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AIMS & SCOPE:

The Green Life Medical College Journal is an english language scientific papers dealing with clinical medicine, basic sciences, epidemiology, diagnostic, therapeutics, public helath and healthcare in relation to concerned specialities. It is an official journal of Green Life Medical College and is published bi-annually.

This Joural is recognized by Bangladesh Medical & Dental Council (BM&DC).

The Green Life Medical College Journal of Bangladesh intends to publish the highest quality material on all aspects of medical science. It includes articles related to original research findings, technical evaluations and reviews. In addition, it provides readers opinion regarding the articles published in the journal.

INSTRUCTION TO AUTHORS:

Papers:

The Green Life Medical College Journal (published bi-annually) accepts contributions from all branches of medical science which include original articles, review articles, case reports, and letter to the Editor.

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The standard layout of a manuscript:

- Title page
- Abstract, including Keywords
- Introduction
- Methods
- Results
- Discussion
- Acknowledgements
- Funding
- List of references
- Tables & Figures
- Illustrations

The pages should be numbered in the bottom right-hand corner and the title page being page one, etc. Start each section on a separate page.

Title page:

A separate page which includes the title of the paper. Titles should be as short and concise as possible (containing not more than 50 characters). Titles should provide a

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Abstract:

The 'Abstract' will be printed at the beginning of the paper. It should be on a separate sheet, in structured format (Introduction/Background; Methods; Results; and Conclusions) for all Clinical Investigations and Laboratory Investigations. For Reviews and Case Reports, the abstract should not be structured. The Abstract should give a succinct account of the study or contents within 350 words. The results section should contain data. It is important that the results and conclusion given in the 'Abstract' are the same as in the whole article. References are not included in this section.

Keywords:

Three to six keywords should be included on the summary page under the heading Keywords. They should appear in alphabetical order and must be written in United Kingdom English spelling.

Introduction:

The recommended structures for this section are:

- Background to the study/Introduction
- What is known/unknown about it
- What research question / hypothesis you are interested in
- What objective(s) you are going to address

The introduction to a paper should not require more than about 300 words and have a maximum of 1.5 pages double-spaced. The introduction should give a concise account of the background of the problem and the object of the investigation. It should state what is known of the problem to be studied at the time the study was started. Previous work should be quoted here but only if it has direct bearing on the present problem. The final paragraph should clearly state the primary and, if applicable, secondary aims of the study.

Methods:

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Ethical clearance:

Regardless of the country of origin, all clinical investigators describing human research must abide by the Ethical Principles for Medical Research Involving Human Subjects outlined in the Declaration of Helsinki, and adopted in October 2000 by the World Medical Association. This document can be found at: http://ohsr.od.nih.gov/guidelines/helsinki.html. Investigators are encouraged to read and follow the Declaration of Helsinki. Clinical studies that do not meet the Declaration of Helsinki criteria will be denied peer review. If any published research is subsequently found to be non-compliant to Declaration of Helsinki, it will be withdrawn or retracted. On the basis of the Declaration of Helsinki, the Green Life Medical Journal requires that all manuscripts reporting clinical research state in the first paragraph of the 'Methods' section that:

- The study was approved by the appropriate Ethical Authority or Committee.
- Written informed consent was obtained from all subjects, a legal surrogate, or the parents or legal guardians for minor subjects.

Human subjects should not be identifiable. Do not disclose patients' names, initials, hospital numbers, dates of birth or other protected healthcare information. If photographs of persons are to be used, either take permission from the person concerned or make the picture unidentifiable. Each figure should have a label pasted on its back indicating name of the author at the top of the figure. Keep copies of ethics approval and written informed consents. In unusual

circumstances the editors may request blinded copies of these documents to address questions about ethics approval and study conduct.

The methods must be described in sufficient detail to allow the investigation to be interpreted, and repeated if necessary, by the reader. Previously documented standard methods need not be stated in detail, but appropriate reference to the original should be cited. However, any modification of previously published methods should be described and reference given. Where the programme of research is complex such as might occur in a neurological study in animals, it may be preferable to provide a table or figure to illustrate the plan of the experiment, thus avoiding a lengthy explanation. In longitudinal studies (case-control and cohort) exposure and outcome should be defined in measurable terms. Any variables, used in the study, which do not have universal definition should be operationalised (described in such terms so that it lends itself to uniform measurement). Where measurements are made, an indication of the error of the method in the hands of the author should be given. The name of the manufacturer of instruments used for measurement should be given with an appropriate catalogue number or instrument identification (e.g. Keyence VHX-6000 digital microscope). The manufacturer's town and country must be provided, in the case of solutions for laboratory use, the methods of preparation and precise concentration should be stated.

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In the case of animal studies, it is the responsibility of the author to satisfy the board that no unnecessary suffering has been inflicted on the animal concerned. Therefore, studies that involve the use of animals must clearly indicate that ethical approval was obtained and state the Home Office License number or local equivalent.

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When a drug is first mentioned, it should be given by the international non-proprietary name, followed by the chemical formula in parentheses if the structure is not-well known, and, if relevant, by the proprietary name with an initial capital letter. Dose and duration of the drug should be mentioned in sufficient details. If the drug is already in use (licensed by appropriate licensing authority), generic name of the drugs should preferably be used followed by proprietary name in brackets.

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Dorababu M, Prabha T, Priyambada S, Agrawal VK, Aryaa NC, Goel RK. Effect of Azadirachta indica on gastric ulceration and healing of bacopa monnierang in experimental NIDDM rats. *Indian J Exp. Biol 2004; 42: 389-397.*

Chapter in a book:
Hull CJ. Opioid infusions for the management of postoperative pain. In: Smith G, Covino BG, eds. Acute Pain. London: Butterworths. 1985,1 55-79.

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Any reader can provide feedback regarding published articles by writing letter to editor. The reader can also share any opinion in relation to medical science.

Prof. Dr. A.B.M. Bayezid Hossain
Editor-in-chief
Green Life Medical College Journal and
Principal
Green Life Medical College

ABOUT THE COLLEGE

INTRODUCTION

In 2005, about fifty distinguished physicians of the country started a hospital to give specialized care in the private sector. They named it Green Life Hospital and it turned out to be a great success. So in 2009, they decided to establish a medical college which will be a non-government, non-profit, self-financing project and will serve the humanity.

This College came into existence in 2009. The college commences its activities with the enrollment of 51 students in the 1st batch in 2010. Since inception, the college has undergone tremendous development and became a splendid centre for learning and development. At present we are enrolling 120 students each year. Among them, numbers of seats are reserved for overseas students.

We continue to evaluate and improve our programme to ensure the best medical education for the students. Our educational strategy is to create a conducive learning environment and to steer our students to acquire adequate knowledge, skills and temperament to practice medicine and be a competent health care professional group.

Green Life Medical College (GLMC) is approved by the Ministry of Health and Family Welfare (MOHFW), Government of Bangladesh and Bangladesh Medical and Dental Council (BM&DC) and affiliated to the University of Dhaka.

AIMS AND OBJECTIVES OF THE COLLEGE

Aims:

To create a diverse and vibrant graduate scholars in medical discipline and to create highly competent and committed physicians for the country.

Objectives:

- To provide an appropriate learning environment where medical students can acquire a sound theoretical knowledge and practical skills with empathetic attitude to the people.
- To carry out research in medical sciences to scale up the standard of medical education in the country.

LOCATION

The campus is located at 31 and 32, Bir Uttom K. M. Shafiullah Sarak (Green Road), Dhanmondi, Dhaka. The location is at the heart of the mega city Dhaka and is facilitated with very good communication networks.

The Medical College and the Hospital complexes have been raised in a multistoried fully air-conditioned building with an arrangement of approximately 600 patients. The building is equipped with state-of-the-art infrastructure, excellent with an out-patient department and adequate in-patient facilities.

Rising HIV in Bangladesh: A Wake-up Call

Bangladesh has long been considered a low-prevalence country for human immunodeficiency virus (HIV), with national prevalence remaining below 0.1% in the general population.[1] However, recent epidemiological data show a significant increase in HIV incidence. As we are approaching the UNAIDS 2030 target to eliminate AIDS, this spike will provide significant public health challenges for Bangladesh.[2] From 2020 to 2024, the diagnosed HIV cases more than doubled, from 658 cases in 2020 to 1,438 cases in 2024.[3]

Notably, the rise in HIV is not randomly distributed. In 2025, the Directorate General of Health Services (DGHS) declared Sirajganj as a 'red zone ' after 255 HIV-positive cases were identified, with roughly 73% of them being injecting-drug users.[4] This must serve as a warning—behind these numbers is a virus that silently destroys immune integrity and amplifies vulnerability to life-threatening infections. In Jessore, ART Center health workers report 40 new infections from January to October, with 25 of them in students aged 17-23.[5] Meanwhile, Rajshahi documented 28 HIV cases in the past ten months, many of whom are men aged 20-35, with a significant proportion associated with same-sex contact.[6] These geographic clusters highlight that the epidemic is intensifying in specific high-risk zones, which calls for more focused, pathology-based public health response.

From a pathological perspective, HIV is more than an infectious disease; it is a progressive and destructive immunopathological process. Even small increases in incidence can lead to significant burdens. The virus specifically targets CD4+ T-lymphocytes, predisposing patients to tuberculosis, fungal infections, malignancies, and a spectrum of chronic complications affecting the cardiovascular, renal, and nervous systems.

Late diagnosis remains a major concern in Bangladesh. Patients often reach the health care center or pathology laboratory when immunosuppression is in an advanced state, making treatment less effective and increasing the risk of mortality.

Although Bangladesh has made progress in the availability of antiretroviral therapy (ART), several barriers continue to persist:

1. In many regions, the lack of laboratory facilities for CD4 count and Viral load monitoring delays diagnosis and treatment failure.
2. Social stigma, fear of discrimination, blaming, or violence, discourages laboratory investigations, disclosure, and seeking treatment.
3. Mobile populations such as migrant workers and drug users often neglect follow-up, leading to advanced opportunistic infections detected in the pathology lab.

To prevent localized HIV outbreaks from escalating into a national crisis, Bangladesh needs to implement a new science-based strategy.

• Improve laboratory infrastructure for early diagnosis of HIV

Ensuring widespread availability of CD4 and viral load testing across all divisions of Bangladesh. Additionally, upgrade diagnostic tools for opportunistic infections and initiate anti-retroviral therapy (ART) as soon as possible after diagnosis. Early monitoring not only improves survival but also reduces onward transmission of disease.

• Focus on the transmissible and target High-Risk population

To reduce transmission within the vulnerable population, Bangladesh should expand harm-reduction programs such as opioid substitution, promote and establish a clear policy for safe injection practices in hospitals, and destroy used needles to prevent reuse by drug abusers. Increase HIV testing and use of condoms among men who have sex with men (MSM) and sex-worker populations. Conduct the partner notification when one household member tests positive.

• Including HIV Treatment in Regular Medical Services

HIV management should not be conducted in isolation. It should be integrated with tuberculosis, sexually transmitted infections (STIs) programs, as well as with maternal and child health care services to prevent mother-to-child transmission. As patients with HIV are now living longer and increasingly experience noncommunicable diseases, chronic disease clinics must also be linked with HIV care. In addition, support services for mental health

and substance-use disorders are essential components of a comprehensive response.

The pathology lab must be equipped with essential diagnostic facilities to detect HIV at an early stage and timely identify of its associated complications. By strengthening diagnostics capacity, expanding testing, promoting preventive measures, and eliminating stigma, we can protect the thousands who might otherwise suffer silently.

Our response must begin now, while the virus is still at the door — not after it enters every household.

