Communication Skill in Medical Practice

"The bigger communication problem is we do not listen to understand. We listen to reply."

-Stephen R. Covey

Communication is a process by which we relate and interact with people. It's a mutual process between two sides and includes listening and understanding with passion and respect. Communication is an art and like other arts it is a learned skill.

Effective communication is the basis of mutual understanding and trust, which is very important in Medicine. Traditionally, in Medical Training, emphasis was given to the knowledge and Medical proficiency than to the communication skill. Today patient's perception of a good doctor is based on good verbal and non-verbal skills, approachable personal attributes and finally knowledge of their subjects. So learning communication skill and evidence based practice become the corner stones of modern Medicine.

Doctors need to learn essentials of good communications than other professionals because patients are humans with emotions and sensitive needs. Doctors cannot practice Medicine without effective communication skills and poor communication causes a lot of complaints, dissatisfaction and medico legal problems. Effective communication skill ensures good working relationship, increases patients satisfaction, improves patient compliance with treatment and is a key to success in professional career.

In the recent years we have been observing increasing numbers of litigation against doctors, vandalism in the hospitals. One of the leading factors in happening of such things is a poor communication with the patient and his relatives. The reason behind this lacking of communication skill in doctors is we have never been taught this subject during our training. Soft skill courses such as Health Care Management, Medical Ethics and Pofessionalism, communication skills are not included neither in the MBBS nor in Master Level Curriculum so far. Hence it is a strong recommendation to the Medical Education Regulatory bodies of our country to incorporate such soft skills in the MBBS Curriculum as a compulsory subjects and also to have some sort of assessments of these skills during the course.

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Editor- In-Chief

ORIGINAL ARTICLE

Ultrasonographic Measurement of Optic Nerve Sheath Diameter in Patients with Traumatic Head Injury: A Prospective Observational Study

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ABSTRACT

Introduction: The early detection of elevated intracranial pressure is crucial for guiding interventions and improving patient outcomes in head injury patients. The intracranial pressure assessment with invasive intracranial devices is the gold standard. These devices however has a risk of infection, bleeding and dislodgement. Optic nerve sheath diameter measurement using ultrasonography has emerged as a promising method for indirect intracranial pressure estimation. **Aims:** To observe the changes in optic nerve sheath diameter over period of time, and to correlate the optic nerve sheath diameter with computed tomography findings of raised intracranial pressure in traumatic head injury. **Methods:** A prospective cross-sectional time series study was conducted at Nepalgunj Medical College to assess the utility of ultrasonography measurement of optic nerve sheath diameter in patients with head injuries from August 2023 to January 2024. Forty-nine patients with head injuries were included in the study. The ultrasonographic optic nerve sheath diameter measurements were obtained at admission, 48 hours post-admission, and 1 month post-head injury. The clinical parameters including Glasgow Coma Scale and radiological findings from Computed Tomography head were recorded. **Results:** Forty nine patients were enrolled in the study. Among them, 44.90% (27) were male and 55.10% (22) were female. Age ranged from 5 to 66 years, with a mean of 33.94 ± 15.27 years. The mean optic nerve sheath diameter was 5.24±0.86 mm at admission which decreased to 4.31±0.62 mm at 48 hours and 4.02±0.47 mm at 1 month. Our study showed significant reduction in optic nerve sheath diameter after conservative or surgical treatment in patients with head injury (F = 27.017; P =0.002). **Conclusion:** The ultrasonographic measurement of optic nerve sheath diameter proved to be a valuable tool in monitoring intracranial pressure in patients with head injuries.

***Keywords*:** Head injury, Intracranial pressure, Optic nerve sheath diameter

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INTRODUCTION

Increased intracranial pressure (ICP) is a critical emergency with significant risks for morbidity and mortality.[1-3] Detecting elevated ICP early is crucial for guiding treatment in head injury patients and enhancing their prognosis.[4,5] The ICP assessment with invasive intracranial devices is the gold standard.[6-9] These devices could, however, increase the risk of issues including infection, bleeding, and dislodgement. Furthermore, it cannot be carried out when there are bleeding disorder.[10, 11]

The change in ICP also results in corresponding change in intraorbital subarachnoid space pressure.[7,12] The optic nerve sheath, an extension of the dura, is continuous with the subarachnoid space, and a rise in ICP transmits to the optic nerve sheath, causing swelling of the optic sheath, optic disc, and papilledema.[13, 14] The optic nerve sheath diameter (ONSD) can be assessed using Ultrasonography, Computed Tomography (CT) head and MRI Brain. The repeated CT head is an exposure to ionizing radiation and MRI brain is time consuming. The available evidence underscores the significance of ultrasonic

measurement as a crucial indicator of ICP as ultrasonography is a non-invasive bedside real time assessment of optic nerve sheath diameter which is free of radiation exposure, less expensive and takes less time. ONSD has recently emerged as a new method correlating with changes in ICP.[15] There are few studies in Nepal correlating ONSD with CT head findings. There are only few research done to monitor optic nerve diameter serially. Our study aimed to do serial monitoring of ONSD using ultrasonography in patients with head injury.

METHODS

This was prospective cross-sectional time series study conducted at Nepalgunj Medical College from August 2023 to January 2024 to do serial monitoring of ONSD using ultrasonography in patients with head injury. The study was conducted in conjunction with the radiology department, had 49 participants of varying ages who were either treated conservatively or surgically. Patients without brain stem reflexes and those with a Glasgow Coma Scale (GCS) score of less than four were excluded from the study. Informed and written consent were obtained from eligible patients. The ONSD measurements were taken with a 6-13 MHz linear transducer probe, applying gel over the closed eye while the patient was in a supine position. ONSD was measured 3 mm posterior to the globe {figure (1a, 1b, 1c)}. The ONSD was calculated as the average measurements of ONSD from both the right and left eyes of each patient. ONSD measurements were done at admission, 48 hours post-admission, 1 month post-head injury, and as required. Additionally, CT head was performed at admission and was repeated when required, analyzing the blood volume, midline shift, third ventricle diameter, compression of basal cistern and brain herniation. Data was entered in Excel sheet and was analyzed using SPSS-PC-26.

