P, Lee Y, Wu C-M.L. Detection of Glioma-Derived Exosomes with the Biotinylated Antibody-Functionalized Titanium Nitride Plasmonic Biosensor. *Adv. Funct. Mater.* 2019;29:1806761. doi:10.1002/adfm.201806761
3. Thakur A, Qiu G, Xu C, Han X, Yang T, Ng S.P, Chan K.W.Y, Wu C.M.L, Lee Y. Label-free sensing of exosomal MCT1 and CD147 for tracking metabolic reprogramming and malignant progression in glioma. *Sci. Adv.* 2020;6:eaaz6119. doi:10.1126/sciadv.aaz6119
4. Thakur A, Mishra A.P, Panda B, Sweta K, Majhi B. Detection of Disease-Specific Parent Cells via Distinct Population of Nano-Vesicles by Machine Learning. *Curr. Pharm. Des.* 2020;26:3985–3996. doi:10.2174/1381612826666200929153527
5. Lo Cicero A, Delevoye C, Gilles-Marsens F, Loew D, Dingli F, Guéré C, André N, Vié K, van Niel G, Raposo G. Exosomes released by keratinocytes modulate melanocyte pigmentation. *Nat. Commun.* 2015;6:7506. doi:10.1038/ncomms8506
6. Olumesi KR, Goldberg DJ. A review of exosomes and their application in cutaneous medical aesthetics. *Cosmet Dermatol.* 2023;22:2628–2634. PMID: 33594711
7. Doyle LM, Wang MZ. Overview of extracellular vesicles, their origin, composition, purpose, and methods for exosome isolation and analysis. *Cells.* 2019;8:727. doi:10.3390/cells8070727
8. Kalluri R, LeBleu VS. The biology, function, and biomedical applications of exosomes. *Science.* 2020;367:eaau6977. doi:10.1126/science.aau6977
9. Shao J, Zaro J, Shen Y. Advances in exosome-based drug delivery and tumor targeting: from tissue distribution to intracellular fate. *Int J Nanomedicine.* 2020;15:9355–71. doi:10.2147/IJN.S281890
10. Hessvik NP, Llorente A. Current knowledge on exosome biogenesis and release. *Cell Mol Life Sci.* 2018;75:193–208. doi:10.1007/s00018-017-2595-9
11. Lehmann BD, Paine MS, Brooks AM, et al. Senescence-associated exosome release from human prostate cancer cells. *Cancer Res.* 2008;68:7864–71. doi:10.1158/0008-5472.CAN-07-6538
12. Zhang Y, Bi J, Huang J, et al. Exosome: a review of its classification, isolation techniques, storage, diagnostic and targeted therapy applications. *Int J Nanomedicine.* 2020;15:6917–34. doi:10.2147/IJN.S264498
13. Kanemoto S, Nitani R, Murakami T, et al. Multivesicular body formation enhancement and exosome release during endoplasmic reticulum stress. *Biochem Biophys Res Commun.* 2016;480:166–172. doi:10.1016/j.bbrc.2016.10.019
14. Shao J, Zaro J, Shen Y. Advances in exosome-based drug delivery and tumor targeting: from tissue distribution to intracellular fate. *Int J Nanomedicine.* 2020;15:9355–71. doi:10.2147/IJN.S281890
15. Zhang J, Li S, Li L, et al. Exosome and exosomal microRNA: trafficking, sorting, and function. *Genomics Proteomics Bioinformatics.* 2015;13:17–24. doi:10.1016/j.gpb.2015.02.001
16. Oh M, Lee J, Kim YJ, Rhee WJ, Park JH. Exosomes derived from human induced pluripotent stem cells ameliorate the aging of skin fibroblasts. *Int J Mol Sci.* 2018;19:1715. doi:10.3390/ijms19061715
17. Kim YJ, Yoo SM, Park HH, et al. Exosomes derived from human umbilical cord blood mesenchymal stem cells stimulates rejuvenation of human skin. *Biochem Biophys Res Commun.* 2017;493:1102–1108. doi:10.1016/j.bbrc.2017.09.056
18. Zhang Y, Liu Y, Liu H, Tang WH. Exosomes: Biogenesis, biologic function and clinical potential. *Cell Biosci.* 2019;9:19. doi:10.1186/s13578-018-0263-x