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ORIGINAL ARTICLE

Study on the Result of Unstable Intertrochanteric Fracture Treated by Trochanter Stabilizing Plate (TSP) in 65 Years and Above Old Age Group

ASHRAF Z[1], HAQ Z[2], ALAM MI[3]

Abstract

Introduction: *The management of unstable intertrochanteric fractures, particularly in individuals aged 65 and older, presents a significant challenge for orthopedic surgeons. A sliding screw device offers numerous benefits; however, its application in unstable trochanteric fractures has been linked to issues such as collapse and medialization of the femoral shaft. The trochanteric stabilizing plate (TSP), an add-on plate that extends proximally from the side plate, providing a lateral support to the greater trochanter. This study aimed to assess the outcomes of selected unstable intertrochanteric fractures classified as AO type 31-A2.2, 2.3, and 3.3, which were treated with TSP in patients aged 65 years and older.*

Methods: *This was a prospective observational study, carried out in National institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka from July 2017 to June 2018. After fulfilling inclusion and exclusion criteria a total of 10 cases treated with TSP superimposed on the regular DHS analysed.*

Results: *Out of 10 cases, 6 were female and 4 were male. Mean age 74.20 years (SD 7.64). Sedentary working job were the prominent occupation with 90% cases. Left side was involved in 60% cases. Maximum of 50% cases had ASA stage II. Abbreviated mental test score mean was 8.80 with SD 1.13. Mean interval between injury & operation was 7.10 days (SD 2.37). Mean operation duration was 94.50 minutes (SD 14.23) and hospital duration was 13.40 days with SD2.98. Lateralization of the greater trochanter and lag screw cut-out was successfully prevented in all fractures. Average lag screw sliding was 5.90 mm with SD 2.84. All fractures had healed within 18 weeks. More than 10° varus deformity observed in one case, but functional outcome was fair. One patient had persistent hip pain needed re-operation, followed by full gain of function. One patient had superficial wound infection, which was improved conservatively. One patient died of unrelated to operation after radiological union. Pre-fracture Parker Mobility Score 7.60 with SD 0.96 and on last follow-up 7.10 with SD 1.66. Hip functional results were satisfactory in 80% of patients and unsatisfactory in 20% according to the Salvati-Wilson score.*

Conclusion: *In selected unstable intertrochanteric fractures characterized by a small or absent lateral cortical buttress in individuals aged 65 years and older, incorporating a TSP with the DHS provides effective support for the unstable greater trochanter fragment. This addition can help avert lateralization, screw cut-out, and limb shortening, thereby enhancing surgical outcomes.*

Keywords: *Unstable intertrochanteric fracture, Trochanter stabilizing plate, Dynamic Hip Screw.*

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Introduction:

Intertrochanteric fracture (ITF) which is one of the common fractures in elderly[1,2], have greater risk of loss of independence among that age group.[3,4] Though their union rates are high, but without surgery functional outcomes tend to be disappointing.[5] According to members of the American Academy of Orthopaedic Surgeons (AAOS) approximately 50% of 350,000 patients treated for hip fractures annually in the United States do not regain pre-fracture level of mobility.[5] Its

frequency increases with age which poses a public health issue.[6]

Operative treatments of these fractures are challenging for all Orthopaedic surgeons. With diversity of fixation devices available for treatment of ITF demonstrate difficulties encountered in the actual treatment.[7] Of them two types are most widely used to fix ITFs, one is intramedullary nailing and another is screw with plate fixation.[4,7-9] Nails have advantage of preventing excessive sliding and medialization of shaft, lower implant failure rate, makes no dissection at fracture site.[4] However, they usually costly, may cause iatrogenic abductor injury and this gets complicated with case of having additional femoral shaft fractures below the implant and the technique is more difficult than DHS.[10,11]

In contrast, Dynamic Hip Screw (DHS) is the standard fixation device for most of the ITF.[12] DHS has advantages such as controlled telescoping & impaction and short operation time and failure rates as low as 5% have been reported in studies.[12,13] However, unstable ITFs lack the posteromedial buttress, lateral buttress, or both. When treated with DHS, these fractures tend to exhibit significant medial displacement of the shaft accompanied by lateral dislocation of the greater trochanter fragment. This occurs due to excessive sliding of the screw within the barrel, leading to a higher incidence of screw cut-out and failure rates ranging from 5% to 12%.[7,12,13]

To address this issue, the AO has introduced the trochanteric stabilization plate (TSP), which is utilized in conjunction with the side plate of the DHS as a modular extension. This plate is fixed to the lateral femoral wall to provide stabilization to the greater trochanter. It showed equivalent biomechanical and clinical stability comparable to nailing and prevented excessive sliding or medialization of the shaft. Encouraging results have been reported by several groups using a trochanter buttressing plate in some series. [3,12]

We find no study of using TSP-DHS used in elderly with unstable ITFs in Bangladesh. The purpose of this study was to evaluate the result of unstable intertrochanteric fracture of AO type of 31-A2.2, 2.3 and 3.3 treated by Trochanter Stabilizing Plate (TSP) in elderly of 65 years and above age group.

Methods:

This study was prospective observational research conducted at the National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR) in Dhaka, spanning from July 2017 to June 2018. Elderly patients aged 65 years and older, who were admitted with radiologically proven cases of intertrochanteric fractures that satisfy the eligibility criteria, were included in the study population. Inclusion criteria were Unstable trochanteric fracture AO type 31-A2.2, 2.3 and 3.3., age 65 years and above, all gender, close fracture and fracture less than 3 weeks old. Exclusion criteria were age below 65 years, history of previous surgery in proximal femur, AO type 31-A1, A3-3.1 & 3.2 fracture, open fracture, sign of infection, unstable medical illness that increase risk of morbidity or mortality and dementia.

A stable fracture is characterized by no post-fixation displacement. And an unstable fracture has been defined as fracture which has tending to collapse with axial loading after appropriate reduction and fixation.[1] AO type 31-A2.2 & 31-A2.3 and 31-A3.3– these fractures are characterized by the absence of the posteromedial buttress, the lateral buttress, or both.[12] The lag screw sliding distance defined as radiological difference between the lag screw length on anteroposterior (A-P) view taken immediately after operation and 6 months after the operation.[14] Radiological union of fracture defined when fracture line could barely be visible because of callus and sclerosis in plain x-ray and clinically when there is no tenderness at fracture site.[14] American Society of Anesthesiology (ASA) Score used to determine physical status before surgery.[15] Abbreviated mental test score was used to exclude patient with any cognitive impairment (e.g. Dementia).[16]

Surgical technique

All the patients of this study were operated under spinal anesthesia. Fracture table was utilized and patients were positioned supine. Standard lateral approach was applied to reach the proximal femur. Guidewire placement directed below the center of the femoral head in the A-P view and in the center or slightly posterior on lateral view. After performing triple reaming, appropriate size lag screw was inserted. We used 4-hole side plate, securing it to the femur with cortical screws in the 2nd and 4th holes by 2 cortical screws. If necessary, we contoured the proximal end of the TSP to accommodate the mass of the greater trochanter. The TSP was positioned over the DHS plate to ensure it was securely seated and that the screw holes aligned properly. We then fixed TSP using 2 cortical screws in remaining 2 holes, with washer if needed. Finally, compression screw was inserted. the entire procedure was conducted under fluoroscopic guidance. Skin closure was done in layers.[3,17]

On the first postoperative day, patient advised for to sit on bed, breathing exercise and static quadriceps exercise. Drain was removed after 24 to 48 hours. Subsequently, knee bending exercise begun. Stitches were removed on 14th postoperative day. The patient was advised to walk without bearing weight using crutches. After 12 weeks, if radiological union was observed, full weight bearing was allowed. Follow-up evaluations were conducted at the 4th, 12th, and 24th weeks by both clinically and radiologically.

Parker mobility score used to evaluate pre-fracture and last follow up mobility level.[18] Salvati & Wilson Hip Score employed to assess Hip function.[19] Data were collected by interview, observation and clinical examination and investigations. Data were processed and analyzed using IBM SPSS (version 20).

This research presents a number of limitations. Firstly, the sample size was small. Secondly, the duration of follow-up was comparatively short. Consequently, the results may have been premature. Finally, the surgeries were not conducted by a single surgeon. The varying operative skills among the surgeons could have influenced the treatment outcomes. Nevertheless, all procedures were carried out by experienced professionals.

Results:

A total of 10 patients, who fulfilled the inclusion & exclusion criteria were enrolled in this study. Age of patients range from 65 to 87 with mean 74.2 and SD 7.6. Of them 4 (40%) were male and 6 (60%) were female.

Table I

Age and Gender distribution

Gender	Frequency	Age Range	Age Mean	±SD
Male	04 (40%)	65 – 87 (22)	78.00	±10.13
Female	06 (60%)	65 – 80 (15)	71.66	±4.93
Total	10	65 – 87 (22)	74.20	±7.64

All the female (6, 60%) were house wife, among male businessman 2(20%), retired service man 1(10%) and farmer 1(10%). Low velocity injuries (eg. falls to the ground) account for the majority with 8 cases (80%). Notably, all 6 female patients had a history of falling. Among the male patients, 1 experienced a high velocity injury (such as a road traffic accident), while 3 cases (30%) were attributed to low velocity injuries. Table 2 shows fracture type with AO 31-A2.2 is the leading type, followed by 31-A2.3 and lastly 31-A3.3 with 1 case. Fractures of the left side were more common than the right.

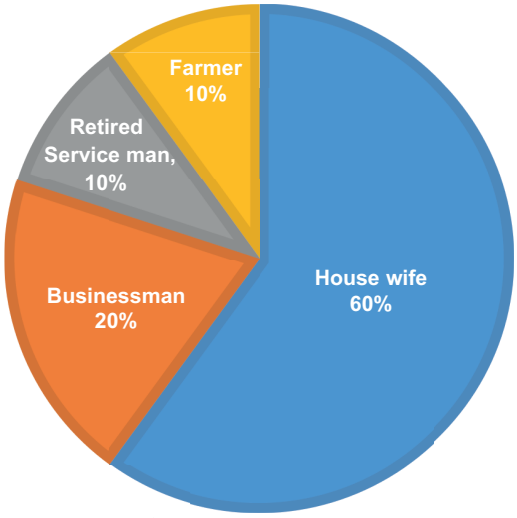

Figure 1: Patient Occupation distribution

ASA Score (Bhattacharya & Wray, 2004; American Society of Anesthesiologists, 2015) distribution shows 3 patients had ASA score stage I, five patients had stage II and 2 patients had stage III (Table 2). Among the two patients, one presented with both uncontrolled diabetes mellitus and hypertension, while the other had only uncontrolled hypertension. All of these comorbid conditions were managed prior to the surgical procedure. Almost all the patients had good Abbreviated mental test score with mean 8.8 with SD 1.1. None of the patients had any cognitive impairment (Table 3).

Table II

Fracture profile and ASA Score

Topic		Frequency (%)
Fracture type	AO 31-A2.2	5 (50%)
	AO 31-A2.3	4 (40%)
	AO 31-A3.3	1 (10%)
Side	Right	6 (40%)
	Left	4 (60%)
ASA Score	Stage I	3 (30%)
	Stage II	5 (50%)
	Stage III	2 (20%)

Table 3

Abbreviated mental test score

Score		Frequency	Mean ± SD
Abbreviated mental test score	Severe (0-3)	0	8.80 ± 1.13
	Moderate (4-7)	0	
	Normal (≤8)	10	

Table IV

Management of fracture in hospital

	Range	Mean ± SD
Interval between injury and operation	3 – 11 days (8 days)	7.10 ± 2.37
Operation duration	75 – 120 mins (45 mins)	94.50 ± 14.23
Hospital stays	10 – 18 days (8 days)	13.40 ± 2.98

Time interval between injury and operation was from 3 days to 11 days, mean 7.10 with SD 2.37. Operation duration was from 75 minutes to 120 minutes, mean 94.5 minutes and SD 14.23. Hospital stays were from 10 days to 18 days, mean 13.4 days with SD 2.98. (Table IV)

Table V shows the post-operative complications. One patient (10%) who developed superficial wound infection, which was managed conservatively. There was no lateralization of greater trochanter, lag screw cut-out, implant failure, non-union and significant limb shortening (e"1cm) at final follow-up. One patient exhibited positive Trendelenburg sign and required reoperation after radiological union, due to persistent pain caused by impingement of proximal part of TSP. After reoperation patient regained abductor muscle function. Another patient of 31-A2.3 fracture type presented with a varus deformity exceeding 10°. Additionally, one patient died which was unrelated to operation, after radiological union. All patients had a minimum of 6-month follow-up (range 6 months to 12 months), mean 8.50 with SD 1.65. The mean of lag screw sliding was an average of 5.90mm with SD 2.84.

Table V

Postoperative Complications

Complications	Number of patients
Infection	1
Pulmonary complication	None
DVT	None
DHS screw cut-out	None
Implant failure	None
Lateralization of greater trochanter	None
Significant limb Shortening (e"1cm)	None
Non-union	None
Varus deformity ≥10°	1
Reoperation	1

The different movement of hip like flexion, rotation, abduction and adduction were evaluated at 12 and 24 weeks which are shown in table 6.

Table VI

Range of motion at follow-up

Movement	On 12th week	On 24th week	p – value
Flexion	105.00 ± 10.80	126.50 ± 8.18	< 0.0005
Internal rotation	33.00 ± 4.83	38.50 ± 4.74	< 0.0005
External rotation	27.00 ± 6.32	35.50 ± 5.98	< 0.0005
Abduction	27.00 ± 4.83	35.50 ± 5.50	< 0.0005
Adduction	23.00 ± 4.83	27.50 ± 4.24	< 0.0005
Knee Flexion	107.50 ± 13.59	128.00 ± 9.77	< 0.0005

*Paired T-test was employed to analyze the data.