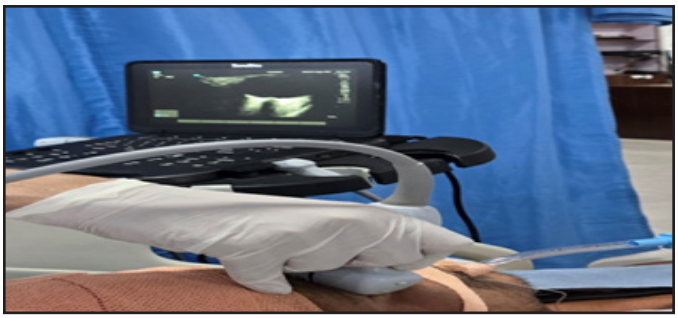

Figure 1(A)

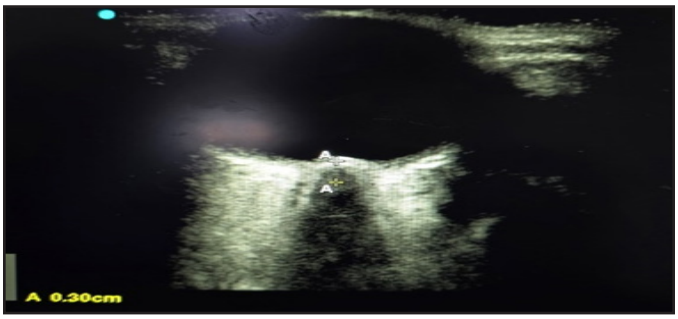

Figure 1(B)

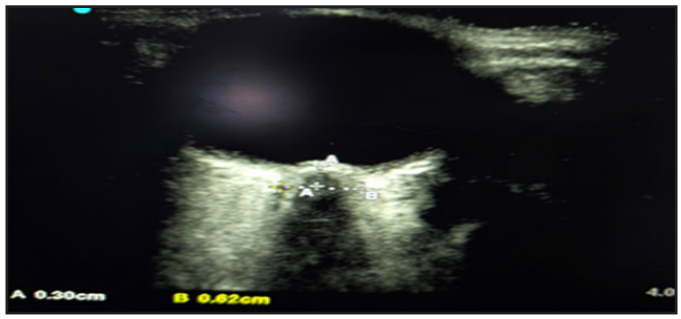

Figure 1(C)

* AA distance is 3mm posterior to the globe. ONSD was measured as B line passing through the point A. ONSD is the transverse distance between two outer hypoechoic zones. The transverse distance of inner hypoechoic region is optic nerve diameter (OND). [Figure 1(a), 1(b), 1(c)]

RESULT

Variable	Mean ± SD
Age	33.94±15.27
Sex	
Male	27 (44.90%)
Female	22 (55.10%)

Table I: General characteristics of patients (N=49)

Among 49 patients, 44.90% (27) were male and 55.10% (22) were female. Age ranged from 5 to 66 years, with a mean of 33.94 ± 15.27 years. [Table I]

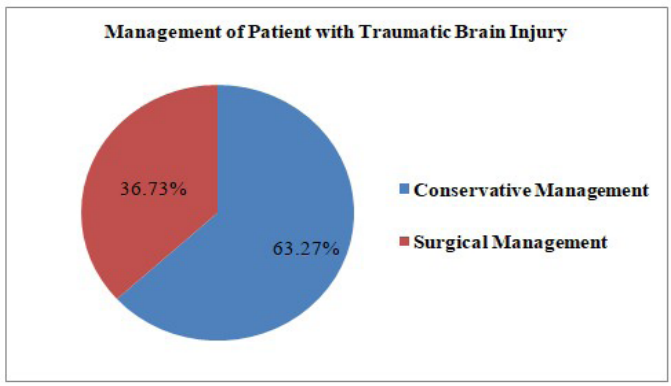

Figure 2: Management of patient with Traumatic Brain Injury (n=49)

Among 49 patients, 36.73% (18) patients with traumatic brain injury underwent surgery, and majority of patients 63.27% (31) were treated conservatively. [Figure 2]

Variables	Frequency (F)	Percentage (%)
Compression of basal cistern		
No	31	63.27
Yes	18	36.73
Herniation		
Absent	31	63.27
Present	18	36.73
Transverse third ventricle diameter		
Not collapsed	26	53.06
Collapsed	23	46.94
	Mean ±SD	
Midline shift in mm (n=49)	5.43 ±3.13	
Blood Volume in ml (n=28)	32.19±11.53	

Table II: Computed Tomography (CT) head findings (n=49)

Among 49 traumatic brain injury patients, 36.73% (18) of patients had compressed basal cistern and brain herniation while 46.94% (23) of patients had collapsed third ventricular diameter. Compressed basal cistern, brain herniation and collapsed third ventricle diameter are the signs of raised intracranial pressure. The mean values of midline shift and blood volume are 5.43 ±3.13 mm and 32.19±11.53 ml respectively. [Table II]

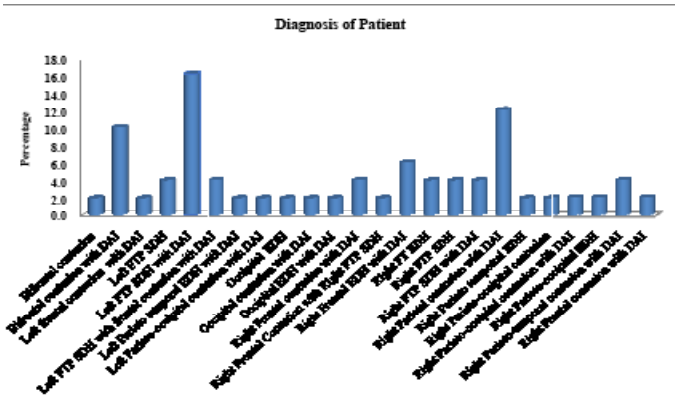

Figure 3: Diagnosis of patient (n=49)

Optical nerve sheath diameter	Mean in mm	F value	p-value
ONSD at admission	5.24±0.86	27.017	P=0.002*
ONSD at 48 hour	4.31±0.62		
ONSD at 1 month	4.02±0.47		

level of significance at 0.05

Table III: Comparison of mean and F value of ultrasonographic measurements of optic nerve sheath diameter (n=44)

The mean ONSD value was 5.24±0.86 mm at admission which decreased to 4.31±0.62 mm at 48 hour and 4.02±0.47 mm at 1 month. There was significant reduction in ONSD (F = 27.017; P =0.002) after conservative or surgical treatment in patients with head injury. The result highlights the clinical significance of monitoring ONSD in head injury patients. The change in ONSD could serve as a non-invasive indicator of change in ICP, aiding in the management and prognosis of head injury patients. Five patients (10.2%) died during the course of study. [Table III]