19. Xiong M, Zhang Q, Hu W, et al. The novel mechanisms and applications of exosomes in dermatology and cutaneous medical aesthetics. *Pharmacol. Res.* 2021;166:105490. doi:10.1016/j.phrs.2021.105490
20. Guo L, Chen Y, Feng X, et al. Oxidative stress-induced endothelial cells-derived exosomes accelerate skin flap survival through Lnc NEAT1-mediated promotion of endothelial progenitor cell function. *Stem Cell Res. Ther.* 2022;13:325. doi:10.1186/s13287-022-03233-y
21. Shin KO, Ha DH, Kim JO, Crumrine DA, Meyer JM, Wakefield JS, Lee Y, Kim B, Kim S, Kim HK, et al. Exosomes from Human Adipose Tissue-Derived Mesenchymal Stem Cells Promote Epidermal Barrier Repair by Inducing de Novo Synthesis of Ceramides in Atopic Dermatitis. *Cells.* 2020;9:680. doi:10.3390/cells9030680
22. Wong PM, Yang L, Yang L, Wu H, Li W, Ma X, Katayama I, Zhang H. New insight into the role of exosomes in vitiligo. *Autoimmun. Rev.* 2020;19:102664. doi:10.1016/j.autrev.2020.102664
23. Dai B, Pelton LE. Exploring consumers' skincare retail patronage. *J Retail Consum Serv.* 2018;43:269–277. doi:10.1016/j.jretconser.2018.04.002
24. Kalluri R, LeBleu VS. The biology, function, and biomedical applications of exosomes. *Science.* 2020;367(6478):eaau6977. doi:10.1126/science.aau6977
25. Zhang Y, Liu Y, Liu H, Tang WH. Exosomes: biogenesis, biologic function and clinical potential. *Cell Biosci.* 2019;9(1):1–18. doi:10.1186/s13578-018-0263-x
26. Bartel DP. MicroRNAs: genomics, biogenesis, mechanism, and function. *Cell.* 2004;116(2):281–297. doi:10.1016/S0092-8674(04)00045-5
27. Yaar M, Eller MS, Gilchrist BA. Fifty years of skin aging. *J Invest Dermatol Symp.* 2002;7(1):51–58. doi:10.1046/j.1523-1747.2002.19636.x
28. An Y, Liu W, Xue P, et al. Autophagy promotes MSC-mediated vascularization in cutaneous wound healing via regulation of VEGF secretion. *Cell Death Dis.* 2018;9(2):1–14. doi:10.1038/s41419-017-0082-8
29. Yang X, Wang J, Guo S-L, et al. miR-21 promotes keratinocyte migration and re-epithelialization during wound healing. *Int J Biol Sci.* 2011;7(5):685. doi:10.7150/ijbs.7.685
30. Yang G-H, Lee Y-B, Kang D, et al. Overcome the barriers of the skin: Exosome therapy. *Biomater. Res.* 2021;25:22. doi:10.1186/s40824-021-00237-w
31. Hu S, Li Z, Cores J, Huang K, Su T, Dinh P-U, Cheng K. Needle-free injection of exosomes derived from human dermal fibroblast spheroids ameliorates skin photoaging. *ACS Nano.* 2019;13(10):11273–11282. doi:10.1021/acsnano.9b04384
32. Kim YJ, Mi Yoo S, Park HH, Lim HJ, Kim YL, Lee S, Seo KW, Kang KS. Exosomes derived from human umbilical cord blood mesenchymal stem cells stimulates rejuvenation of human skin. *Biochem Biophys Res Commun.* 2017;493(2):1102–1108. doi:10.1016/j.bbrc.2017.09.056

The prevalence of asthma and allergic conditions among school-aged children.

Urooj Samoo*¹, Shaista Ehsan²

ABSTRACT

Objective: This study aimed to ascertain the occurrence of asthma and allergic ailments and determine the associated risk factors in school-aged children.

Methods: A prospective, cross-sectional investigation was carried out from August 2019 to November 2019 involving school-aged children (4-15 years). The study utilized a non-probability purposive sampling approach, and data analysis was conducted using SPSS version 20.

Results: The study found that allergic rhinitis and eczema prevalence among the participants was 22.1%, while asthma prevalence was 14%. Additionally, 34% of the children reported experiencing wheezing in the past 12 months, and 15.5% had food allergies. Predisposing factors included exposure to dust (32.6%), passive smoking (30.8%), perfume odors (27.3%), and pet presence in the household (23.2%). Male gender and maternal asthma showed significant associations with the development of these allergic disorders in children (p-value 0.033).

Conclusion: The research underscores a notable prevalence of allergic disorders and asthma among Karachi's school children. Environmental factors, notably dust exposure and passive smoking, emerged as significant predisposing elements. There is an imperative for further epidemiological investigations to pinpoint high-risk groups and key modifiable factors.

Key Words: Allergic disorders, Asthma, Prevalence

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1. Conducted literature review, designed the study methodology, collected and analyzed data, drafted the manuscript, and revised it critically for important intellectual content. Approved the final version for submission and publication.

2. Contributed to study design, assisted in data collection and analysis, provided critical feedback on the manuscript draft, and approved the final version for publication.

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INTRODUCTION

The prevalence of Asthma and other allergic disorders has increased over the past few decades in many countries. Childhood Asthma often coexists with other atopic diseases and is a major cause of school absence amongst children. Allergic disorders are a group of illnesses linked by a shared underlying problem with the immune system and they are a significant public health burden worldwide^[1]

Approximately 60-70% of school children with asthma have been sensitized to one or more allergens.^[2] The development of Asthma in children is influenced by interaction between a number of genetic and environmental factors. Results from a number of studies point towards positive association of asthma, wheezing, hay fever and eczema with parental atopy and various environmental allergens^[3].

The need for systematic international comparison of the prevalence of asthma and its associated risk factors, led to the International Study of Asthma and Allergies in Childhood (ISAAC) program which aimed to elucidate the prevalence of allergic disorders in children aged 13-14 years and 6-7-years-old.^[4] The study surveyed around 1.2 million children at 233 centers from 98 countries across the globe. The initial prevalence of self-reported wheezing during the previous 12 months varied from 1.6% to 36.7% in 13 to 14-year-old children in different countries. The corresponding prevalence for parent-reported wheezing in the 6-to-7-year-old children was from 0.8% to 32.1%. Asthma was less prevalent in developing countries as compared to the developed world.^[5] However, the prevalence pattern of allergic disorders in developing countries is showing a rising trend over the past few decades and now more and more cases of childhood asthma are being diagnosed where earlier the prevalence was low. Recent studies report the prevalence of asthma in preschool children in low-income countries to be around 10–15%^[6].

According to the ISAAC global study, the prevalence of asthma in Pakistan among school children aged 13–14 years was 8% in 1995^[4]. However in 2007, the estimated prevalence of physician-diagnosed asthma was reported to be 15% in school-going children (3–16 years of age) thus, indicating a rising trend.^[7] However, there is paucity

of published literature on childhood asthma in Pakistan despite the fact that the burden of asthma is increasing in low-income countries like Pakistan.^[8]

Most of the research on allergic disorders however, has been conducted in the developed countries. However, the risk factors identified for these disorders might not be the same in the developing part of the world due to differences in the genetic and environmental elements. Further research studies are needed in the developing countries to establish the prevalence of allergic disorders and the associated predisposing factors. The objective of this study was thus, to evaluate the frequency of allergic disorders and asthma in school-aged children of Karachi and to identify the risk factors as the epidemiology of asthma, allergic rhinitis and other allergic disorders is not well documented in Pakistan.^[9]

METHODS

This cross-sectional, questionnaire-based, prospective study was conducted on school children of two randomly selected schools of Karachi from August 2019 to November 2019. Data was collected by using a modified questionnaire based on the ISAAC questionnaire; the structured questions addressed the allergic symptoms, triggering factors of asthma and information regarding allergies in parents. It was developed in two languages i.e. English and Urdu (local language). Written informed consent was obtained from the parents before administering the questionnaire. These were then sent to the parents/caregivers of 360 students of two randomly selected schools of Karachi and we received 341 questionnaires back. Sampling was done through non-probability purposive sampling technique.