Table VII

Radiological union and Parker Mobility Score

Radiological union	Union in weeks	Number of patients	Percentage	Mean ± SD
	12 - 14	8	80%	14.30 ± 1.88
	15 – 18	2	20%	
Parker Mobility Score[18]	Pre-fracture	Last Follow-up		P-value
	7.60 ± 0.96	7.10 ± 1.66		< 0.05

Table VIII

Salvati & Wilson Hip function evaluation result [19]

Result	Number of patients	Percentage		Mean ± SD
Excellent	2	20%	Satisfactory 80%	28.20 ± 5.28
Good	6	60%		
Fair	2	20%	Unsatisfactory 20%	
Poor	0	0		

Table VIII shows Salvati & Wilson Hip function evaluation result. No cases had poor result. Satisfactory result was 80% and unsatisfactory 20%.

All fracture united within 18 weeks. Highest union observed between 12 to 14 weeks. Eight (80%) patients had identical Parker mobility score in pre-fracture & at last follow-up. Two (20%) had decreased mobility score, of them one patient had 3 points, and another two had 1 point difference in pre-fracture & last follow-up. There were lag screw sliding range from 2 mm to 10 mm with average 5.9 mm with SD 2.8.

Image 1: Pre-operative X-ray of 65 years old male.

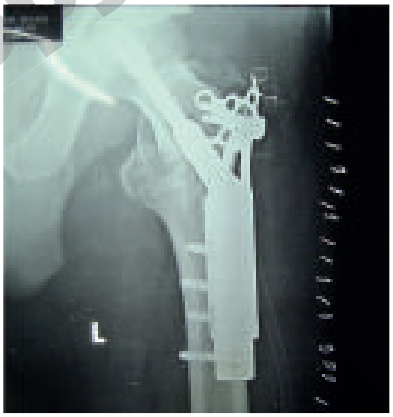

Image 3: Post-operative X-ray

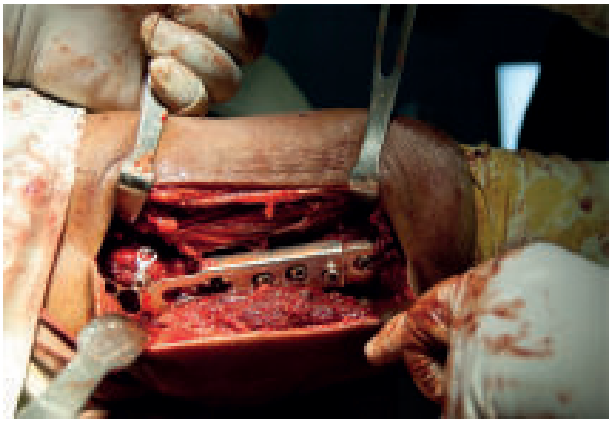

Image 2: DHS-TSP applied.

Image 4: 12 weeks after operation

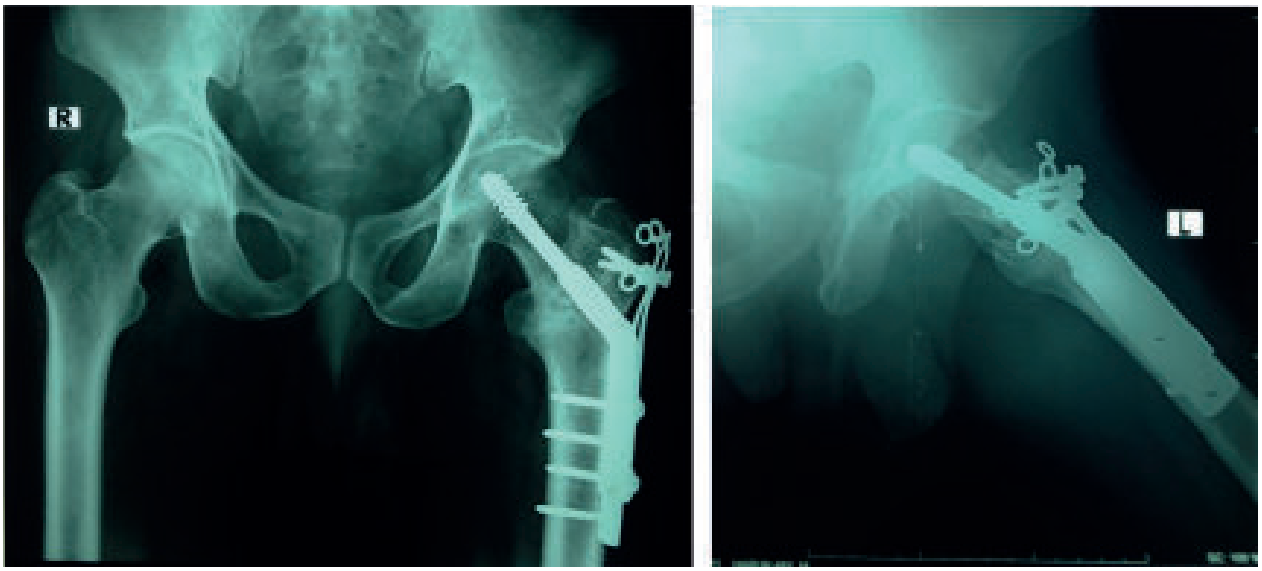

Image 5: *24 weeks after operation*

Discussion:

In our study, selected unstable intertrochanteric fracture of AO type 31-A2.2, A2.3 and A3.3 was tested. These fractures have lateral wall fracture or with posteromedial comminution. DHS alone tends to allow lateral wall collapse, varus collapse, medialization of the femoral shaft, and excessive sliding of lag screw.[12] In patients aged 65 and older, the presence of osteoporosis and reduced regenerative capacity, coupled with existing comorbidities, results in slower healing times, a higher risk of complications, and possibly less effective functional recovery.

TSP seems to reconstruct or buttress this lateral wall, thereby improving load distribution, reducing the lever arm of deforming forces, reducing telescoping, shortening, and improving abductor mechanics. In older patients with weaker lateral walls, this role is even more critical. Also, the TSP permits the sliding screw to slide freely through a hole in the plate, thus facilitating controlled fracture impaction, which is likely crucial for healing of these difficult fractures and represents the fundamental principle underlying the sliding screw plate systems.[12]

In our study, the mean age was 74.2 years, which is lower compared to other studies. Madsen et al. (1998)[20] reported a mean age of 78.9 years in the DHS/TSP group, while Cho et al. (2011)[14] found it to be 76 years, and Babst et al. (1998)[12] reported 79.7 years. This lower average age can be explained by the study conducted by Parker et al. (2003)[21], who indicated that in developing countries, the average age tends to be lower than in developed countries. In gender distribution in this study, female was the predominantly effected with 60% cases, compared to male with 40% cases with ratio of 6:4. This female predominant coincide with finding of other studies.[7,14,20]

Among occupations, sedentary works are predominating like businessman, house wife and service holder. Active worker like farmer is lest patient group. This is maybe due to sedentary work predispose to hip fracture.[22] Falls accounted for the majority of injuries in out study, representing 90% of all cases. This finding did agree with study by Babst et al. (1998).[12] Also, in the study by Gupta et al. (2010), 85% cases were due to fall and only 15% cases due to RTA.[7] This is attributed to fragility fractures, which are predominantly associated with postmenopausal osteoporosis. In this study, all six female patients experienced trauma resulting from low-energy incidents (such as falls), and the majority were postmenopausal, suggesting that osteoporosis may be a contributing risk factor.

In the current study, there were 5 cases (50%) of AO 31-A2.2 fracture, followed by 31-A2.3 with 4 cases (40%) and 31-A3.3 with 1 case (10%). Also 60% cases had their left trochanter fractured. Babst et al (1998) also had predominant of AO 31-A2.2 fracture type, and left side is more fractured than right. Therefore, the findings of the current study align with that of the previously mentioned study.

In accordance of Madsen et al. (1998)[20], ASA stage II was predominant findings with 40% cases of DHS/TSP group. Hsu et al. (2015)[3] also found stage II predominance with 50% cases. In present study also agree with former two, where ASA stage II present in 50% cases.

All the fractures in Babst el al. (1998) study fixed within 24 to 48 hours of injury. Where, in our study, range of time interval between injury and operation was from 3 days to 11 days. The longer delay was attributed to insufficient logistical support in a developing country such as Bangladesh. The average operation time observed in study by Babst el al. (1998) in 46 cases was 119 minutes (range 50 to 240 minutes). Sliding hip screw systems such as the DHS, have established themselves as the standard implant type for the fixation of stable intertrochanteric fractures over the last few decades. Consequently, the majority of surgeons are well-acquainted with the conventional implantation technique. The superposition of the TSP is technically simple once the DHS screw is inserted and the side plate fixed to the shaft fragment. For surgeons familiar with the DHS, the learning curve seems minimal. A shorter learning curve is consistent with a better outcome of the procedure since it reduces operative time and the incidence of operative complications.[3,7] Surgeons in current study were familiar with the DHS, the additional surgical time for adding modular TSP over DHS was only needed. That's why this study mean operation time was mean 94.50 minutes which is lower than former study.

Madsen et al. (1998) stated in their study that hospital stay was significantly longer in the DHS/TSP group with average 14.9 days, compared with 10.2 days in CHS group and 12.9 days in Gamma group. In present study average hospital stay was 13.4 days, which is slightly better than DHS/TSP group, but still longer than other 2 groups in the mentioned former study.

The occurrence of hip fractures is associated with a considerable risk of death during the initial 1st year post-fracture, with studies proposing a mortality range of 8.4% to 36%.[23] Babst et al. (1998)[12] reported 5(11%) death in their study, Madsen et al. (1998)[20] reported 11(22%) death in their TSP/DHS group. Russell (2013) mentioned that Bentler et al. reported on Medicare data from the United States during 1993 to 2005 and stated that mortality rate of intertrochanteric fracture at 6 months is 19%. In the current study, there was one death (10%), which was not related to the operation following radiological union. This rate is lower than that reported by Madsen et al. and Bentler et al., but is similar to the findings of Babst et al. (1998).[12]

About incidence of complications, Madsen et al. (1998)[20] reported a low infection rate of 2.4% in their DHS/TSP cohort, in contrast to the Gamma group which had a rate of 10% and the CHS group with 8.5%. Babst et al. (1998)[12] discovered that 2 cases (5%) in their research experienced infections, one being a deep infection and the other a superficial wound infection. In the current study, there was only a single case of superficial wound infection, which did not appear to extend the patient's hospital stay or affect the rate of fracture healing. The reason for the low infection rate may be attributed to a heightened awareness of infection issues among these patients, emphasizing general hygiene both pre- and postoperatively, along with a somewhat more proactive approach to diagnosing and treating infections.[3,12,20]

The primary complications of intertrochanteric fractures fixed with DHS are postoperative late collapse leading to shortening of the limb, screw cut-out and coxa vara.[7] Babst et al. (1998)[12] stated that Müller-Färber et al. discovered a correlation between the degree of screw sliding and postoperative mobility. Specifically, screw sliding of less than 6.7 millimeters did not influence mobility levels, while an average screw sliding of 13.4 millimeters led to a decrease in mobility, and 18.7 millimeters resulted in the lowest mobility levels. The mean sliding observed in this study was calculated to be 5.90 mm. This average sliding measurement was considerably lower than those reported in earlier studies that utilized DHS alone. For instance, Larson et al. (1990)[13] documented an average sliding of 12.4 mm in cases of unstable fractures. In a similar vein, Jacobs et al. (1976, as cited in Gupta et al., 2010, p. 127) noted an average sliding of 15.7 mm in unstable fractures. Additionally, Hardy et al. (1998)[11] reported an average sliding of 10.2 mm.

In the current study, no notable discrepancy in limb length was detected, which is consistent with the findings reported in the literature by Gupta et al. (2010).[7] Though one study had average 2 cm shortening in 12 out of 62 cases.[24] These statistics underscore the significance of anatomical reduction during surgical procedures; however, this can only be accomplished if the stability of these fractures is secured by buttressing the lateral wall. These observations support the conclusions of Babst et al. (1998),[12] who similarly noted a considerable decrease in excessive collapse and a subsequent reduction in limb length discrepancy through the use of a TSP in conjunction with DHS.