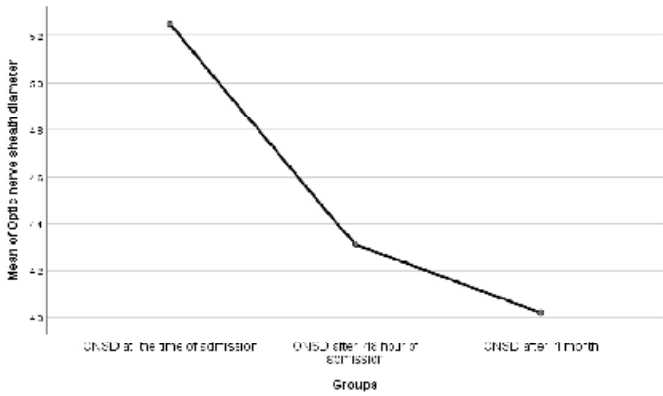

Figure 4: Ultrasonographic measurement of ONSD at differerent time period (n=49) **Bivariate Analysis**

GCS category	Mild (13 to 15)	Moderate (9 to 12)	Severe (3 to 8)	P-Value
	Odds ratio	Odds ratio	Odds ratio	
ONSD	1	4.42 (95%CI, 1.21 to 7.63)	7.96 (95%CI, 3.72 to 12.20)	P=0.001*

level of significance at 0.05

Table IV: Multinomial logistic regression analysis for the association of GCS and ONSD at the time of admission (n=49*Fisher's Exact Test

The multinomial logistic regression analysis revealed a significant association (p=0.001) between GCS and ONSD at the time of admission. Compared to patients with mild head injury (GCS 13 to 15), those with moderate head injury (GCS 9 to 12) have 4.42 times higher odds of having an abnormal ONSD (95% CI: 1.21 to 7.63), while patients with severe head injury (GCS 3 to 8) have even higher odds, with an odds ratio of 7.96 (95% CI: 3.72 to 12.20). The findings concluded that, as the severity of head injury increases, there is increase in the ONSD which is statistically significant (p=0.001). [Table IV]

Computed Tomography findings	ONSD at admission
Blood volume (n=28)	r= 0.901 (p=0.003)
Midline shift	r= 0.888 (p=0.01)
Collapsed third ventricular diameter	r= 0.866 (p=0.018)
Brain herniation	r= 0.765 (p=0.03)
Compression of basal cistern	r= 0.855 (p=0.001)

level of significance at 0.05

Table V: Association of ONSD with CT head findings in patients with traumatic brain injury at the time of admission (n=49)

The findings revealed that ONSD is positively correlated with midline shift (r=0.888, p=0.01), compression of basal cistern (r=0.855, p=0.001), collapsed third ventricular diameter (r=0.866, p=0.018), brain herniation (r=0.765, p=0.03) and blood volume (r=0.901, p=0.003). These correlations revealed the utility of ONSD as a non-invasive surrogate marker for ICP monitoring in head injury patients. These findings emphasize the importance of integrating ONSD measurements into clinical practice for the comprehensive management of head injury patients, allowing for timely intervention to identify and manage the adverse effects of increased ICP. [Table V]

DISCUSSION

The raised intracranial pressure is a dire emergency which need to be dealt either conservatively, and if necessary surgically.[1,4,5] There are few direct and indirect methods in existing literature to assess the raised ICP. The gold standard method of ICP monitoring is invasive which has the risk of complications.[6,7,8,9,10,11] The raised intracranial pressure is reflected in the subarachnoid space of intraorbital cavity which can be measured as optic nerve sheath diameter.[7,12,13,14] The ultrasonography is bedside real time examination of optic nerve sheath diameter, less expensive and less time consuming.[6]

Though few research has been done in the past to assess the optic nerve sheath diameter using ultrasonography, there are only few research done to monitor optic nerve diameter serially. We conducted the research to fill the lacunae on the same.

In the current study, 36.73% (18) of patients had compressed basal cistern and brain herniation while 46.94% (23) of patients had collapsed transverse diameter of third ventricle which are the signs of raised intracranial pressure on the basis of CT head. We did not perform the invasive ICP monitoring to confirm the raised ICP. The study done by sekhon et al showed that when ONSD cutoff is 6mm, it has the sensitivity of 97%, specificity of 42%, positive predictive value of 67% and a negative predictive value of 92 % in predicting ICP to be more than 20 mmHg.[16] Soldatos et al investigated ocular sonography in severe head injury patients with GCS<8.[17] Their findings indicated a 96% probability of elevated ICP when ONSD exceeded 5 mm, contrasting with a 9% probability for diameters below 5 mm. A 5.8 mm ONSD is identified as the threshold for ICP surpassing 20 mmHg, with a 90% likelihood of accurate diagnosis.[17] A prospective observational study conducted by Raffiz and Abdullah revealed that intracranial pressure exceeding 20 mm Hg had an ONSD cut off value of 5.205 mm with a sensitivity of 95.8% and a specificity of 80.4%.[18]

Our study revealed that ONSD is positively correlated with midline shift (r=0.888, p=0.01), compression of basal cistern (r=0.855, p=0.001), collapsed third ventricular diameter (r=0.866, p=0.018), brain herniation (r=0.765, p=0.03) and blood volume (r=0.901, p=0.003). These correlations revealed the utility of ONSD as a non-invasive surrogate marker for ICP monitoring in head injury patients. These findings emphasize the importance of integrating ONSD measurements into clinical practice for the comprehensive management of head injury patients, allowing for timely intervention to identify and manage the adverse effects of raised ICP. The findings showed that moderate head injury (GCS 9 to 12) have 4.42 times higher odds of having an abnormal ONSD (95% CI: 1.21 to 7.63), while patients with severe head injury (GCS 3 to 8) have even higher odds, with an odds ratio of 7.96 (95% CI: 3.72 to 12.20). The findings concluded that, as the severity of head injury increases, there is a significant increase in the ONSD measurements at the time of admission. Das et al stated that higher the ONSD, greater is the severity of traumatic brain injury. The ONSD >5.8mm indicated critical Traumatic brain Injury (TBI).[19]

In this study, ONSD was 5.24±0.86mm at admission which decreased to 4.31±0.62mm at 48 hour and 4.02±0.47mm at 1 month follow up. There was significant reduction in ONSD after conservative or surgical treatment in head injury patients (F=27.017; P =0.002). This highlights the clinical significance of monitoring ONSD in head injury patients.

The change in ONSD could serve as a non-invasive indicator of change in ICP, aiding in the management and prognosis of head injury patients. The changes in ONSD could serve as a non-invasive indicator of changes in ICP, aiding in the management and prognosis of head injury patients. The ultrasonographic measurement of optic nerve sheath diameter in critical care units serves to estimate intracranial pressure (ICP) fluctuations, validated in multiple studies, including a meta-analysis.[20]

Our findings support ONSD as a reliable, cost-effective, non-invasive, and expeditious method for ICP monitoring in patients with traumatic brain injury. Our study has advanced the existing literature by highlighting the utility of ONSD monitoring and showcasing its diagnostic value in traumatic brain injury patients. Moving forward, there is a need for further research endeavour's utilizing larger datasets and extended follow-up periods to strengthen the evidence base surrounding the use of ONSD measurement in the clinical management of traumatic brain injury patients.