INCLUSION CRITERIA

- All school children between 4-15 years of age were included in the study.
- Children whose caregivers consented to be part of the study

EXCLUSION CRITERIA

- The following were excluded from the study:
- Children below 4 years of age

- Children with chromosomal abnormalities
- Children with co-morbid conditions e.g. congenital heart disorders
- Children with other respiratory pathology e.g. cystic fibrosis

Data was collected using a structured three- page self-administered questionnaire based on the ISAAC questionnaire with a few modifications. The questionnaire was pre-tested for clarity by piloting on three doctors before distribution. Informed consent was obtained from the parents/caregivers and purpose of the study explained before administering the questionnaire. The school teachers of the two schools were given the questionnaire forms to be distributed to the students to have them filled by their parents/caregivers. Two pediatric residents were assigned the task to collect the filled questionnaire forms from the respective teachers. Each questionnaire took about 15 minutes to fill. Relevant information regarding the triggering factors of asthma as well as frequency of symptoms related to asthma, allergic rhinitis and eczema and any history of parental atopy were recorded on the questionnaire. Ethical Committee clearance was obtained prior to the study. Confidentiality of the

respondents and the schools was assured by using a coding system.

STATISTICAL ANALYSIS

Data was entered on MS Excel sheet and compiled. Statistical Package for Social Sciences version 20 was used for data analysis and the results were expressed as frequencies and percentages for qualitative data and mean and standard deviation for quantitative data. Chi-square test was applied for categorical variables. To adjust for the large number of outcome variables, p- value ≤ 0.05 was considered significant and interpreted as positive in terms of correlation of two cross-tabulated variables.

OPERATIONAL DEFINITIONS

Wheeze: is defined as a whistling sound from the chest and not from the nose or mouth.

Eczema: An inflammatory condition of the skin characterized by redness, itching, and oozing vesicular lesions, which become scaly, crusted, or hardened.

Allergic rhinitis: is a heterogeneous disorder characterized by one or more symptoms including sneezing, itching, nasal congestion, and rhinorrhea.

TABLE1. AGE DISTRIBUTION OF THE STUDY POPULATION (TOTAL N=341)

Age (years)	N	%
< = 5	59	17.3
6 - 10	155	45.5
11 - 15	115	33.7
> 15	12	3.5
Total	341	100

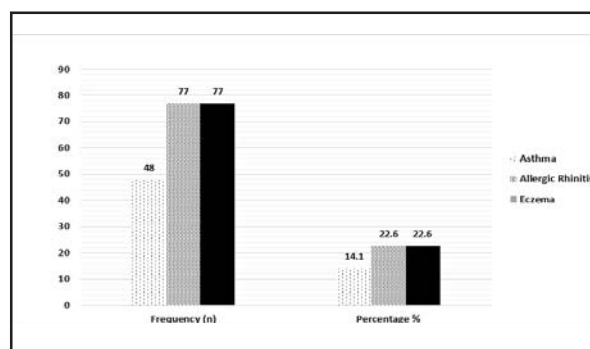


TABLE 2. PREVALENCE OF ALLERGIC DISORDERS IN MALE AND FEMALE

	Gender	
	Male	Female
	N (%)	N (%)
Asthma	25 (17.7%)	23(11.5%)
Allergic rhinitis when no flu in last year	34 (24.1%)	43(21.5%)
Eczema	34(24.1%)	43(21.5%)

TABLE 3. CROSS TABULATION OF PARENTAL ALLERGY WITH WHEEZING IN CHILDREN

Father allergy	Wheezing in Children Yes	P-value No
History of Asthma in Father	15.8%	11.1%
Mother allergy		0.212
History of Asthma in Mother	22.9%	9.4%
Total	38.7%	0.033*
		20.5%

Asthma: is defined according to the ISAAC questionnaire as the presence of symptoms of recurrent wheezing or whistling in the last 12 month.^[10]

RESULT

Out of a total of 360 questionnaires that were distributed amongst the school children in the age group 4 to 15 years, 341 questionnaires were obtained with a response rate of 95%. The mean age of the study participants was $8 \pm SD 1.5$ years (Table1.) Out of the total 341 participants, n=141 (41.3%) were male and n=200 (58.7%) were female.

When gender was cross -tabulated with frequency of allergic disorders in the study population, it was observed that males were more prone to develop asthma, allergic rhinitis and eczema as compared to the female gender (Table 2).

The results of our study indicate that children less than 5 years old have a greater predisposition

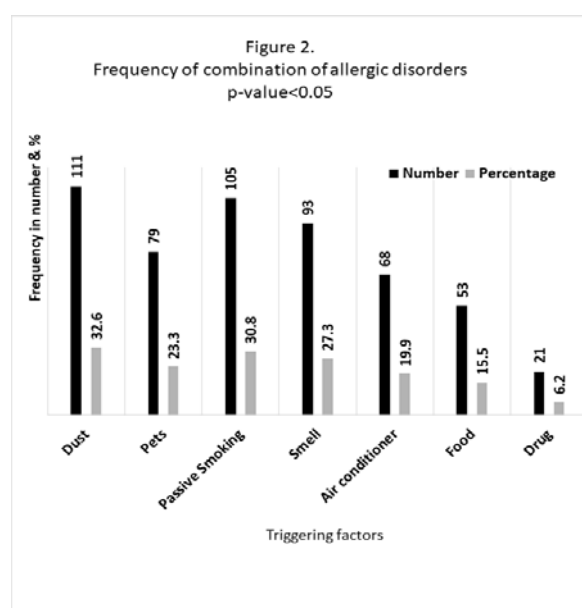
for wheezing .Out of a total of 59 children aged 5 years and less, n= 33 (56%) had a history of wheezing in the past one year and in n=58 (37%)out of a total of n=155 children in the age group 6-10 years history of wheezing was present. Out of a total of 341 children included in the study, n= 116 (34%) had history of wheezing in the 12 months and n=75 (22%) children had a history of nocturnal cough. Out of n=116 children with history of wheezing, in n=17 (15%) of these children wheezing was induced or aggravated by exercise. Figure 1 shows the prevalence of asthma, allergic rhinitis and eczema in the study population.