There exists a positive correlation between the strength of abduction and the lengths of the lever arm of the abductor muscles following total hip replacement.[25] In intertrochanteric fractures excessive collapse on the fracture side can change the lever arm and may account for muscle weakness, as demonstrated by a positive Trendelenburg sign. The weakness of the abductors may be a significant factor that accounts for the differences in

mobility levels observed postoperatively compared to pre-trauma. Preventing substantial limb shortening could play a crucial role in enhancing functional outcomes. As stated by Jong-Keon et al. (2010),[10] the use of an intramedullary device can lead to iatrogenic injury of the abductor muscles, potentially impacting the functional outcome of the hip. In the current study, the assessment results for hip abductor function at the final follow-up were significantly improved, supporting the perspective that the DHS combined with TSP is likely to enhance abductor function due to the stability it provides to the greater trochanter.[7]

Babst et al. (1998)[12] discovered that the lateralization of the greater trochanter was successfully avoided in all cases by employing a prototype buttress plate in conjunction with the DHS during their investigation. In a prospective, randomized study, Madsen et al. (1998)[20] evaluated the outcomes in 170 patients who had undergone treatment for an unstable intertrochanteric hip fracture using a Gamma nail, a compression hip screw, and DHS/TSP. Their findings indicated that both the DHS/TSP and Gamma nail groups effectively prevented the lateral displacement of the greater trochanter. The current study has confirmed that these complications can be mitigated with the TSP, as it significantly decreases the sliding of the lag screw and the lateralization of the greater trochanter while also limiting excessive medialization of the femoral shaft, all without hindering fracture healing. This demonstrates that the effectiveness of TSP is comparable to that of intramedullary devices in preventing the lateralization of the greater trochanter.

The current study reported no instances of non-union. A similar outcome was observed in the research conducted by Cho et al. (2011).[14] In their comparative study, Madsen et al. (1998)[20] identified a varus mal-union exceeding 10° at 6 months in 2.4% of cases within the DHS/TSP group, compared to 12% in the Gamma Nail group and 14% in the CHS group. Additionally, Gupta et al. (2010)[7] documented 2 cases of varus mal-union in their investigation. In the present study, 2 patients exhibited mal-union characterized by a varus deformity greater than 10°. Therefore, this study corroborates the findings of Madsen et al. that TSP is more effective in reducing varus union compared to Gamma Nail and CHS. The mal-alignment likely resulted from a loss of fracture reduction during the surgical procedure, which could have been prevented through proper reduction.

In the research conducted by Madsen et al. (1998)[20], it was observed that five patients (6%) out of a total of 85 in the DHS/TSP group required reoperation; four of these cases involved lag screw cut-out, while one was associated with an unrelated supracondylar fracture of the femur resulting from a fall at home. In another study, three patients out of 74 (4%) necessitated reoperation.[7] A more recent investigation revealed that a higher number of patients in the IM nail group underwent reoperations due to fractures around the implant and local pain from the implant compared to the SHS group (7.1% vs. 4.5%).[26] In our study, only one patient (5%) required reoperation after achieving radiological union, attributed to persistent pain in the hip area caused by impingement of the proximal section of the TSP. This complication rate aligns with the findings of the previous two studies. Following reoperation, the patient fully regained their pre-fracture level of mobility.

The average follow-up duration reported in Babst et al. (1998)[12] was 14 months, with a range of 12 to 20 months. In the present study, all patients underwent a minimum follow-up of 6 months, with a mean duration of 7.45 months, ranging from 6 months to 11 months. The shorter follow-up period in this study was attributed to the constraints of the study duration and the inclination of patients to avoid long-term follow-up.

Radiological union was observed in all cases at an average of 13.56 weeks in the research conducted by Gupta et al. (2010).[7] Radiological union in our study was with similar result, range of 12 to 18 weeks, mean 14.30 with SD 1.88. The highest rate of union was recorded within a period of 12 to 14 weeks, encompassing 80% of the cases.

The mean mobility score for Parker and Palmer[15], as reported in the study by Cho et al. (2011)[14], was 7.2 (SD 4.6) in the pre-fracture state, which decreased by 1 point to 6.2 (SD 3.5) at the final follow-up. In the current study, the pre-fracture score was 7.60 (SD 0.96), and the last follow-up indicated a half-point difference, resulting in a score of 7.10 (SD 1.66). This study demonstrated superior results compared to Cho et al., likely due to the variation in the mean age of the study population. Babst et al. (1998) found that 28 out of 39 cases (71%) achieved the same mobility score at both pre-fracture and last follow-up. Similarly, Madsen et al. (1998) reported in their comparative analysis that 69% of patients in the Gamma group, 73% in the CHS group, and 91% in the DHS/TSP group were able to return to their preoperative walking ability. In the present study, 80% of cases regained the same mobility score at both pre-fracture and last follow-up, which falls between the results of Babst et al. and Madsen et al., and is also an improvement over the Gamma and CHS groups noted in

Madsen et al.'s research. This discrepancy among the groups may indicate a lower incidence of secondary fracture displacement in the DHS/TSP group compared to the Gamma and CHS groups.

We used Salvati & Wilson hip functional scores to evaluate functional outcomes after intertrochanteric fracture surgery. Other studies[12,20] have employed the same scoring, allowing us to compare our results with theirs. Babst et al. (1998) utilized TSPs in 46 unstable ITFs, reporting Salvati & Wilson hip functional scores of 51% excellent, 36% good, 13% fair, and no cases with poor results, leading to a total satisfactory result of 87%.[12] This study provided the earliest and essential outcome data for TSP. In the clinical results presented by Madsen et al. (1998), the Gamma group showed a satisfactory outcome in 69%, while the TSP group achieved 91%, indicating superior results for the TSP-DHS group compared to the Gamma group.[20] In cases of unstable intertrochanteric fractures due to posterior, medial, and lateral comminution, the collapse at the fracture site associated with sliding hip screw fixation may exceed typical expectations. In such instances, weakness of the abductor muscles and the resulting fatigability are likely to be more pronounced. TSP significantly reduced the incidence of lateralization of the greater trochanter, with limited telescoping of comminuted fragments during weight bearing. These factors contributed to improved hip abductor function and a final Salvati-Wilson functional score, restoring pre-fracture mobility. The hip functional outcomes based on the Salvati & Wilson score in this study were classified as satisfactory in 80% of cases (20.0% excellent and 60% good), with 20% rated as fair and none as poor. The satisfactory results are comparable to those reported by Babst et al. (1998) but surpass those of the Gamma group mentioned in Madsen et al. (1998).[12,20] Therefore, this study suggests that the addition of a TSP to DHS is likely to enhance surgical outcomes in these specific types of unstable intertrochanteric fractures.

Conclusion:

The TSP-DHS effectively treats AO type 31-A2.2, 2.3 and 3.3 unstable intertrochanteric fractures in patients aged 65 and older. Outcome comparable to intramedullary nailing, while offering advantages of preserving the dynamic compression benefits of the standard DHS. This method establishes a biomechanically stable structure that facilitates lateral buttressing, which helps to prevent the lateralization of the greater trochanter and consequently limits the medialization of the femoral shaft. Future studies with a larger sample size, extended follow-up, and surgeries performed by a single surgeon may address the limitations.

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ORIGINAL ARTICLE

Practice of Prelacteal Feeding to Newborn in Dhamrai Upazilla, Bangladesh

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Abstract

***Introduction*: Infant mortality rate in Bangladesh (23 per 1000 live birth) is still high compared to international goals set by the UN. In Bangladesh, infectious diseases such as diarrhoea and the acute respiratory infections are major causes of infant mortality. Prelacteal feeding is the practice of feeding the newborn with foods other than breast milk before the starting of breastfeeding. It has been recognized as a major cause of developing diarrhoea and acute respiratory tract infections. This study was done to describe the practice of prelacteal feeding of mothers having newborn at or below six months of age in rural area of Dhamrai Upazilla, Bangladesh.**

Methods: A cross-sectional descriptive study was conducted among 141 mothers having newborns aged at or below 6 months, residing in Dhamrai Upazilla of Dhaka District from January 2020 to March 2020. Data were collected through face-to-face interviewing of mother by using a semi-structured questionnaire. The collected data were analyzed both manually as well as by computer-based software MS Excel.

Results: The proportion of respondents who practiced prelacteal feeding was less than half (48.9%) of the total respondents. The two most popular items used as prelacteal feeding were honey (31.5%) and infant formula (30.2%). Around 34.8% had no knowledge about the outcome of prelacteal feeding practice. About 91.5% of the respondents had fed the colostrum to their newborn, but around 22.0% had no knowledge regarding the importance of colostrum. Among 141 respondents, about one third of the respondents (34.1%) replied that they had not received breastfeeding counselling during pregnancy.

Conclusion: This study revealed that the lack of knowledge regarding prelacteal feeding is a major cause of the widespread practice of prelacteal feeding. Delivery of adequate information to pregnant women and lactating mothers through various channels can help reduce this practice.

Keywords: Prelacteal feeding, Infant formula, Colostrum

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Introduction:

Prelacteal feeding is the practice of feeding the newborn with foods other than breast milk before the starting of breastfeeding. Infant mortality rate in Bangladesh (23 per 1000 live birth) is still high compared to international goals set by the UN.[1] Major contributors of this high mortality rate are infectious diseases such as diarrhoea and pneumonia.[2]

Globally, the prelacteal feeding is practiced to different extents in different countries. In a study conducted in Ethiopia, it has been discovered that children exposed to prelacteal feeding before six months of age had a 16 times higher probability of developing diseases.[3] A study conducted in China revealed that around 26% of the newborns were given prelacteal foods.[4] Another study in Nepal found that 26.5% of mothers practiced prelacteal

feeding.[5] In India, a study conducted in Wadi rural area found 31.8% of the respondents had given prelacteal feed to their newborn.[6] Several studies conducted in Pakistan found widespread practice of prelacteal feeding, with 72.5% of the respondents believing prelacteal feeding to be a requirement for the newborn.[7] Multiple studies conducted in different regions of Bangladesh found concerning results. A study conducted in Dhamrai Upazilla in 2015 found the proportion of prelacteal feeding to be 69.3%.[8]

The World Health Organization has mentioned several strategies to achieve the reduction in under-5 mortality envisioned in Sustainable Development Goals. Of these strategies, prompt starting of breastfeeding after birth and exclusive breastfeeding with no other food provided to the newborn until first six months of age is of the upmost importance.[9]

The objective of this study was to find out the practice of prelacteal feeding of mothers having newborn at or below six months old in rural area of Dhamrai Upazilla. The findings generated by this study can be used to tackle this problem at the community level and ultimately reduce infant mortality and morbidity rate in Bangladesh caused by the practice of prelacteal feeding. Hence the problem of prelacteal feeding needs to be addressed.

Methods:

A cross-sectional type of descriptive study was conducted in several villages of Dhamrai Upazilla of Dhaka district from January 2020 to March 2020 over a period of 3 months. The study population included mothers having newborn at or below six months of age in Dhamrai Upazilla. Non probability purposive sampling technique was used. The sample size was 141. A semi-structured questionnaire was used to collect the necessary data by face to face interview. Before the data collection, questionnaire was pretested and revised. After collection the data were checked, revised, edited and analyzed both manually and on a computer-based software Microsoft Excel.

Results: This cross-sectional study was conducted from January 2020 to March 2020 with an aim to find out the practice of prelactial feeding of mothers having newborn at or below 6 months and different factors associated. Data were analyzed manually and computer based software MS Excel and presented here with table and graphs.

Table 1 shows the socio-demographic characteristics of the respondents. The mean age was 19.23 and most (58.9%) of the respondents were under 25 years of age. The majority of them (80.9%) were followers of Islam. About half (50.4%) of the respondents were educated up to SSC level. Most (85.2%) of them were homemakers. The highest proportion (58.2%) of the respondents had a monthly family income of Tk 10,000 – Tk 20,000. Equal number of respondents (42.6) had either 1 or 2 children.

Table-I

Distribution of the respondents by socio-demographic characteristics (n = 141)

Socio-demographic characteristic	Frequency	Percentage (%)
A. Age group		
Below 25 years	83	58.9
26 – 30 years	39	27.6
31 – 35 years	17	12.1
Above 35 years	2	1.4
Mean	19.23	
B. Religion		
Islam	114	80.9
Hinduism	27	19.1
C. Level of Education		
No formal education	7	5.0
Can sign only	5	3.5
Up to primary level	71	50.4
Up to SSC	37	26.2
Up to HSC	11	7.8
Graduation or above	9	6.4
Refused to answer	1	0.7
D. Occupation		
Homemaker	120	85.2
Service holder	11	7.8
Maid Servant	2	1.4
Small businessman	2	1.4
Agricultural worker	1	0.7
Others	5	3.5
E. Monthly Family Income		
Less than Tk 10,000	24	17.0
Tk 10,000 – Tk 20,000	82	58.2
Tk 20,000 – Tk 30,000	24	17.0
More than Tk 30,000	11	7.8
F. Number of Children		
1	60	42.6
2	60	42.6
3	20	14.1
4 and above	1	0.7

Among 141 respondents, the proportion of respondents who practiced prelacteal feeding was near about half (48.9%) of the total respondents.