LIMIITATION

This is a single centre study and sample size is also small.

CONCLUSION

Serial ultrasonography measurement of ONSD proved to be a valuable tool in monitoring intracranial pressure in patients with head injury. The study highlights the association between ONSD and CT findings suggestive of raised ICP, emphasizing the potential utility of ONSD as a non-invasive method for evaluating elevated ICP.

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Role of FNAC in Breast Lump and its Histopathological Correlation

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ABSTRACT

Introduction: Breast malignancy is one of the common causes of morbidity and mortality among females. Screening of breast lumps by Fine Needle Aspiration Cytology (FNAC) is included in triple approach and is easy to perform. Accuracy of diagnosis can be further enhanced by histopathological confirmation. **Aims:** The role of FNAC in diagnosis of breast lumps and to determine its diagnostic accuracy. **Methods:** This was a hospital based prospective study conducted over the period of one year (from March 2023 to February 2024) in department of Pathology, Nepalgunj Medical College, Kohalpur, Nepal. Patients who presented with breast lump underwent FNAC with biopsy for histopathological study was included in the study. Cytological opinion was categorized according to International Academy of Cytology Yokohama System for Reporting Breast Fine Needle Aspiration Biopsy Cytopathology criteria reporting system. Histological correlation was carried out in patients who went surgical excision or biopsy of the lesion. **Results**: Most common diagnosis on cytology was fibroadenoma. According to International Academy of Cytology Yokohama reporting system C2 (benign) was most common reported category (19 cases). On histopathological study, 19 cases were benign and 13 cases were malignant with most common benign lesion being fibroadenoma and all malignant cases were Invasive ductal carcinoma. All cases diagnosed as malignant on cytology were concordant on histopathology. Three benign, one atypical and one suspicious on cytology were malignant on histopathological study. The sensitivity and specificity of FNAC was 84.2% and 69.2% respectively. Diagnostic accuracy of FNAC was 59.4%. **Conclusion**: Breast FNAC is a rapid and reliable tool for evaluation and have high sensitivity and specificity.

Keywords: Breast, Cytology, FNAC, Histopathology

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INTRODUCTION

Breast lesions commonly present clinically as palpable lumps, nipple discharge or pain. Fine Needle Aspiration Cytology (FNAC) is one of the safe, easiest and widely used method for identification of various types of lesions. It is also an important component of triple approach for breast mass. FNAC is highly sensitive, specific and rapid diagnostic tool.[1] It has an important role in evaluation of breast masses before surgical procedure and helps in differentiation of benign from malignant lesion for appropriate management. Breast cancer account for 11.7 % of cancer in both sexes and 6.9 % death globally.[2] In Nepal, breast cancer is fourth common cancer in both sexes accounting for 9.6% of cases and third most common cancer in females accounting for 17.1%.[3] This study was conducted to evaluate the role of FNAC in identifying the spectrum of breast lesion and the cytological findings was compared with histopathological findings of breast biopsy.

METHODS

This is a hospital based prospective study conducted over the period of one year (March 2023 to February 2024) in department of Pathology, NGMC, Kohalpur, Nepal. Informed verbal consent from the patient was also obtained. Patients who presented clinically with breast lump was included in the study in which both FNAC and histopathological study were conducted. Relevant clinical data were obtained from records or from patient's history.

FNAC was performed using 22G needle fitted on 10ml disposable syringe. Smears were prepared from aspirated sample and stained with Giemsa and Pap stain after proper fixation.[4] A cytological opinion was made by correlating with clinical and radiological findings. Histological correlation was carried out in patients who went surgical excision or biopsy of lesion. Lesions on FNAC were categorized as C1-C5 as per The International Academy of Cytology (IAC) Yokohama System for Reporting Breast Fine Needle Aspiration Biopsy Cytopathology criteria. Inadequate/ insufficient (C1): aspirates having hypocellular or poorly fixed smears. Benign (C2): aspirates having unequivocally benign cytological features, which may or may not be diagnostic of a specific benign lesion. Atypical (C3): aspirates having predominant benign feature but with some additional features that can be seen in malignant lesion. Suspicious of malignancy (C4): aspirates with presence of some cytological features which are usually found in malignant lesions but with insufficient malignant features, either in number or quality, to make definitive diagnosis of malignancy. Malignant (C5): aspirates with unequivocal malignant features and type of malignancy identified is stated whenever possible. The risk of malignancy (ROM) for each category is 2.6-4.8%, 1.4-2.3%, 13-15.7%, 84.6-97.1% and 99.0-100% respectively.[5] For statistical analysis FNAC results were further subdivided as benign and atypical proliferative lesions / suspicious of carcinoma/ malignant category. Similarly, the biopsy results were also subcategorized as benign and atypical / malignant.

Inclusion Criteria

Patients with palpable or non-palpable breast lumps that underwent FNAC and later surgical exploration either in the form of lumpectomy or mastectomy.

Exclusion Criteria

All the cases who have not undergone surgery were excluded.

Data was analyzed using Microsoft excel and standard statistical software SPSS 20.0. Cyto-histopathological correlation was done. Sensitivity, specificity, Positive predictive value, Negative predictive value and diagnostic accuracy of FNAC were calculated.

RESULTS

A total of 32 cases were included in the study which have undergone both FNAC and histopathology study. The age of patients ranged from 16-80 years and most common age range being 31-40 years and 41-50 years with nine cases in each group. All patients included were female. Left breast was seen to be more commonly involved than right side, which included 17 cases (53.1%) presented as left breast lump/lumpiness. The upper and outer quadrant of breast was the commonest part involved. Painless breast lump was most common presenting feature which included 24 cases. Breast lump with pain was present in five cases. Skin changes related to malignancy was seen in two cases. Nipple discharge was present in four cases.