Figure 1. Frequency of allergic disorders in school children of Karachi

The prevalence of having all the three allergic conditions i.e. asthma, allergic rhinitis and eczema i.e. combination of allergic disorders was only n=6 (1.8%) in the study population where as n=36 (10.6%) were prone to any two of the allergic disorders i.e. asthma or allergic rhinitis or asthma and eczema or allergic rhinitis and eczema.

Our analysis shows strong correlation of history of asthma in the mother with the development of wheezing in the children (p-value less than 0.05)

A number of predisposing factors for these allergic disorders were studied (Figure 2). Exposure to dust, passive smoking, perfume and presence of pets in the house were found to be significantly associated with the development of allergic rhinitis and asthma (p-value <0.05). 10% of the children had allergy to eggs, seafood, cow's milk and wheat. Amongst children who had drug allergy 8% were allergic to penicillin and 1% to ibuprofen.



DISCUSSION

Prevalence rates for asthma show a wide variation globally. High rates as much as 17-30% have been reported in developed countries such as the United Kingdom, New Zealand and Australia whereas Eastern Europe, China and Indonesia show a comparatively low prevalence rate of 1-7%.^[10] In our study a prevalence rate of 14.1% was observed for asthma, 22.6 %for both allergic rhinitis and eczema. The burden of allergic disorders and asthma in the pediatric population of Pakistan is showing a rising trend. A study from Karachi by Khan et al^[11] reported a frequency of 34.3% for allergic rhinitis, 9.5% for diagnosed cases of asthma and wheezing and 15.2% for eczema. Another local study^[9] reported a very high frequency of allergic disorders in school-aged children with allergic rhinitis present in 42.1%, physician diagnosed asthma in 31.58% and eczema in 35.7% of the children. On the contrary, a study from Chennai by Balaji et al observed a prevalence rate of asthma among school children in the 6-17 year age group to be 4.5%, which is much lower than observed in the present study.^[12] A similar study from Bangladesh, reported a prevalence rate of 7.3% among children aged 5-14 years.^[13] This difference in the prevalence rates for asthma and allergic disorders in different countries can be explained by difference in climatic conditions, level of air pollution, difference in genetic and environmental factors.^[10]

In our study wheezing within the past 12 months was observed in 34% of the school children and 15% of them had wheezing induced or aggravated by exercise. In comparison a study from Karnataka, India^[14], reported 5% of children to have had a history of wheezing during or after exercise but a comparable number 21.4% had nocturnal cough. However, another study by Kumar SG et al^[15] reported a much higher proportion i.e. 37.5 % of the school children to have had asthma symptoms induced or aggravated by exercise.

In the present study asthma, allergic rhinitis and eczema were observed to be more prevalent amongst males as compared to females .A local study conducted on school-aged children observed a significantly higher prevalence of asthma (69.4%) in males as compared to females.^[9] This is comparable to the results of a study from Bangladesh

^[16] wherein asthma was more prevalent (15.6%) in males as compared to females (7.4%). In contrast to our findings another study from Karachi^[11] reported both eczema and allergic rhinitis to be more prevalent in females with a much higher prevalence rate of 54.47% and 59.03% respectively.

We observed that the frequency of wheezing was significantly high in children less than 5 years of age followed by the age group 6 to 10 years. These results are similar to a Korean study^[17] that reported a decrease in the prevalence of asthma with age. Also, a study from Iran^[18] reported a much lower prevalence rate of 1% for physician-diagnosed asthma in the 13-14 year old age group.

In our study, a positive family history for asthma was present in 38.7% of the wheezing children. A study by Rathore et al^[19] also reported that a significant number (66%) of children with asthma had a positive family history. It was also observed that a history of maternal asthma was a significant risk factor for those with wheezing. Similar to these results, Majeed et al^[8] reported a positive history of maternal allergy to be a significant risk factor for childhood asthma.

The risk for developing asthma is associated with exposure to paternal smoking during childhood.^[20] The results of our study confirm this, as it was observed that exposure to dust (indoor/outdoor), domestic pets and presence of a smoker in the house were significantly associated with asthma and allergic rhinitis in children. Studies have observed that house dust mite had a positive association with asthma in children.^[21] Similar to our findings Rathore et al.^[19] reported that in children who had a history of wheezing in the past 12 months, 76.6% of them had exposure to passive smoking at home .A study by Majeed et al observed that 38.5% of the children with asthma were exposed to cigarette smoke in their homes. Contrary to our findings, Majeed et al^[8] also reported that the presence of pets in the house was not a significant risk factor. Hill et al observed that 35% of the children with food allergy developed allergic rhinitis^[22]. In our study, food allergy was present in 15.5% of the study population.

There are however a few limitations of this study as it was a cross-sectional study, conducted on school children of a single city; therefore, the findings may

not be generalized due to the different socio-demographic characteristics in different settings. Also, due to feasibility constraints, diagnostic tests could not be done to validate and correlate the parental reports of symptoms of asthma.

CONCLUSION

To sum up, the results of this study indicate a high prevalence of allergic diseases and asthma in school children of Karachi. Apart from a positive family history, perfumes dust exposure, parental smoking and male gender was significantly associated with asthma and other allergic disorders. It is imperative to conduct further research to identify risk factors in relation to the severity of these disorders and to plan and implement preventive strategies. This would help to create public awareness of the risk factors in children, sensitizing people and educating them to seek early treatment.

RECOMMENDATIONS

Further research is needed to elucidate the association between the risk factors and the severity for asthma and allergic disorders.