Table-II

Distribution of respondents according to practice of prelacteal feeding (n = 141)

Prelacteal feeding	Frequency (n)	Percentage (%)
No	72	51.1
Yes	69	48.9

Among 69 respondents, the two most popular items used for feeding were honey (31.5%) and infant formula (30.2%). A considerable number fed their newborns sugar dissolved in water (26.0%). A sizable portion (8.2%) fed other liquid like fruit juice. The least popular items were cow's milk (2.7%) and plain water (1.4%). No respondent fed glucose dissolved in water to their newborn.

Among 141 respondents, 34.8% had no knowledge about the outcome of prelacteal feeding. About 19.1% believed that prelacteal feeding might have adverse effects on child's health. Approximately 17.7% believed that newborn would receive better nutrition if prelacteal feeding was done and 13.5% believed prelacteal feeding would not give adequate nutrition to the newborn. About 7.8% believed newborn would not receive immunity if prelacteal feeding was done, and 6.4% believed newborn would show better development in the future.

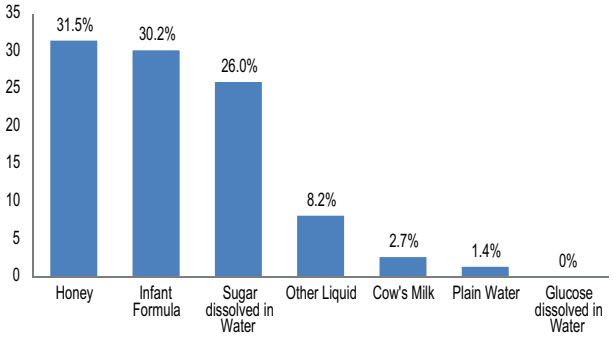

Figure 1: Distribution of respondents according to types of food items used for prelacteal feeding (n = 69)

Among 141 respondents, the majority of respondents (91.5%) fed the colostrum to the newborn, and only the remaining minority (8.5%) threw it away.

Among 141 respondents, 12 respondents threw away the colostrum. Among them more than half (58.3%) of the respondents threw away the colostrum due to lack of knowledge of its usefulness, 16.7% of the mothers thought that the quantity was insufficient and another 16.7% had physical difficulty. For the rest 8.3%, the newborn did not accept it.

Table-III

Distribution of the respondents according to knowledge on outcome of prelacteal feeding practice (n = 141)

Knowledge regarding prelactealfeeding	Frequency (n)	Percentage (%)
No knowledge	49	34.8
Infant might face healthproblems in future	27	19.1
Infant will receive morenutrition than from breast milk	25	17.7
Infant will not receiveadequate nutrition	19	13.5
Infant will not receiveimmunity	11	7.8
Infant will show betterdevelopment in the future	9	6.4
Other	1	0.7

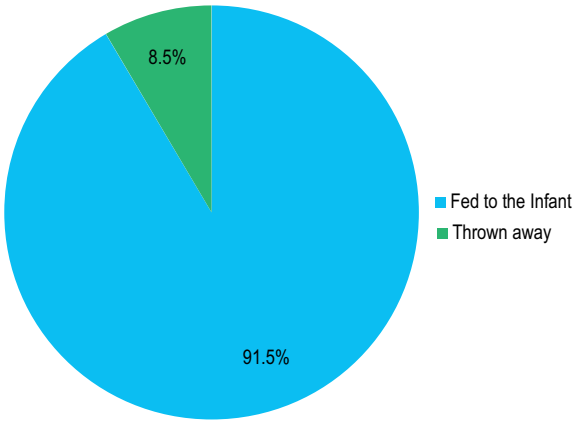

Figure 2: *Distribution of respondents according to feeding of colostrum (n = 141)*

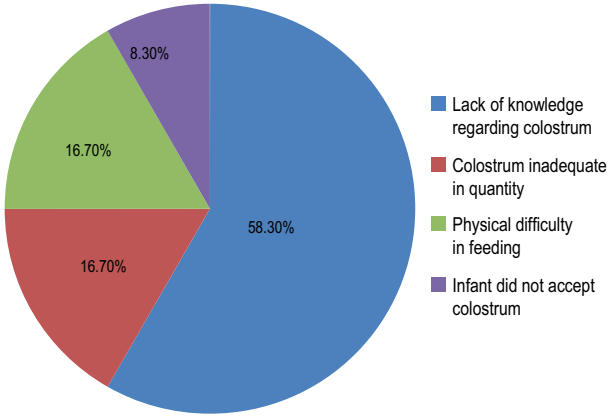

Figure 3: *Distribution of respondents according to reasons for throwing away colostrum (n = 12)*

Table-IV

Distribution of the respondents according to belief about importance of colostrum (n = 141)

Belief regarding importanceof colostrum	Frequency (n)	Percentage (%)
Gives appropriate nutrition tothe infant	90	63.8
No idea	31	22.0
Gives immunity to the infant	19	13.5
Can easily be digested by the infant	1	0.7
Harmful for the infant	0	0.0

Among 141 respondents, the majority (63.8%) of the respondents thought that colostrum would give the newborn appropriate nutrition while only 22.0% had no knowledge regarding the importance of colostrum. About 13.5% knew about the immunity it grants. Only 0.7% thought that it is important because it would be easily digested by the neonate. No respondent thought that it is harmful.

Among 141 respondents, almost two third of the respondents (65.9%) replied that they had received breastfeeding counselling during pregnancy whereas remaining (34.1%) replied that they had not received any counselling during pregnancy.

Table-V

Distribution of respondents according to breastfeeding counselling received during pregnancy (n = 141)

Breastfeeding counselling received	Frequency (n)	Percentage (%)
No	48	34.1
Yes	93	65.9

Among 141 respondents, most of the respondents (93) received counselling regarding breastfeeding. More than half of those respondents (61.3%) received counselling from health care providers during their antenatal checkup. Other sources were family members (10.8%), trained birth attendants (9.7%) and elder persons from same village (6.4%). About 11.8% received counselling from various other sources like from friends, teachers etc.

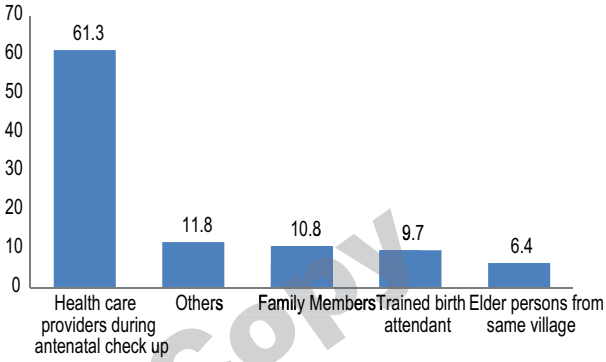

Figure 4: *Distribution of respondents according to source of receiving breastfeeding counselling (n = 93)*

Discussion:

The study aimed to find out the practice of prelacteal feed to newborn at or below 6 months in rural area of Dhamrai Upazilla. After preliminary data analysis, it was found that about 48.9% respondents practiced prelacteal feeding. Several studies conducted in various countries found widely varying proportions of respondents who practiced prelacteal feeding, such as 57.8% in Mansoura, Egypt, 31.8% in Central India, 20.6% in South Ethiopia, 73.3% in Vietnam, and 17% in Nepal.[10-14] A study conducted in Dhamrai Upazilla in 2015 showed that 69.3% practiced prelacteal feeding.[8] Hence there has been a decrease in the prevalence of prelacteal feeding in this area over the last few years.

In our study, the two most popular items used for prelacteal feeding were honey (31.5%) and infant formula (30.2%). A considerable number fed their newborns sugar dissolved in water (26.0%) and the least popular items were cow's milk (2.7%) and plain water (1.4%). No respondent fed glucose dissolved in water to their newborn. In similar studies, it was found that in Mansoura, Egypt the popular prelacteal foods were sugar water (22.9%), infant formula (16.5%), herbs or decoction (12.5%), gripe water (0.8%) and animal milk (2.9%)[10]. whereas in South Ethiopia, plain

water (7.7%), cow's milk (3.6%) and butter (4.6%) were most common.[12]

In this study, among 141 respondents, 34.8% had no knowledge about the outcome of prelacteal feeding. About 19.1% believed the newborn might face health problems in the future. Approximately 17.7% believed that newborn would receive better nutrition if prelacteal feeding was done and 13.5% believed prelacteal feeding would not give adequate nutrition to the newborn. About 7.8% believed newborn would not receive immunity if prelacteal feeding was done, and 6.4% believed newborn would show better development in the future.

In this study, the majority of respondents (91.5%) fed the colostrum to the newborn, and only the remaining minority (8.5%) threw it away. Out of the twelve respondents who threw away the colostrum, more than half (58.3%) of the respondents threw away the colostrum due to lack of knowledge of its usefulness, 16.7% of the mothers thought that the quantity was insufficient and again another 16.7% had physical difficulty. For the rest, 8.3% the newborn did not accept it. In another study in Central India, 62% threw away colostrum because they believed it leads to adverse effects for child's health, 33.8% due to elders' advice and 4.2% because the baby could not suck.[11]

Nearly two-third (63.8%) of the respondents think that colostrum will give neonate appropriate nutrition and 22.0% have no knowledge regarding the topic. Only 13.5% know about the immunity it grants. Less than 1 percent stated that it is important because it will be easily digested by the neonate.

In this study, majority of the respondents (65.9%) replied that they received breastfeeding counselling during pregnancy whereas remaining (34.1%) replied that they did not receive any counselling during pregnancy. Among the 93 respondents who received counselling, more than half of the respondents (61.3%) received counselling from doctors/ health care providers during antenatal checkup. Other source of counselling were family members (10.8%), elder persons from same village (6.4%), trained birth attendants (9.7%) and (11.8%) from various other sources. In a similar study in South Ethiopia, 84.9% of the respondents received breastfeeding counselling and the remaining 9.4% didn't.[12] In Maharashtra, India, 76.4% of the respondents received breastfeeding counselling and 23.6% of them did not.[16] This is consistent with the lower percentage of prelacteal feeding in their findings compared with this study findings.

Conclusion:

This study reveals that more than half of the respondents did not know about the harmful effects of prelacteal feeding, which is consistent with the data that about half of the respondents practiced prelacteal feeding. Honey and infant formula were the most widely used food items for prelacteal feeding. The majority of the respondents knew about the importance of colostrum and almost all of the respondents fed the colostrum to the newborn. Hence, the data reflects that lack of knowledge of the respondents regarding prelacteal feeding and its effects is a major cause of the practice of prelacteal feeding.

Majority of the respondents are housewives so provision of health education about prelacteal feeding can be done through focus group discussion. A nationwide mass media campaign through TV, radio, billboard, and folk song can be implemented to create public awareness, correct misconception and build social endorsement for breastfeeding practices. Strengthening of counselling about breastfeeding in antenatal and postnatal care should be done. Finally, these findings can be given to policy makers so that they can take the necessary steps which have been mentioned. These steps will reduce infant mortality and morbidity caused by prelacteal feeding by decreasing the prevalence of this practice.

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ORIGINAL ARTICLE

Observational Study on the Socio-demography of Diabetic Depressive Patients in Tertiary Level Hospitals

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Abstract

Introduction: Diabetes Mellitus is one of the most common disease. Associated depression is more common among Diabetic patients. This study was done aimed to assess the sociodemographic condition of the diabetic depressive patient and bring of social awareness.

Methods: This observational prospective study was conducted among patients of diabetic depressive patient consulting at the Department of Psychiatry and Endocrinology Department of Sir Salimullah Medical College & Hospital & BIRDEM during the period of January 2018- December 2018.

Results: According to the study, people who were commonly effected by diabetes and depression were selected. The 'patient's age range were between 40 to 68 years. Among the patients 5 (14.3%) were males and 30 (85.7%) were females. Here, most of the patient"s monthly income ranges between-20000-30000 taka and it was 42.86%. Among the 35 patients, 9 (25.7%) had minor depression and 26 (74.3%) are moderate to severe depression.

Conclusion: A significant proportion of females were suffering from type-2 diabetes with depression.For our better social and family life,we should take care of our women.