In this study, cytological diagnosis was categorized according to IAC Yokohama system, cases were reported as benign which included lesions like fibroadenoma, abscess, fibrocystic change and benign proliferative changes. Among these, commonest lesion was fibroadenoma (11 cases), including two cases of complex fibroadenoma and three cases of cellular fibroadenoma. Two cases of atypical lesion were reported which included fibroadenoma with atypia and borderline phylloides (one case each). Three cases were suspicious of malignancy on cytology. Malignancy was reported in eight cases all showed cytological features compatible with infiltrative ductal carcinoma (IDC). (Table I)

Cytology			Histology (N)
Category	**FNAC**	**N**	
C1 (Inadequate/ insufficient)	Inadequate	0	0
C2 (Benign)	Fibroadenoma	6 (18.8%)	Fibroadenoma-4 Benign Phylloides-1 DCIS-1
	Fibrocystic change	3 (9.4%)	Fibroadenoma-2 Papillary neoplasm suspicious of invasion-1
	Abscess	3 (9.4%)	Chronic mastitis-2 Duct ectasia-1
	Cellular Fibroadenoma	3 (9.4%)	Fibroadenoma-2 Fibroadenoma with UDH-1
	Complex Fibroadenoma	2 (6.2%)	Fibroadenoma with secondary changes-1 Fibroadenoma-1
	Lactational adenoma	1 (3.1%)	Lactational adenoma-1
	Cellular Papillary lesion	1 (3.1%)	Fibrocystic change with apocrine atypia-1
C3 (Atypical)	Complex fibroadenoma with atypia	1 (3.1%)	Fibroadenoma with secondary changes-1
	Borderlline Phylloides	1 (3.1%)	Malignant phylloides-1
C4 (Suspicious of malignancy)	Suspicious of malignancy with fibrocystic change	3 (9.4%)	Fibrous mastopathy-1
	Suspicious of malignancy with abscess		Duct ectasia-1
	Suspicious of malignancy		Intraductal carcinoma-1
C5 (Malignant)	Intraductal Carcinoma	8 (25.0%)	Intraductal carcinoma, NST-6 Intraductal carcinoma with medullary features-2

Table I: Cyto-histological correlation according to category

On histological examination, 19 cases were benign (59.4%) and 13 cases were malignant (40.6%). Most common benign lesion was fibroadenoma, 13 cases (40.6%). Two cases reported as fibrocystic change in cytology were reported as fibroadenoma

in histopathology. One case reported as fibroadenoma on cytology showed morphology of benign phylloides on histopathology and one case was diagnosed as DCIS. One case of fibrocystic change on cytology was reported as papillary neoplasm with areas suspicious of invasion on histology. Cases of fibroadenoma also showed areas of secondary changes and UDH on histology (2 and 1 case respectively). One case of borderline phylloides on cytology was reported as malignant phylloides on histopathology. Among three cases which was reported as suspicious of malignancy on cytology, two were benign and one was of IDC. All cases reported as malignant on cytology were concordant on histology. Six cases were of IDC with no special type (NST) and two cases were of IDC with medullary features. Out of eight cases of IDC, three were of grade I and four cases were of grade II. (Table I, Table II)

		Histology		Total	P-Value
		Benign	Malignant		
Cytology	Benign	16	3	19	<0.001
	Atypical	1	1	2	
	Suspicious	2	1	3	
	Malignant	0	8	8	
Total		**19**	**13**	**32**	

Table II: Cyto-histological cross tabulation

Statistical analysis showed sensitivity of 84.2%, specificity of 69.2% of FNAC. Positive Predictive Value was 80.2%, Negative Predictive Value was 75.0% and diagnostic accuracy if FNAC was 59.4%. Correlation was done by categorizing the lesion as benign and malignant and was statically significant with P value of <0.01. (Table II)

DISCUSSION

Evaluation of breast lesion/lumps by FNAC is useful for preoperative diagnosis and management in both benign and malignant cases.[6,7] With rapid increase in the incidence of breast malignancy among female population, role of FNAC with other tests is vital. FNAC is cheap, easy to perform, accurate and less invasive than biopsy and can be used in follow-up of required cases as well.[8] IAC Yokohama system helps to categorize breast lesion and based on associated ROM management can be planned accordingly.[5]

Most of the cases were seen in age group of 31-40 years and 41-50 years which is also seen in other studied done by Malini AG, Hussain MT, Ariga R et al, Shrestha A and Tripathi K.[1,9,10,11,12] Some studies showed more number of malignant breast neoplasm in age more than 50 years which could be due to late medical attention because of lack of knowledge regarding the illness or fear of cancer treatment and outcome or lack of breast self-examination awareness.[13,14] On cytology, 16 cases were benign with most common diagnosis being fibroadenoma (11 cases) which is also seen in other studies.[1,6,13,15] In this study, left breast was most commonly involved than right with outer upper quadrant being common site.[1,9,16,17] On FNAC maximum number of cases were in C2 category followed by C5 which is also seen in other studies.[6,17] All cytologically diagnosed cases of malignancy were proven to be malignant on histopathology, also with similar type (IDC), similar to studies done by Khan A, Ahuja S, Mahajan NA, Malukani K and Tiwari M.[13,15,18,19,20] Thus showing FNAC as reliable method for helping diagnosing malignant breast lumps.

Missing the lesions while aspiration is the most common cause of false negative diagnosis on FNAC and false positive results can be seen in fibroadenomas with proliferative changes which may appear atypical.[6,7,21] In this study, three cases had suspicious result on cytology which on biopsy showed benign lesion in two cases and one was malignant. Four cases which was reported under benign and atypical category were malignant on histology. This can happen if FNAC aspirate was obtained without proper image guidance in small lesions or lesions with variable areas showing benign changes as well.[15,22]

In this study, results for statistical analysis of sensitivity, specificity and diagnostic accuracy of FNAC was close to other studies done by Tripathi K and Shila KM et al, the sensitivity was found to be in the range of 65-97.5% and specificity in range of 72.4%-100% in different studies which is close of this study with sensitivity of 84.2% and specificity of 69.2%.[12,23] Most of the studies had diagnostic accuracy of FNAC higher than this study, relatively low diagnostic accuracy of FNAC could be due to small sample size, misdiagnosis of lesion in cytology as atypical/suspicious due to low cellularity and proliferative changes resembling atypia which caused decline in specificity.[1,15]

LIMITATIONS

One of the limitations of this study is that the cases with both cytological and histological study were less, thus data might be less for accurately categorizing the statistical analysis of the study. Other limitation related to FNAC is difficulty in categorizing lesions with hypocellular smear or suspicious diagnosis due to low grade atypia which can give false negative or false positive impression on cytology.

CONCLUSION

FNAC as effective diagnostic method and can be used with histopathological study for providing concordant diagnosis in breast lesion with high sensitivity and specificity. Categorizing cytological diagnosis according to standard reporting system helps to simplify the result understanding and following the management required.