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REFERENCES

1. Pawankar R, Baena-Cagnani CE, Bousquet J, Canonica GW, Cruz AA, Kaliner MA et al. State of World Allergy Report 2008: Allergy and Chronic Respiratory Diseases. *World Allergy Organization Journal*. 2008; 1(6): S1-S17
2. Just J, Saint-Pierre P, Gouvis-Echraghi R, Laoudi Y, Roufai L, Momas I et al. Childhood Allergic Asthma Is Not a Single Phenotype. *The Journal of Pediatrics*. 2014; 164(4): 815-820
3. Bjerg A, Hedman L, Perzanowski MS, Platts-Mills T, Lundbäck B, Rönmark E. Family history of asthma and atopy: in-depth analyses of the impact on asthma and wheeze in 7- to 8-year-old children. *Pediatrics*. 2007; 120(4): 741-748
4. Beasley R, Keil U, von Mutius E, Pearce N. "Worldwide variation in prevalence of symptoms of asthma, allergic rhino conjunctivitis and atopic eczema: ISAAC". *Lancet*. 1998; 351(9111): 1225-1232
5. Beasley R, Ellwood P, Asher I. International patterns of the prevalence of pediatric asthma: the ISAAC program. *Pediatr Clin N Am*. 2003; 5(3): 539-553
6. Ostergaard MS, Nantanda R, Tumwine JK, Aabenhuis R. Childhood asthma in low income countries: an invisible killer? *Prim Care Respir J*. 2012; 21:214-19
7. Hasnain SM, Khan M, Saleem A, Waqar MA. Prevalence of asthma and allergic rhinitis among school children of Karachi, Pakistan, 2007. *J Asthma*. 2009; 46(1): 86-90
8. Majeed R, Rajar UD, Shaikh N, Majeed F, Arain AA. Risk factors associated with childhood asthma. *J Coll Physicians Surg Pak* 2008; 18(5): 299-302
9. Waqar MA, Khan M, Hassnain SM, Saleem A, Shaukat S, Sarwar S et al Prevalence of Allergy and Asthma in School Children of Islamabad, Pakistan. *World Appl Sci J*. 2009; 6(3): 426-432.
10. Asher MI, Montefort S, Björkstén B, Lai CK, Strachan DP, Weil SK et al. Worldwide time trends in the prevalence of symptoms of asthma, allergic rhino conjunctivitis, and eczema in childhood: ISAAC phases one and three repeat multicountry cross-sectional surveys. *Lancet*. 2006; 368:733-743
11. Khan AA, Tanzil S, Jamali T, Shahid A, Naeem S, Sahito A. Burden of asthma among children in a developing megacity: childhood asthma study, Pakistan. *Journal of Asthma*. 2014; 51:891-899
12. Balaji BS, Sha JSI, Elilarasi S. Analysis of the Prevalence of Bronchial Asthma in 6-17 Years Old Urban School Children Belonging to Lower Middle Class and Lower Income Groups. *Int J Sci Stud*. 2017; 5(2): 194-201
13. Hassan MR, Kabir AR, Mahmud AM, Rehman F, Hossain MA, Bennoor KS et al. Self-reported asthma symptoms in children and adults of Bangladesh: findings of the National Asthma Prevalence Study. *Int J Epidemiol*. 2002; 31(2): 483-488
14. Dhakar AS, Kamath R, Pattanshetty S, Mayya SS. Prevalence of childhood asthma among 3-6 years old children, Udipi, Taluk, Karnataka, India.

GJMEDPH. 2015; 4(6): 1-7

15. 23. Kumar GS, Sarkar S, Sahu SK et al. Prevalence and factors associated with asthma among school children in rural Puducherry, India. *Current Pediatric Research*.2012; 16(2): 159-163
16. Prevalence of Bronchial Asthma Among Secondary School Students in Dhaka City. Sarkar S, Mumu SJ, Shahjahan M, Flora MS, Hafeez MA. *Bangl Med J*.2012; 41(1): 28-31
17. Kwon JW, Kim BJ, Song Y, Seo JH, Kim TH, Yu J et al. Changes in the prevalence of childhood asthma in Seoul from 1995 to 2008 and its risk factors. *Allergy, asthma and immunology research*.2011; 3(1): 27-33
18. Zobeiri M. Prevalence, Risk factors and Severity of Asthma Symptoms in Children of Kermanshah, IRAN: ISAAC Phase I, II. *Acta Medica Iranica*.2011; 49(3); 184-187
19. Rathore AW, Randhawa SM, Ain Q, Maqbool S. Wheezing conditions in early childhood: prevalence and risk factors among pre-school children. *Ann King Edward Med Coll*. 2005; 11:14-16
20. Weinmayr G, Weiland SK, Björkstén B, and the ISAAC Phase Two Study Group. Atopic sensitization and the international variation of asthma symptom prevalence in children. *Am J Respir Crit Care Med*.2007; 176:565 -74
21. Mitchell EA, Beasley R, Keil U, Montefort S, Odhiambo J, and the ISAAC Phase Three Study Group. Association between tobacco and the risk of asthma, rhino conjunctivitis and eczema in children and adolescents: analyses from Phase Three of the ISAAC programme. *Thorax*. 2012; 67: 941–49
22. Hill DA, Grundmeier RW, Ram G, Spergel JM. The epidemiologic characteristics of healthcare provider-diagnosed eczema, asthma, allergic rhinitis and food allergy in children: a retrospective cohort study. *BMC Pediatr*.2016; 16:133 .DOI 10.1186/s12887-016-0673-z

Exploring Delayed Presentation of Large Goiters: A Cross-Sectional Study at a Tertiary Care Hospital in Pakistan

Mariam Imran¹, Saad Abdul Razzaq¹, Zahid Mehmood², Ghansham³, Zawwar Reza³, Hazrat Bilal Burki⁴

ABSTRACT

Aim This study aimed to discern the factors contributing to the delayed presentation of goiters.