Keywords: *Diabetic depressive patient, Diabetes mellitus, Socio-demography of diabetic patient.*

Journal of Green Life Med. Col. 2026; 11(1): 19- 22

Introduction:

The prevalence of Diabetes is increasing worldwide. According to recent global estimates by the World Health Organization (WHO) there will be 300 million people with diabetes by the year of 2025.[1] Major depression is a common medical problem which frequently co exists with diabetes Mellitus.[2] The association between depression and diabetes was first described in the seventeenth century by Thomas Willis, an English Physician and Anatomist, who stated, 'Diabetes is caused by sadness or long sorrow'.[3] Depression has been associated with hyperglycemia and diabetes related complications. Depression is commoner in females and those with a duration of diabetes >3 years had a three fold higher risk of depression.[1]

Depression has negative effects on motivation, concentration, energy, self-efficacy and hope for the future. Depression in people with Diabetes is associated with less adherence to diet, exercise and medication recommendation. Consistent with its association with diabetes selfcare depression is also associated with glycemic control. Depression in people is also associated with increased complication rate. A meta-analysis has confirmed that there is an association of moderate effect size between Depression and the presence of Diabetes Mellitus both macrovascular and microvascular complications.[4]

However in Bangladesh, usually there is less strategy about the epidemiology of these patients. The purpose of this

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study is to highlight the sociodemographic feature of the people of diabetic depressive patients and achieve the social awareness.

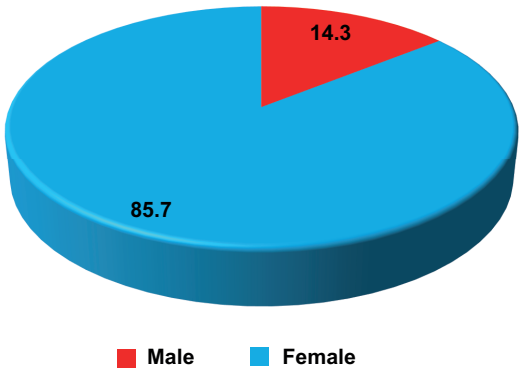
Methods:

We conducted a 1 year (January 2018- December 2018) observational prospective study of diabetic depressive patient consulting at the Department of Psychiatry and Endocrinology Department of Sir Salimullah Medical College & Hospital & BIRDEM. Sample size was 35 & purposive convenient sampling technique applied. The clinical records of these patients, we identify the demographic data, psychological data. Demographic data was collected including age, gender, marital status, monthly income. Severity of depression was diagnosed by DSM-V & Hamilton Depression scale. After proper counseling the aim, objectives of the study was explained in details to the subjects. Only positive responder was recruited as research participants and was allowed to withdraw themselves from the study even after participants whenever they like. Ethical permission has been taken from the institute. Persons who were given informed written consent to participate volantarily in the study were included as study sample. The SPSS version 22 was used for data analysis.

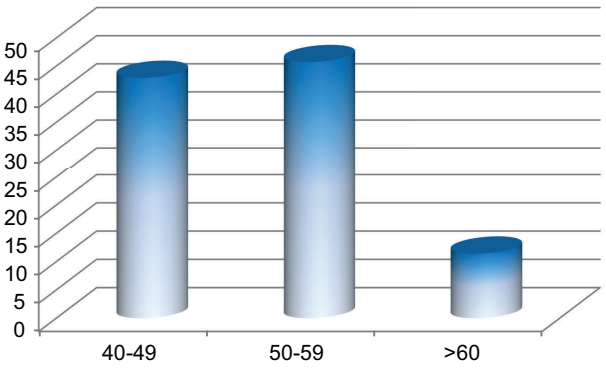
Results:

The presented study was intended to estimate the people who are commonly effected diabetes and depression.

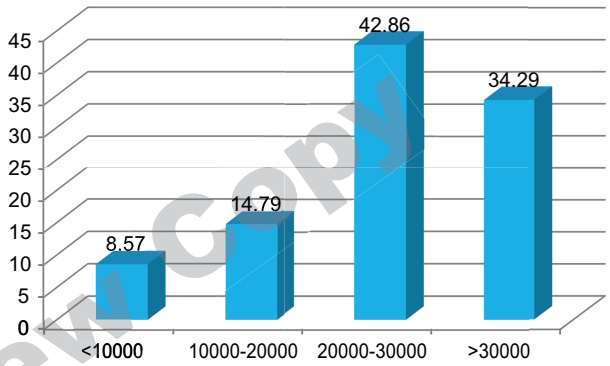
Among the patients, 5(14.3%) were males and 30(85.7%) were females.



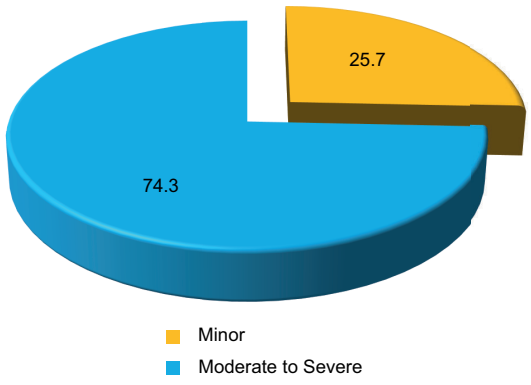
Figurer 1: *Pie chart of study subjects according to gender Patient's age range was between 40 to 68 years. Mean age was being 51.2±6.3 years.*



Figurer 2: *Age distribution of study subjects Here, monthly income of the patient's (42.86%) commonly was 20000-30000 taka.*



Figurer 3: *Bar diagram showing socio-economic condition of study subjects. Among the 35 patients, 9 (25.7%) are minor Depression and 26 (74.3%) are moderate to severe Depression.*



Figurer 4: *Study subjects according to Severity of Depression*

Discussion:

In recent years there has been a heightened interest in the psychological well being of people with diabetes. Current epidemiological evidence suggests that at least one third

of them suffer from clinically relevant depressive disorders.[3] Furthermore, people with depression have an increased risk of developing diabetes.[3] It is suggested that each disease is a mutual risk factor for developing each other, and the two disorders may share similar pathophysiological mechanisms . For depression, patients are in poor glycemic control, less self care and day by day increase complications and treatment burden.[5] However, in spite of the huge impact of comorbid depression and diabetes on the individual and its importance as a public health problem, questions still remain as to the nature of the relationship, it causes and consequences, as well as potential ways of preventing and treating these two conditions.[6]

In this study, fifty-five patients were enrolled study population. Sample size was thirty five. This research work was conducted in Department of Pharmacology, Sir Salimullah Medical College, Dhaka.

In term of distribution of the patients according to age ranged between 40 to 68 years, with the mean age being 51.2 ± 6.3 years which is similar to other study.

Moreover, in age group distribution, maximum 45.7% patients were in the age group of 50-59 years. The tendency of diabetes is more in this age group of the patients and this people are very much prone to developed depression. Similar another study found mean age of patients with comorbid diabetes and depression was 50.8 years of which 60.1% are females.[7]

In this study, females were 85.7% which was more than males. On the other hand, male patients were 14.3%.

Depression is more in females because-compared to men, women may have a stronger genetic predisposition to developing depression. They are much more subjected to fluctuating hormone levels. This specially occurs at the time of puberty, pregnancy, child birth and at menopause, which are associated with increased risk of developing depression.

Hormone changes during puberty with other social experiences can play a role in depression.

After puberty, depression rates are higher in females than in males. Because girls typically

reach puberty before boys.[8] In pregnancy, drastical changes in body and mind due to hormonal changes, social and familial factors depression is commonly occur on that time and some in postpartumly. Associated diabetes is more common in this situation.[5]

Another factor is, women faces more stress than men. They have to go work and also to be expected to bear the burden of maintaining home, care of children and family members.[5]

Here, age of the most female patients were 50-59 years, which was postmenopausal age and above with all factors females were developed more depression with all these conditions associated diabetes is also more common in female.

Among the selected patients, 25.7% are minor depressive and 74.3% are moderate to severe depressive. Here, 42.86% of the patient's monthly income was taka 20000-30000. This type of socioeconomic status is a common risk factor for depression and type 2 diabetes. The relationship between socioeconomic status, psychosocial factors and diabetes is complex. It is likely that socioeconomic status contributes to the development of diabetes through areas unrelated or indirectly related to psychosocial pathways, such as unhealthy lifestyles.[9-11] Similar study was conducted in India that showed similar type of socio demographic profile.

Conclusion:

This study shows a significant incidence in symptoms of depression more in female diabetic patients. Women play an important role not only in their family but also in society even nationally. Individual family depends on their female members. It is our great responsibility to take care of their physical & mental health.

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REVIEW ARTICLE

NS1 Antigen and Laboratory Diagnosis of Dengue: A Narrative Review

HAQUE N,[1] JALIL RA,[2] HOSSAIN T [3]

Abstracts

Dengue non-structural protein 1 (NS1) is a multifunctional viral antigen that acts as a potent immunomodulator of vascular and immune pathology in dengue. It circulates at high concentrations during acute infection. NS1 promotes endothelial dysfunction through multiple complementary mechanisms, including the engagement of pattern-recognition receptors (notably TLR4), which triggers the release of proinflammatory cytokines and leads to prolonged vascular leakage. Additionally, impaired coagulation contributes to hemorrhagic manifestations. On the diagnostic front, secreted NS1 is detectable during the early stages of infection, often concurrently with viremia and before antibody seroconversion, and has been successfully utilized in capture ELISA and rapid antigen tests. This narrative review focuses on the current role of NS1 in dengue pathogenesis, as well as on accurate and timely diagnosis of dengue, which is essential for early clinical management and preventing severe disease outcomes.

Keywords: Dengue, NS1 antigen, endothelial glycocalyx, ELISA, rapid test.

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Introduction:

Dengue virus (DENV), a mosquito-transmitted pathogen that affects humans and ultimately leads to dengue fever. It is one of the predominant causes of insect-borne viral illness and poses a major public health threat. The World Health Organization (WHO) estimates that approximately 390 million dengue infections occur annually (with a 95% confidence range of 284–528 million), of which roughly 96 million (ranging from 67–136 million) manifest clinically with varying degrees of severity.[1] In the year 2024, a staggering 14,127,435 dengue cases were recorded worldwide, which was the highest-ever total since the global dengue recording system was introduced in 2010. Historical records suggest dengue-like illnesses emerged as early as 1635 in Martinique and Guadeloupe, and in 1699 in Panama, though potentially even earlier accounts exist.[2–5] Bangladesh first documented dengue in the 1960s (during its period as East Pakistan), where it was termed "Dacca fever." The country witnessed the first major outbreak in 2000, with a higher case fatality rate (1.67%).[6] Dengue virus is transmitted by Aedes aegypti and Aedes albopictus, the same vectors that also transmit Chikungunya and Zika.[7] In the year 2023, Bangladesh experienced the highest cases of dengue fever (n = 321,179), and many cases remain undiagnosed.[8] The sudden onset of high fever, severe headache, joint and muscle pain, rash, and retro-orbital pain are the characteristic features of the disease.

Genomic structure of Dengue virus and its genotypes

The virus belongs to the Flavivirus family and comprises five genetically related yet different serotypes: DENV 1, 2, 3, 4, and 5.[9,10] DENV has an approximately 11-kb, single-stranded, positive-sense RNA genome that contains one open reading frame (Fig.-1).[11] This genetic material is translated into one large polyprotein and is subsequently cleaved into three structural proteins (capsid protein – CP, envelope protein – EP, and membrane protein – MP) and seven non-structural proteins (NS1, NS2A, NS2B, NS3, NS4A, NS4B, and NS5).[12] While structural proteins form the viral particle, non-structural proteins facilitate viral entry, genome replication, particle assembly, and

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disease development.[13–16] Both viral architecture and genetic variation influence dengue laboratory testing methods.

The NS1 protein is a glycosylated molecule weighing 46–55 kDa that forms dimers within cells and on cell surfaces.[17] NS1 is also released extracellularly, mainly as a hexamer, although recent work using recombinant NS1 produced in human embryonic kidney cells shows that secreted tetramers can also form.[18] In infected patients, NS1 levels in the bloodstream peak around days 3–5 after fever begins and can reach concentrations up to 50 µg/mL, which establishes NS1 as a valuable diagnostic indicator.[19] Soluble NS1 has been implicated in dengue pathogenesis through several mechanisms, which include complement activation, disruption of tight junctions and the endothelial glycocalyx in cell models, and activation of innate immune responses via TLR4 signaling.[20–22] These functions indicate a direct role for NS1 in the coagulation abnormalities, vascular leakage, and cytokine storm seen in severe dengue. Furthermore, pre-exposure of vertebrate or mosquito cells to NS1 enhances DENV replication,[23–25] because internalized NS1 can influence innate immune pathways.[26] Continuous elevation of NS1 levels in the blood has been linked to more severe disease.[27]

For the improvement of diagnostic assays and interpreting molecular epidemiology, it is important to understand the genomic organization of DENV and its diversity. With advancing sequencing capabilities, genotype identification is becoming more integrated into monitoring programs, providing critical information about viral spread, outbreak sources, and potential effects of viral evolution on diagnostic reliability.