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Evaluation of Functional Outcome of Single Dose Intralesional Autologous Blood Vs Corticosteroid Injection in Chronic Plantar Fascitis

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ABSTRACT

Introduction: Plantar fascitis is one of the main underlying causes of acute and chronic heel pain. Diagnosis is mainly based on clinical symptoms and most of the time diagnostic imaging is not required routinely. Corticosteroid injection and autologous blood injection has been a possible means of treatment. Injection of autologous blood can help stimulate a healing response in chronic tendon disorders. **Aims:** To compare the functional outcome of single dose intra-lesional injection of autologous blood and corticosteroid in chronic plantar fascitis. **Methods:** This study was done in Nepalgunj medical college and teaching hospital during the period of March 2023 to August 2023 in the department of orthopedics. Sixty patients were enrolled in the study with 30 patients in each group. The patients were selected according to our inclusion and exclusion criteria and diagnosis made on clinical examination alone. The pain status was noted on the visual analog scale and the activity level noted based on the Nirschl stage. The final outcome was based on our scoring system based on the pain status and the activity level at two, four- and twelve-weeks' duration and graded into four categories as excellent, good, and acceptable and poor. **Results:** We found that in chronic plantar fascitis, local intralesional steroid injection gives better pain relief and faster return to activities of daily living compared to autologous blood injections. In our study we found that 17.85% had excellent outcome, 35.72% had good outcome and 12% had acceptable outcome in steroid group, whereas in autologous blood group 7.40% had excellent, 22.22% had good and 70.37% had acceptable outcome respectively. **Conclusion:** Intralesional steroid injection in chronic plantar fascitis have shown to achieve better functional outcome than autologous blood injection.

Keywords: Autologous blood, Corticosteroid, Intra-lesional injection, Nirschl stage, Visual analog scale

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INTRODUCTION

Plantar fascitis (PF) is the most common cause of heel pain.[1] It is an inflammation of the fascia of the plantar surface of the foot usually at the calcaneal attachment.[2] About 10% of people worldwide experience heel pain at some point in their lives.[3] Plantar fasciitis is diagnosed on the basis of a history of pain on taking the first few steps in the morning, worsening pain with weight bearing and pain and tenderness to palpation over the medial calcaneal tubercle.[4,5] The modality of treatment constitutes of anti-inflammatory drugs, physiotherapy, foot splints/braces, extracorporeal shock wave, steroid injections, autologous blood injections, nitroglycerin patches and surgical procedures.

Many studies and papers have been written in the support of corticosteroid injection as a reliable and quick pain killer.[6] Corticosteroids are known to inhibit proliferation of fibroblasts and to decrease the synthesis of ground substances. Autologous blood injections on the other hand target the plantar fascitis in order to heal it and bring out pain relief resultantly.[7] The use of autologous blood which contains various growth factors is thought to heal through collagen regeneration and angiogenesis. The degranulation of the alpha granules in the platelets releases many different growth factors that play a role in tissue regeneration processes. Platelet derived growth factor, transforming growth Factor-P, vascular derived endothelial growth factor, epithelial growth factor and insulin-like growth factor are examples of such growth factors.

The intention behind this study was to compare the functional outcome of these two injections, autologous blood, and steroid in plantar fasciitis.

METHODS

This is a prospective, comparative study of patient who attended Orthopedic OPD at Nepalgunj medical college, Kohalpur during the time spanning March 2023 to August 2023, patient meeting inclusion criteria were randomly allocated on the basis of alternate patient to each group, either autologous blood injection or corticosteroid injection as treatment. Both groups were analyzed with visual analogue scale (VAS) for pain and Nirschl staging for activity level at presentation, two-week, four week and twelve-week post injection intervals and results were tabulated. All patients were treated on OPD basis.

Inclusion Criteria: Unilateral heel pain more than six weeks, those patients failed to improve with oral analgesics, foot wear modification and physiotherapy modalities for more than four weeks.

Exclusion Criteria: Bilateral heel pain, has undergone previous local injections, not willing for follow-up, Patients with medical illnesses like diabetes and hypertension.

Technique: Patients were positioned supine and the heel involved was thoroughly scrubbed and painted with povidone-iodine solution. Point of maximum tenderness was located by palpation at the level of medial process of calcaneal tuberosity and injection was performed. Pain of the participants was assessed by most widely used and accepted Nirschl staging and "visual analogue scale."

Nirschl staging.8

0 – no pain

1 – mild pain with exercise which resolves within 24 hours

2 – pain after exercise which exceeds 48 hours

3 – pain with exercise, but allows normal activity

4 – pain with exercise which interferes with normal activities

5 – pain with heavy activities of daily living, but able to do light activity

6 – pain with light activities of daily living and intermittent rest pain

7- pain with heavy activities of daily living, but able to do light activity.

After the procedure was completed, before getting discharged the patients were kept under observation for 15 minutes for hemodynamic stability. Final outcome of both the group is assessed at two-, four- and twelve-week follow-up, based upon the following outcome:

Excellent: No pain, full movement and activity.

Good: Occasional pain, full movement and activity.

Acceptable: Some discomfort after prolonged activity.

Poor: Pain limiting activity.

Injection Technique: In case of autologous blood injection, 2 ml of the venous blood was drawn from antecubital vein from the patient him/ herself and mixed with 1 ml of 2% lignocaine. In case of steroid, 2 ml of methyl prednisolone amounting to 80 mg was mixed with 1 ml of 2% lignocaine. Sterile aseptic precautions were followed. The site of maximum tenderness in the heel was located by careful palpation. The injection was made through the medial aspect of the foot. After the injection, patient was allowed to follow our post-injection protocol.

Post-Injection Protocol: Ice therapy and compression bandage, advised not to take NSAID'S for at least four weeks' post-injection and no activity restrictions was done.