Study Design: Descriptive Cross-Sectional Study

Location and Duration: Conducted at the Department of General Surgery, Ward 25, from January 2019 to August 31st, 2020

Methodology: Patients attending the thyroid Outpatient Department (OPD) with a history of thyroid goitre persisting for at least 3 years were enrolled. Data were meticulously recorded using a standardized form.

Results: Among 120 participants, 82.5% were male, and the remainder were female. The primary reason for delayed presentation was fear of surgery (31%), followed by advice from traditional healers (20%) and suggestions from peers (12.8%). A statistically significant correlation was observed between educational and socioeconomic status and the timing of intervention presentation (p-value <0.001).

Conclusion: The lack of knowledge about surgical interventions for thyroid diseases emerged as the leading cause of delayed presentation, followed by reliance on advice from traditional healers, peers, and healthcare providers.

Keywords: Enlarged goitre, delayed intervention, educational attainment.

KeyWords: -Goiter, thyroid malignancy, hyperthyroidism, multinodular goiter

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INTRODUCTION

Goitre or a benign enlargement of a thyroid gland that can be asymptomatic in some patients but can cause compressive symptoms like dysphagia and dyspnoea in others¹. The incidence of goitre depends upon the iodine intake of the patient, familial background, iodine deficiency, goiterogens and radiation exposure². In long standing cases, nodularity develops frequently. It has been noted in the past that multinodular goitre remains asymptomatic for a longer period of time unless there is underlying malignancy³. Therefore, some people from developing countries usually ignore the enlarging thyroid gland and prefer no treatment until it becomes enlarged and cause symptoms⁴. In contrary to this, in the western world the incidence of thyroid carcinoma has rapidly increased in the recent time due to early presentation and better diagnostic modalities and early intervention, in case of benign smaller toxic thyroid swellings are usually dealt with radio iodine or thyroxin or a combination of both but multinodular large goitre usually does not respond to medical management and requires surgical intervention^{5, 6}. Further medical management include mainly iodine replacement, thyroid hormone replacement, thyroid hormone suppressive therapy, and radioactive iodine, whereas refractory to medical therapy in case of large goitre, surgical options are available. Even in experienced hands difficulties are usually encountered during thyroidectomy for the huge multinodular goitre and chances of injury to the vital structures can be expected including tracheal, oesophageal and recurrent laryngeal nerve and hematoma formation⁷. Furthermore, in the post-operative period, these patients can experience traheomalacia and hypocalcaemia due to inability to preserve parathyroid glands⁸. To prevent these complications, early surgical intervention is advised. It has been observed in many high volume thyroid centres that people are presenting with huge thyroid glands with long standing histories despite being symptomatic⁹.

Therefore, this study is conducted to find out the reason behind delayed presentation so that the awareness can be provided to the general population to consult with physicians for the evaluation of enlarging thyroid gland as soon as they observe it.

METHODOLOGY:

This descriptive cross sectional study was conducted in surgical ward 25, Jinnah Postgraduate Medical Centre, Karachi, Pakistan, from 1st January 2019 to 31st December 2020. Patients with large goitre at presentation having a history of at least 3 years are included in the study. Patients with early presentation (less than 3 years), known thyroid malignancy, solitary thyroid nodule, are excluded from the study. Data was collected in a pre-designed proforma after taking written and informed consent. Data was analysed via SPSS 23 and P value of less than 0.01 was considered significant.

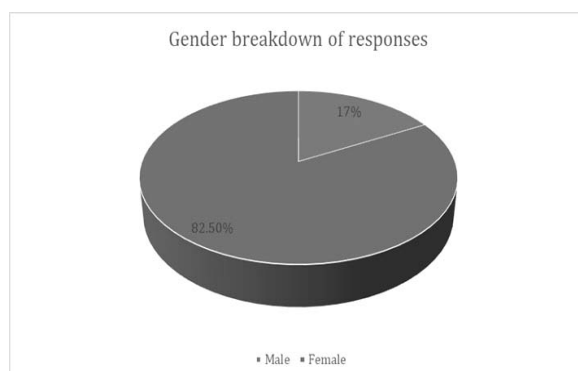
RESULTS:

Total of 120 patients were included in the study as per the inclusion criteria, out of which 99(82.5%) were female and 21(17%) were male.

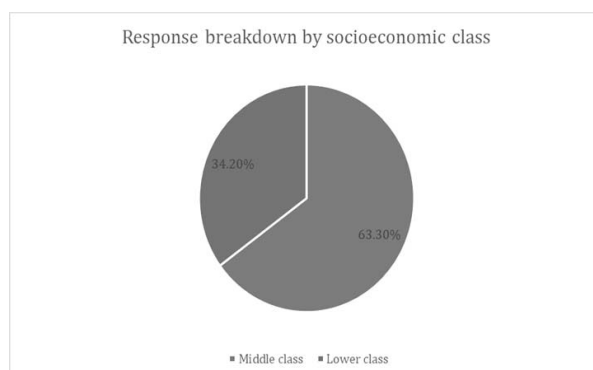
Patient's socio-economic status was determined on the basis of monthly income and expenditure. Most of the patients belong to the middle class (63.3%) followed by lower class (34.2%)

Furthermore, majority of the patients were uneducated (53.3%), with only 31.7% of people who studied in school.

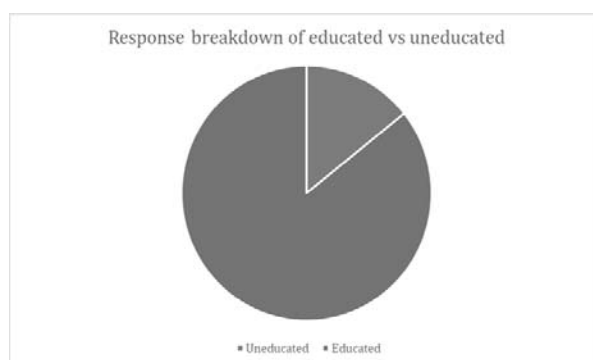
The average time of presentation was found to be 7-8 years. Patients are divided in to four age groups i.e. <20 years, 20-40 years, 41-60 years and >60 years. Around 48.3% patient belong to 20-40 years group followed by 44.2% in age group of



Patient's socio-economic status was determined on the basis of monthly income and expenditure. Most of the patients belong to the middle class (63.3%) followed by lower class (34.2%)



Furthermore, majority of the patients were uneducated (53.3%), with only 31.7% of people who studied in school



41-60years. The reasons for delayed presentation included fear from surgery (31.7%), advise from hakeem/faith healer (20%), advise from physician(10.8%) and advise from relative/friends(12.5%). In addition to these, around 20% of patient did not give any reason for their late presentation. Significant correlation between the socioeconomic and educational level and delayed presentation has been found with the p-value of less than 0.001. Simply stated, patients belonging to the lower socioeconomic status and who were uneducated were more likely to have delayed presentation. This could be due to a lack of awareness amongst the population regarding the surgical treatment of an enlarged thyroid gland.