Dengue virus (DENV) infection occurs when infectious mosquito saliva deposits virions into the skin, where the virus infects permissive cells such as dendritic cells, tissue macrophages, and keratinocytes. Following local multiplication in these cell types, the virus spreads to nearby lymphoid tissues and enters systemic circulation; maximum viremia generally occurs before the critical phase when severe complications emerge. These initial virological processes establish conditions for both protective and harmful host responses.

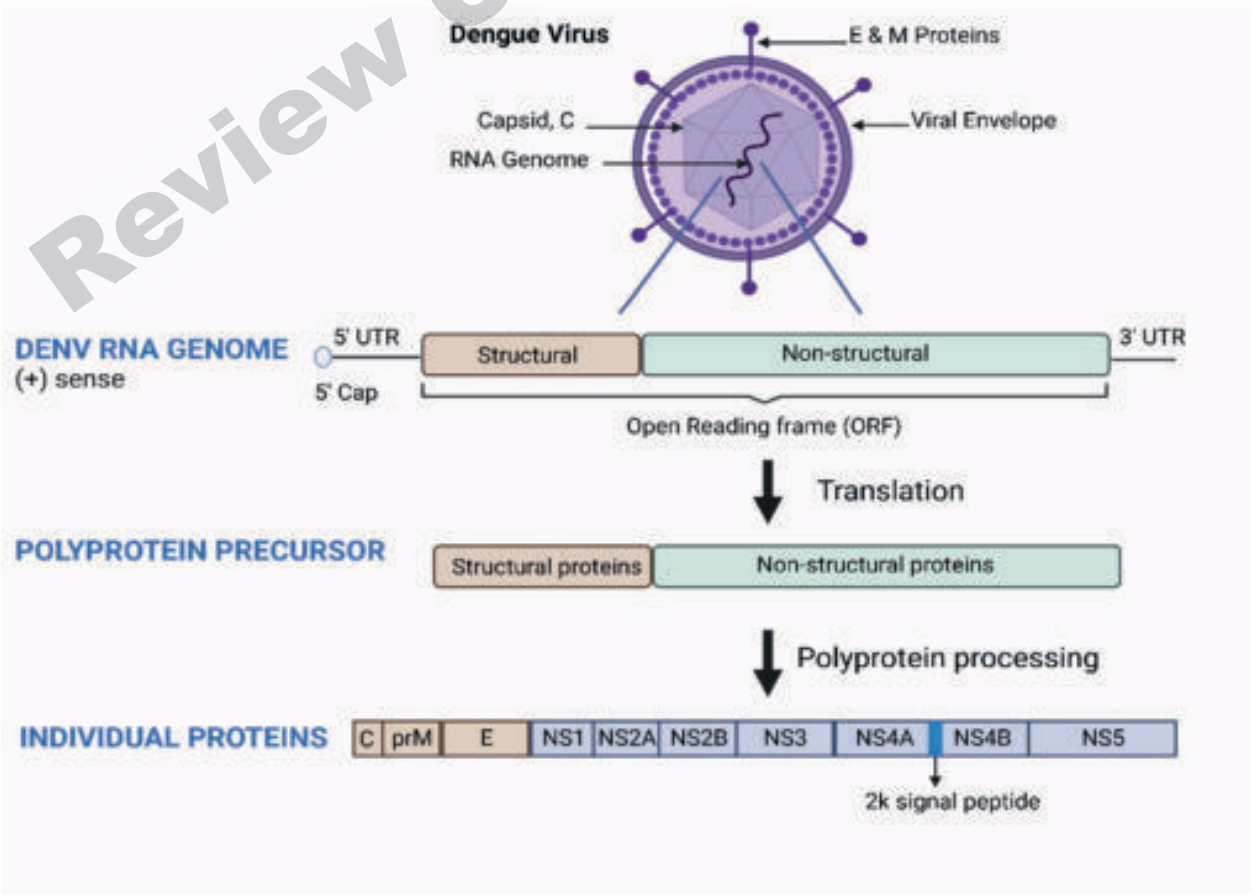


Figure 1. *An illustration of Dengue Virus (DENV) structure and genomic processing*

Role of NS1 in Dengue Pathogenesis

NS1 uses multiple ways in dengue pathogenesis by engaging several host pathways that culminate in vascular dysfunction. Interaction of NS1 with Toll-like receptor 4 (TLR4) stimulates innate immune cells to release pro-inflammatory cytokines and contributes to endothelial injury by disrupting the glycocalyx and promoting apoptosis. Simultaneously, NS1 stimulates mast cells and platelets, triggering the release of vasoactive substances including histamine, leukotrienes, and platelet-activating factor, which leads to inflammation and plasma leakage. This protein also activates complement activation by increasing C5a production, which worsens endothelial permeability. Due to these pathogenic effects, NS1 is an important immunological target. Neutralizing monoclonal antibodies like 2B7 and 1G5.3 have shown the capacity to prevent NS1-induced endothelial injury, which restricts vascular leakage, decreases viremia, and enhances survival in experimental systems, emphasizing the therapeutic promise of targeting NS1-mediated pathways.

Role of NS1 antigen in vascular leakage

NS1 plays a key immunomodulatory role in dengue by influencing both innate and adaptive immune pathways. As a part of the innate immune system, soluble NS1 engages pattern recognition receptors, such as TLR4, which drives the release of pro-inflammatory cytokines and chemokines from monocytes, macrophages, and dendritic cells.[28] NS1 also compromises the endothelial barrier by disrupting the glycocalyx,[29] activating complement (particularly via enhanced C5a generation), and stimulating mast cells and platelets to release vasoactive mediators.[30] These combined effects enhance inflammation and contribute directly to the vascular leakage that leads to severe dengue. NS1 has been proven to stimulate the release of macrophage migration inhibitory factor (MIF), which participates in NS1-driven autophagy in endothelial cells.[31] Experimental models showed that DENV-infected cells also produce MIF, which leads to increased endothelial permeability.[32] Supporting these findings, Mif-/- mice develop markedly less severe disease in a model of dengue, underscoring MIF's role in driving pathology.[33] Clinical trials further observe this association as circulating MIF levels are elevated in dengue patients and are significantly higher in individuals with fatal DHF compared with survivors or patients with uncomplicated dengue fever.[34]

Role of NS1 antigen in coagulopathy and thrombocytopenia

Apart from vascular leakage, NS1 can also exacerbate severe dengue by interfering with coagulation pathways. Complexes of NS1 with thrombin have been detected in patient serum, and NS1 binding to prothrombin has been shown to impair its activation, resulting in prolonged aPTT.[35] Although the contribution of the NS1 antigen to thrombocytopenia remains unclear, evidence from TLR4-mediated platelet activation suggests a potential mechanism. Lipopolysaccharide (LPS) activates and aggregates platelets through TLR4/MyD88 signaling, and because NS1 can similarly engage TLR4, it may drive platelet activation and aggregation, which can accelerate platelet destruction during infection.[36] Collectively, emerging evidence indicates that NS1 acts as a central mediator of dengue pathology, contributing not only to plasma leakage but also to coagulopathy and hemorrhagic manifestations.

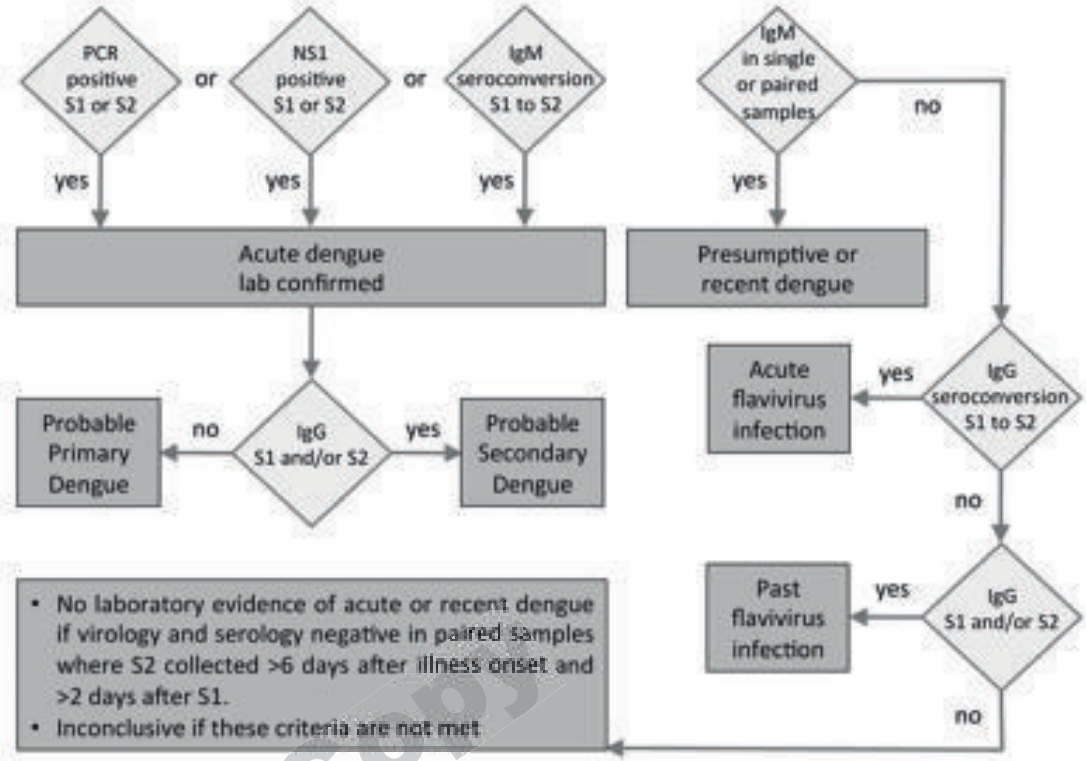
Laboratory Diagnosis

Diagnostic biomarkers for dengue target either the virus itself through viral culture, detection of viral RNA, or other direct methods, such as the secreted NS1 antigen, or the host's immune response, measured by dengue-specific IgM and IgG antibodies. The temporal appearance and persistence of these markers in primary and secondary infections are illustrated in Figure 2. In the following, we briefly review both established and emerging methods used to detect these diagnostic indicators.

Figure 2. Diagnostic algorithm for laboratory diagnosis of dengue virus infection. PCR or NS1 positivity in either acute (S1) or convalescent (S2) clinical samples confirms current dengue infection. Seroconversion of S1 to S2, as measured by immunoglobulin M (IgM) ELISA, confirms acute dengue infection. The presence of immunoglobulin G (IgG) in acute laboratory-confirmed dengue indicates a probable secondary dengue infection. The presence of IgM in a single sample indicates a presumptive or recent dengue infection. While negative IgM with IgG seroconversion between S1 and S2 indicates an acute flavivirus infection, the presence of IgG in S1 and S2 indicates a past flavivirus infection.