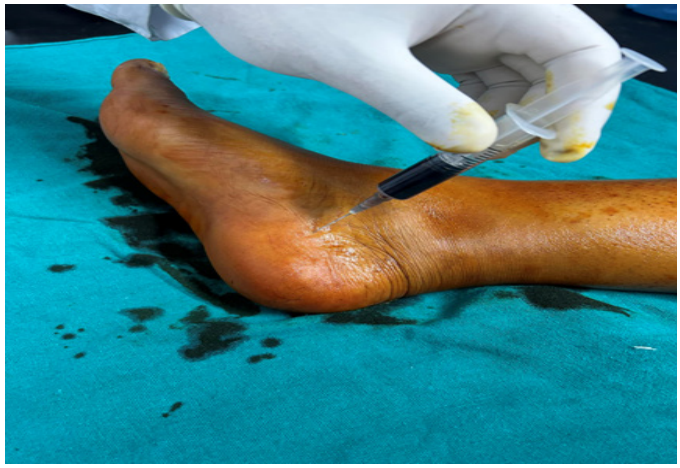

Figure 1: Autologous blood injection site

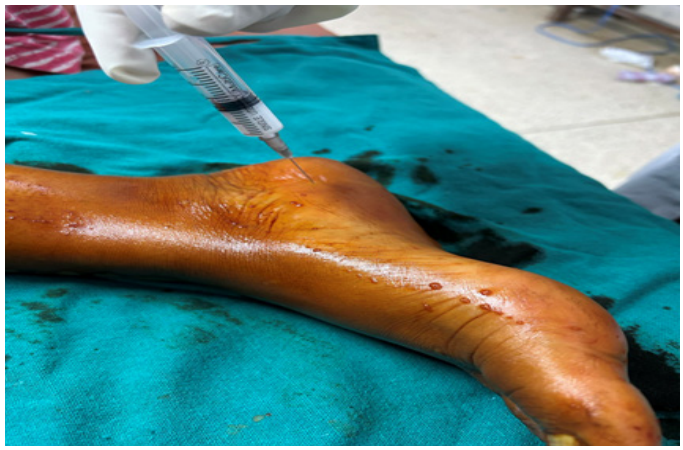

Figure 2: Steroid injection site

Follow-Up:

All the patients were followed up at two, four and twelve-weeks post-injection. At follow up, pain was assessed using the visual analog scale and Nirschl stages and compared with their respective pre-injection levels. Final Outcome was measured based on the pain and activity levels and graded into four categories. Patients were also observed for complications if any at the injection site.

RESULTS

Total 60 cases of unilateral plantar fasciitis meeting the inclusion criteria were involved in this study, out of which total of five patients did not return for the final follow-up at twelve weeks which included two in the steroid group and three in the autologous blood group were excluded from study. There were 15 (27.27%) males and 40 (72.73%) females. The male to female ratio was 1:2.66. Sex distribution is shown in the table I below.

Sex	Number
Male	15 (27.27 %)
Female	40 (72.73%)
Total	**55 (100%)**

Table I: Sex distribution

The mean age of patient was 43.56 and ranging from 21 years to 67 years. The age wise distribution of patient is shown in table II. The right foot was involved in 16 (29.10%) and the left foot was involved in 39 (70.90%) subjects. The mean duration of symptoms was 6.12 months.

	Number	Percentage
21-30 years	8	14.54
31-40 years	21	38.18
41-50 years	12	21.81
51-60 years	9	16.36
>60 years	5	9.10
Total	**55**	**100**

Table II: Age distribution

The median pre-injection scores in autologous blood injection group were 7 VAS and 5 Nirschl scoring while in steroid injection group it was 7 VAS and 6 Nirschl score respectively.

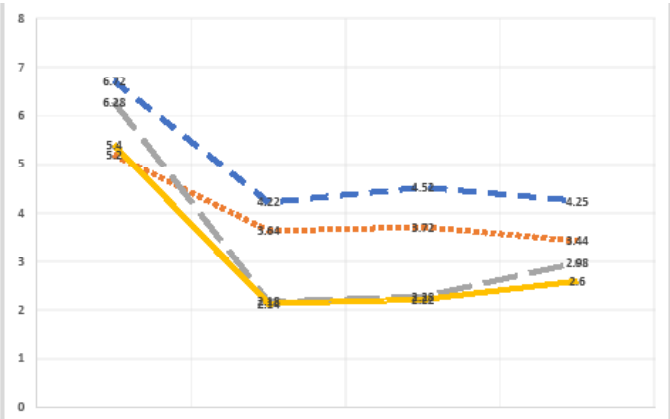

Figure 3: VAS and Nirschl scoring pre and post injection in blood injection group and steroid group

From the above curve it is clear that the autologous blood group followed a gentle curve during the 2 weeks after injection compared to that of the steroid curve. At the end of 12 weeks, the effect is still sustained shown by its down coming curve pattern. Similarly, it is clear that the steroid group had a steep curve during the 2 weeks after injection compared to that of the autologous blood group curve. At the end of 12 weeks, the effect has started slowly weaning off shown by its up going curve pattern.

According to the final outcome assessment scoring, the results at post-injection 12 weeks were as follows in table III.

	Autologous blood group	Steroid group
Excellent	2 (7.40 %)	5 (17.85 %)
Good	6 (22.22 %)	10 (35.72 %)
Acceptable	19 (70.37 %)	12 (42.85 %)
Poor	0	1 (3.57%)
Total	**27**	**28**

Table III: Final outcome based on pain and activity level

DISCUSSION

Plantar fasciitis means inflammation of plantar fascia at its attachment, but recent studies indicates it as a degeneration of the plantar fascia rather than true inflammation which was supported by the findings of pathologist that only very few inflammatory cells were found in specimens received from cases of chronic plantar fasciitis.[9] In this study we found that patients who received corticosteroid showed quicker improvement and probably to a greater extent compared to intralesional autologous blood injection over three months post injection. Furthermore, other studies have shown that once plantar fasciitis becomes chronic, the response to any form of treatment is unpredictable.[10]

Several modalities of treatment of chronic plantar fasciitis are there, classified as conservative and invasive treatment. Initially treatment is started with combination of conservative management including rest, ice pack application, NSAID'S and footwear modifications.[11,12] Intralesional injections like corticosteroids, autologous blood, platelet rich plasma and botulinum toxin are given. Various studies show advantages and disadvantages of one treatment option over the other.[13]

The efficacy of corticosteroid in treating chronic inflammation has been well demonstrated.[14] While autologous whole blood contains platelets with growth factors like platelet derived growth factor, vascular endothelial growth factor and fibroblast growth factor that promotes healing. It stimulates the healing process and lead to partial modification of the damaged tissue, induces angiogenesis, increase growth factor expression and cell proliferation.[15,16]

Martin et al studied the effect of intra-lesional autologous blood injections in chronic plantar fasciitis in over 200 patients and reported good results in about 80%. In our study, in the autologous blood group, 22.22 % had good and 70.37 % had acceptable outcomes.[9] In a study by O Malley and colleagues, patients with chronic PF who received corticosteroid injection showed improvement quicker and probably to a greater extent at four weeks, but the response was similar to autologous whole blood injection at longer follow-up.[17] In a clinical trial conducted by Jain et al on 60 heels with intractable chronic plantar fasciitis, autologous whole blood was as effective as steroid injection at achieving symptom relief at three and six months after injection, and its effect lasted longer than corticosteroid injection.[18] According to the recent meta- analysis by Tsikopoulos K and colleagues, corticosteroids were marginally superior to autologous blood in pain reduction on PF at two to six weeks.[19] In our study, in the steroid group, 35.72% had good, 42.85% had acceptable and 17.85% had excellent outcomes. In our study, one patient in the steroid group had poor outcome and was advised another intra-lesional injection of the same substance.