DISCUSSION:

Massively enlarged thyroid glands are becoming infrequent in the western world, however, it is still prevalent in some geographical locations. It can

cause compressive symptoms including dysphagia, dyspnoea and hoarseness of voice¹⁰. Also, the proposed treatment option is surgical and it requires high level of surgical expertise in order to prevent disastrous complications including permanent hypocalcaemia and tracheostomy in case of bilateral RLN injury.

A study conducted in Baghdad showed the incidence of differentiated thyroid carcinoma to be 21.7% in patients with long standing MNGs¹¹. This study finding was also close to the findings presented in the study conducted in Saudi Arabia by Al-Salamah et al. showing 21.3% incidence of differentiated thyroid cancer in MNG detected by FNA and confirmed by subsequent histopathology¹². One study suggested that , patient with papillary cancer have better survival upto 75% and the incidence of complications were found to be on lower site , this study took a brief review of 200 cases over the period of 30 years and show despite delayed presentation adverse symptoms appear late for which patient seek medical attention.¹³ another cross sectional study conducted in India to compare individuals that are iodine deficient or ones having normal iodine intake and it was found that a significant proportion of population with insufficient iodine intake had thyroid related disorders and total prevalence of goitre was 12.2%.¹⁴

Another study conducted in US based on surveillance among 318,318 participant undergoing various surgeries, the incidence of refusal was found to be 3.5% and mainly among blacks, advance age, unmarried and uninsured individuals. However, racial and ethnic injustice in healthcare domain is one the major talked issue in United states up till date but in our setup still opting for live saving procedures prior to marriages is major dilemma¹⁵ Furthermore, the transformation of papillary thyroid carcinoma in to anaplastic thyroid carcinoma is well documented in the literature. Although, it only comprises 3.8% of the thyroid carcinomas, it is the most aggressive form and have a very high mortality rate. Keeping in mind the high incidence of malignancy in MNG and anaplastic transformation, early evaluation of thyroid nodules is indicated¹⁶ still the incidence of conversion of papillary to anaplastic carcinoma with life threatening complications are minimal as it requires series of further genetic muta-

tions¹⁷, that seems one of the another possibility of delayed presentation, as individuals are unaware of complications that results in early search for medical guidance. Unfortunately, in some eastern part of the world, people are found to be hesitated to seek medical attention for a longer time for thyroid diseases.

This study conducted in one of the surgical unit of Jinnah post graduate medical centre has identified few reasons for the late presentation of large multinodular goitres. Amongst these, fear from the surgery is the most common reason by the patients followed by advise given by faith healers, friends/family and even by some physicians. On top of it, an important co-relation was found between the late presentation and socio-economic status and educational level. The majority of the studied population belonged to the low socioeconomic status and had a very low level of education, therefore, most people were not even aware about the consequences associated with surgery of large thyroid gland and high incidence of carcinoma in MNG.

CONCLUSION:

Lack of education regarding the surgical management of thyroid diseases was found to be the most mentioned cause of delayed presentation followed by advice from hakeem/faith healers, peers and physicians. This is mandating the organization of awareness programs amongst the general population and different health care professionals to highlight the importance of early evaluation of thyroid diseases which in turn will potentially lead to a decrease the morbidity associated with the total thyroidectomy for huge multinodular goitre, especially those with the retrosternal extension.

REFERENCES:

- 1 Giovanella L. Nontoxic Multinodular Goiter 10. Atlas of Head and Neck Endocrine Disorders: Special Focus on Imaging and Imaging-Guided Procedures. 2015 Oct 30:67.
- 2 Bron LP, O' Brien CJ. Total thyroidectomy for clinical benign disease of thyroid gland. Br J Surg 2004; 91: 569-74
- 3 Ahmad T, ud Duja B, Hayat N, Rehan AG. Clinical Presentation of Patients with Multinodular Goiter at Madina Teaching Hospital. Annals of Punjab Medical College (APMC). 2013 Dec 10;7(2):108-13.
- 4 Langlois MF, Lamarche JB, Bellabarba D. Long-standing goiter and hypothyroidism: an unusual presentation of a TSH-secreting adenoma. Thyroid. 1996 Aug;6(4):329-35.
- 5 Maniakas A, Davies L, Zafereo ME. Thyroid disease around the world. Otolaryngologic Clinics of North America. 2018 Jun 1;51(3):631-42.
- 6 Bekele A, Osman M. Goitre in a teaching hospital in North Western Ethiopia. East and Central African Journal of Surgery. 2006;11(2):21-7.
- 7 Chen AY, Bernet VJ, Carty SE, Davies TF, Ganly I, Inabnet III WB, Shaha AR. American Thyroid Association statement on optimal surgical management of goiter. Thyroid. 2014 Feb 1;24(2):181-9.
- 8 Canu GL, Medas F, Cappellacci F, Soddu C, Romano G, Erdas E, Calò PG. Intact parathyroid hormone value on the first postoperative day following total thyroidectomy as a predictor of permanent hypoparathyroidism: a retrospective analysis on 426 consecutive patients. Endokrynologia Polska. 2022 Feb 8.
- 9 Ghafouri A, Hawsawi H, Alanzi A, Alzaidi S. The Influence of Preoperative Thyroid Gland Volume On Intraoperative Time and Postoperative Complications for Total Thyroidectomy Patients. Journal of Pathology Research Reviews and Reports. SRC/JPR-147. DOI: doi. org/ 10.47363/JPR/2022 (4). 2022;138:2-4.
- 10 Imran M, Mehmood Z, Baloch MN, Altaf S. Endoscopic thyroid lobectomy vs Conventional open thyroid lobectomy. Pakistan Journal of Medical Sciences. 2020 May;36(4):831.