Virus Isolation

Historically, virus isolation has served as the standard method for confirming dengue virus (DENV) infection. Over time, however, it has been largely superseded by reverse-transcription polymerase chain reaction (RT-PCR) and, more recently, by NS1 antigen capture ELISAs, which offer faster diagnostic turnaround.[37] In this approach, patient samples are inoculated into various mosquito-derived cell lines (such as AP61, Tra-284, AP64, C6/36, and CLA-1) or mammalian cell lines (including LLCMK2, Vero, and BHK-21), and in some protocols, into live



Figurer 2: Age distribution of study subjects Here, monthly income of the patient's (42.86%) commonly was 20000-30000 taka.

mosquitoes.[38] The highest isolation success rates are obtained from blood collected during the febrile phase, particularly within the first 5 days after symptom onset. Isolation becomes more challenging in secondary infections because early, robust anamnestic antibody responses generate cross-reactive immune complexes that bind circulating virus and reduce recoverable viral titers.[39] Although virus isolation provides definitive confirmation of DENV, it is labor-intensive and slow, often requiring several days to weeks to complete.[40]

RT-PCR

For the successful diagnosing of DENV infection RT-PCR Molecular methods such as RT-PCR and nucleic acid hybridization have been used. During the acute phase of disease, PCR-based methods are helpful for early diagnosis of DENV. The viral RNA can be detected from the onset of illness and is sensitive, specific, fast, less complicated, and cheaper than virus isolation methods, which is a major advantage of the PCR-based technique.[41] But this technique requires a laboratory with specialized equipment and trained staff to perform the analysis. These are not always an option in resource-poor remote settings where dengue is endemic. Furthermore, despite the availability of commercial kits, the bulk of reported RT-PCR methods are developed in-house and also lack center-to-center standardization.[42] Non-PCR-based methods that mimic in vitro nucleic acid amplification, such as isothermal amplification (eg, single-tube reverse transcription–loop-mediated isothermal amplification), have shown high levels of sensitivity and specificity when used alongside other diagnostic methods.[43]

NS1 antigen capture-based method

Non-structural protein 1 (NS1) serves as an excellent diagnostic target because it is actively secreted by DENV-infected cells, which leads to substantial circulating levels in the blood. NS1 can be detected as early as the clinical symptoms appear and may remain measurable for nine days or longer, allowing its identification during the early febrile phase alongside viral RNA and before the development of detectable antibodies. A widely adopted diagnostic approach is to detect NS1 antigen in serum using ELISA.[44] For commercial purposes, rapid test strips and NS1 capture ELISAs have been developed as a result of the demonstration of high amounts of NS1 secretion by quantitative-capture ELISA. These commercial NS1-based assays are simple to perform and demonstrate strong sensitivity and specificity, and can aid in early dengue diagnosis with an excellent diagnostic performance.[45]

Serology

There are multiple approaches to serological diagnosis available, including hemagglutination inhibition (HI) assays, complement fixation tests, dot-blot assays, Western blotting, indirect immunofluorescent antibody tests, and plaque reduction neutralization tests, as well as IgM and IgG antibody-capture ELISAs. The most useful serological diagnostic methods for routine DENV detection are HI assays along with IgM and IgG antibody-capture ELISAs. The HI test has been implemented for dengue diagnosis for many years, with most laboratories developing in-house methodologies, although commercial kits are also available. The early acute disease period usually presents a negative window of detection because all assays based on antibody detection require the need for the relevant antibody response to be elicited. For this purpose, IgM and IgG antibody-capture ELISAs have become relatively routine, particularly following assay automation. IgM can be detected as early as day 3–5 in primary infection, peaking several weeks after recovery and remaining at detectable levels for several months.[46] IgG does not usually appear during the acute phase of primary disease. However, during secondary infection, the IgG response is rapid and anamnestic to shared epitopes on multiple viral proteins between the first and second infecting serotypes, with IgG appearing as early as 3 days after the onset of illness [S66]. Consequently, when performed in parallel, IgM and IgG detection can provide a diagnostic indication of primary or secondary infection, which is based on the ratio of IgM and IgG during the acute phase of disease.

Future approaches

Many new tests for the rapid diagnosis of dengue are currently under development. These include micro/paper fluidics, in vivo micropatches, isothermal PCR[47], and electrochemical and piezoelectric detection. All of these technologies are in the early stages of development, requiring continued refinement to make them practical solutions in real-world settings. In our view, the ideal goal for dengue diagnosis would be a test that differentiates primary from secondary dengue infection with IgM and IgG capture, along with quantitative serotype-specific NS1 detection.

Conclusion:

NS1 is a pathogenically important molecule as well as a valuable diagnostic biomarker in dengue. Targeting NS1 offers the development of therapeutics or immunotherapies that mitigate vascular pathology. Advances in laboratory tools, ranging from viral RNA detection to NS1 antigen assays and serology, have significantly improved diagnostic precision across different illness phases. Strengthening these diagnostic capabilities is critical for effective surveillance, outbreak control, and the reduction of dengue-related morbidity and mortality.

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Persistent Nasal Obstruction in a 21-year-old Female: An Unusual Case of Unilateral Choanal Atresia

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Abstract

Choanal atresia is a rare congenital obstruction of the posterior nasal aperture. Unilateral choanal atresia may remain undiagnosed until adulthood and typically presents as chronic unilateral nasal obstruction. A 21-year-old female presented with right-sided nasal obstruction and intermittent snoring since childhood. She had undergone adenotonsillectomy at 11 years of age without improvement. Examination revealed septal deviation to the left, right inferior turbinate hypertrophy, and absent right nasal airway patency. Nasal endoscopy identified a right posterior choanal atretic plate, and computed tomography of the paranasal sinuses confirmed complete right-sided mixed choanal atresia. The patient was treated with endoscopic transnasal posterior septectomy and removal of the atretic plate. Recovery was uneventful. Follow-up endoscopy at 1 and 4 months demonstrated a widely patent neochoana with complete symptom resolution. Adult unilateral choanal atresia is uncommon and often misdiagnosed. Clinicians should consider this diagnosis in patients with lifelong unilateral nasal obstruction, and endoscopic transnasal posterior septectomy offers a safe and effective treatment option.

Keywords: Unilateral choanal atresia; Adult presentation; Endoscopic posterior septectomy.

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Introduction:

Choanal atresia is a congenital anomaly in which the normal opening between the nasal cavity and nasopharynx fails to form, usually due to persistence of bucconasal membrane. The condition occurs in roughly 1 in 5000–8000 live births and tends to be unilateral, right-sided, and more frequent among females.[1]

Newborns with bilateral atresia usually present early with respiratory distress, whereas those with unilateral disease may not be recognized until adolescence or adulthood. Many such cases as initially treated as allergic rhinitis or chronic sinusitis before the correct diagnosis is made.[2,3]

Case Presentation:

A 21-year-old female presented with right-sided nasal obstruction and occasional snoring since childhood. She had undergone adenotonsillectomy at age 11, but her symptoms still persisted. She underwent multiple medical therapies including intranasal steroids, antihistamines, and leukotriene antagonists but they provided minimal benefit. She had no history of trauma, nasal surgery, or allergic disease.

On general examination, she appeared healthy and stable. Anterior rhinoscopy revealed a deviated septum to the left with compensatory hypertrophy of the right inferior turbinate. Nasal airway was not patent on the right and partially preserved on the left. Diagnostic nasal endoscopy demonstrated complete obstruction of the right posterior choana with an atretic plate, while the left choana was patent.

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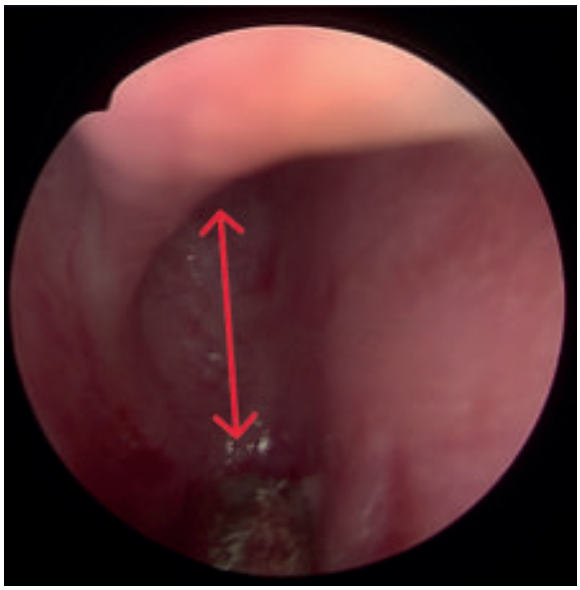

Figure 1: *Preoperative naso endoscopic view of the right choana showing atretic plate*

Computed tomography (CT) of the paranasal sinuses confirmed right-sided mixed (bony and membranous) choanal atresia with septal deviation to left.

Management:

The patient underwent endoscopic trans nasal posterior septectomy under general anesthesia. A powered drill and cold instruments were used to excise the bony atretic plate, creating a wide neo choana with posterior septectomy. Mucosal flaps were preserved, and no stent was placed. Postoperatively, she received saline nasal irrigation and topical steroid spray.

Outcome and Follow-Up:

Her recovery was uneventful. At 1- and 4-month follow-up, nasal endoscopy was done which confirmed a widely patent and well-epithelialized neo choana. She had complete relief of nasal obstruction and her snoring problems were resolved. There was no evidence of restenosis.

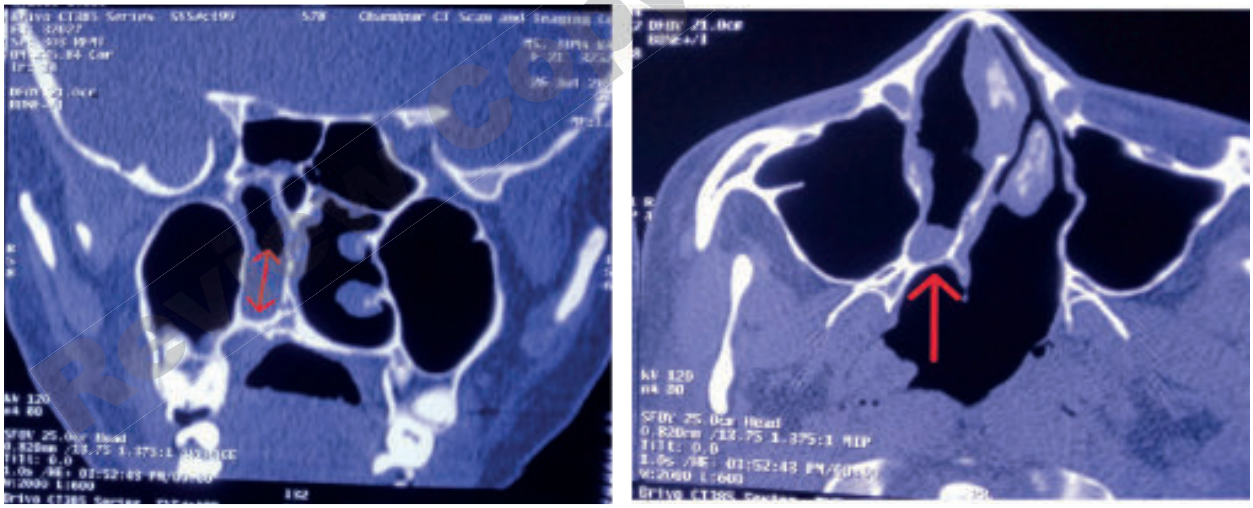

Figure 2: *CT PNS showing right-sided choanal atresia (red arrow)*

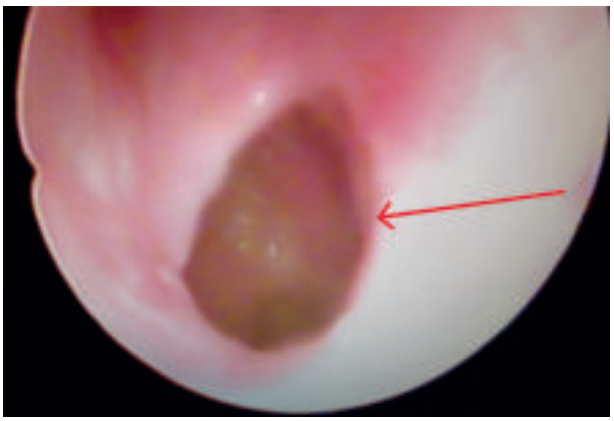

Figure 3: *Postoperative nasoendoscopic view of the right choana showing a widely patent neo choana*

Discussion:

Unilateral choanal atresia in adults is rare and can easily be missed, since the symptoms mimic more common problems like a deviated nasal septum, enlarged turbinate's, or chronic sinus infection.[1,2] The most reliable method of confirming a diagnosis is still paranasal sinus CT scan, which helps with surgical planning and gives precise information about the type and degree of obstruction.[3]

For both adults and children, endoscopic transnasal choanoplasty is now the recommended surgical procedure. It often has few postoperative problems and enables direct visibility and accurate excision of the atretic plate.[3] During surgery, a posterior septectomy lowers the risk of restenosis

and helps to generate a broader common aperture. The use of stents is still up for debate; some research supports stent-free repair, stating comparable results and fewer problems like granulation or infection.[4,6]

In order to maintain the neochoana patent, recent research highlights the significance of creating a large incision, protecting the mucosa, and conducting meticulous postoperative monitoring.[5,6] This instance demonstrates that individuals with persistent nasal obstruction should be suspected of having choanal atresia, even in adulthood. Significant symptom reduction and improved quality of life can result from early diagnosis and surgical treatment.

Conclusion:

Unilateral choanal atresia is a rare malformation in adult. It can be undiagnosed due to the non-specific nature of the symptoms. Diagnostic Naso endoscopy (DNE) and Computed Tomography (CT) SCAN are the Gold Standard for the diagnosis of that. Endoscopic assisted posterior septectomy is the successful treatment option to provide enduring patency and patient satisfaction.

Informed Consent:

Written informed consent for anonymized case presentation and publication was obtained from the patient.

Conflicts of interest:

All the authors declare that there is no conflicts of interest related to this publication.

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