- 11 Ghadhban BR. Incidence of differentiated thyroid carcinoma in multinodular goiter patients. *International Journal of Surgery Open*. 2018 Jan 1;15:18-24.
- 12 Al-Salamah SM, Kamran Khalid FC, Bismar HA, CAES C. nodular goiter. *Saudi Med J*. 2002;23(8):947-52.
- 13 Howard RB, Truels WP. Thyroid cancer: 30 year review of 201 cases. *The American Journal of Surgery*. 1979 Dec 1;138(6):934-8.
- 14 Menon U, Sundaram KR, Unnikrishnan AG, Jayakumar RV, Nair V, Kumar H. High prevalence of undetected thyroid disorders in an iodine sufficient adult south Indian population. *Journal of the Indian Medical Association*. 2009 Feb 1;107(2):72-7.
- 15 Hu X, Ye H, Yan W, Sun Y. Factors Associated With Patient's Refusal of Recommended Cancer Surgery: Based on Surveillance, Epidemiology, and End Results. *Front Public Health*. 2022 Jan 17;9:785602. doi: 10.3389/fpubh.2021.785602. PMID: 35111717; PMCID: PMC8801711.
- 16 Amacher AM, Goyal B, Lewis Jr JS, El-Mofty SK, Chernock RD. Prevalence of a hobnail pattern in papillary, poorly differentiated, and anaplastic thyroid carcinoma: a possible manifestation of high-grade transformation. *The American journal of surgical pathology*. 2015 Feb 1;39(2):260-5.
- 17 Capdevila J, Mayor R, Mancuso FM, Iglesias C, Caratù G, Matos I, Zafón C, Hernando J, Petit A, Nuciforo P, Cameselle-Teijeiro JM. Early evolutionary divergence between papillary and anaplastic thyroid cancers. *Annals of Oncology*. 2018 Jun 1;29(6):1454-60.

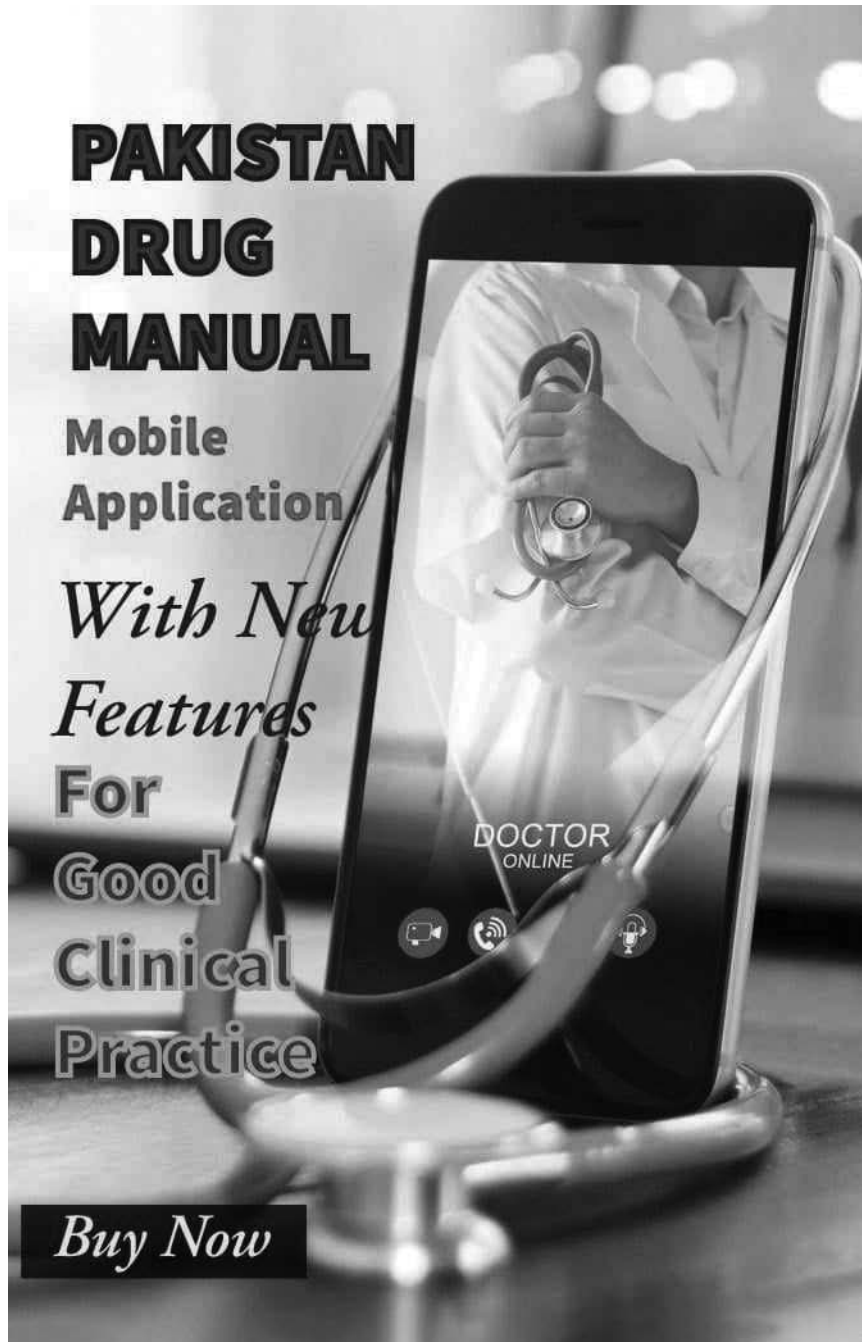
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