Lee TG and Ahmad TS conducted a comparative study between autologous blood and corticosteroid injection in chronic plantar fasciitis and found corticosteroids were much better in the speed and the overall outcome of recovery compared to autologous blood.[20] From our results we found that autologous blood has late and sustained beneficial effect whereas Steroid injections provide faster and better relief of pain compared to autologous blood, but the beneficial effect is only short lived. There were no any complications in both the group. The main limitation of this study is single hospital-based study, small sample size and duration of follow-up. Also, in this study patient were not blinded to the treatment they received which could be the source of bias.

CONCLUSION

We conclude that in chronic plantar fasciitis: local intra-lesional steroid injection gives better pain relief and faster return to activities of daily living compared to autologous blood injections.

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Transforaminal Epidural Injection with Local Anesthesia and Steroid for Single-level Radiculopathy and Pain Score: A Prospective Study in the Tertiary Center of Western Nepal

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ABSTRACT

Introduction: Radiculopathy resulting from prolapse of intervertebral disc commonly at L4-L5 and L5-S1, the prominent cause of low back pain affecting daily activities and has a significant socioeconomic burden. Hence, this needs to be addressed with a prominent solution, of which, the transforaminal epidural steroid injection has been one of the promising solutions these days. **Aims:** To assess the short term and long-term pain relief after transforaminal epidural steroid injection. **Methods:** 58 patients with radiculopathy at the single level of the lumbar or lumbosacral region were included for transforaminal epidural steroid injection with local anesthesia. Visual analog score, pain score was recorded before, in 15 minutes and four weeks after the steroid injection under C-arm guidance. Statistical analysis was done on the basis of Wilcoxon Signed Ranks Test, Spearman's correlation test. A p-value < 0.05 was considered to be statistically. **Results:** The change in Visual Analog Score from the time of presentation in relation to short and long term was significant, viz; VAS0/VAS15m $p<0.5$ and VAS0/VAS4wks was $p<0.5$. There was a positive correlation between immediate pain relief and long-term pain reduction however it was not significant ($r=0.28$, $p=0.10$) **Conclusion:** This study suggested the improvement of symptoms with transforaminal epidural steroid injection with local anesthesia and showed a positive correlation between immediate and long-term relief of pain, however it may not be significant.

***Keywords*:** Anesthetics, Radiculopathy, Steroids

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INTRODUCTION

Radiculopathy of the lumbar region is one of the most common presentations of low back pain visiting the outpatient department, resulting in activity limitation, work loss, and socioeconomic burden.[1-3] Disc herniation, spondylosis, osteoarthritis of the facet joint, and hypertrophy of ligamentum flavum are major causes leading to compression of the nerves at the spinal canal viz; lateral recess, intervertebral foramen, or outside the foramen exiting it. The common sites are L4-L5 and L5-S1.[3,4] This disorder is mostly treated conservatively, but patients' satisfaction is not adequate with it. Hence, there are increasing use of therapeutic injections of steroids under fluoroscopy and has a promising, safe, and effective role in management for the lumbar radiculopathy and it is on an increasing trend.[5-8]

Different approaches are used for epidural injection which include; transforaminal epidural steroid injection (TFESI), interlaminar or caudal, and TFESI is most practiced as it can guide to the targeted site, ventrolateral epidural space where the pathology lies. This is done under fluoroscopy or computed tomography (CT) guided to locate the exact site of the lesion and place the needle at the site of pathology.[9,10] The combination of steroid (triamcinolone acetate or methylprednisolone) with local anesthetic (e.g. lidocaine) are used to relief the pain resulting from nerve compression, as steroid is a long-acting anti-inflammatory drug and radicular pain is caused by mechanical compression of the nerve root and local inflammation. Hence, local injection symptomatically relieves the radiculopathy for weeks to months.[3,10] Local anesthesia has dual effects like immediate relief of pain resulting from nerve

compression and uneasiness caused by the procedure itself. In our institution, we performed the serial interview regarding the pain before and after TFESI. This would provide an idea about the status of improvement of pain depending upon VAS score. Hence, we hypothesized, that the outcome has impact on both short term and long-term pain relief outcome compared to the initial presentation of pain with TFESI. Therefore, our goal was to assess and evaluate the correlation regarding pain relief after TFESI, both short term and long term (after 4 weeks) with discogenic lumbar radiculopathy.

METHODS

This is the prospective study with low back pain with radiculopathy, who failed the conservative treatment, after the approval of the institutional review committee (IRC) who presented to the Nepalgunj Medical College for the duration of four months from December 2023 to March 2024. For all the patients, who were treated with TFESI were included in the study after informed written consent for the use of data for research.

Statistical analysis :

Statistical analysis was done based on SPSS 26; The test was subjected to the Wilcoxon Signed Ranks Test and Spearman correlation was calculated for statistical significance with p-value less than 0.05.

Inclusion criteria:

1. Age above 18 years
2. Lumbar radiculopathy (L4, L5, or S1 nerve root) on clinical examination confirmed by MRI (Magnetic resonance imaging)
3. Patient who failed the conservative treatment
4. Those who gave consent

Exclusion criteria

1. History of steroid injection in the past
2. Lumbar neoplasia/ metastasis or infection
3. Spondylolisthesis
4. Lesion on both sides or multiple levels
5. Missing data
6. Those not willing to take part in the study or with no consent

A thorough history and examination were done for the neurological examination, and then MRI was advised for the confirmation of the clinical finding of the lesion on the targeted nerve root (lateral recess, neuroforamen, or extraforaminal). A trial of the oral medication was tried for two weeks and observed. When there was no improvement with it, then they were subjected to the TFESI. We reviewed the patient at the first time of presentation at OPD then 15 minutes after injection, and 4 weeks after the treatment and further analysis was done.

Procedure

All patients were treated on a daycare basis. Each procedure was done by a trained Orthopedic Surgeon. For the procedure, standard injection protocol was performed. Inside the operation theater, after the IV cannulation, the patient was kept prone on the operation table to maintain the natural lumbar curvature. Sub-pedicular approach for TFESI was used. The l evel of the steroid injection, target level, was confirmed under fluoroscopy in the posterior-anterior direction and the X-ray beam was aligned and targeted to the inferior vertebral endplate of the upper vertebra. Visualization of the target point, the posterior surface of the vertebral body adjacent to the caudal border of the pedicle above the target nerve, opposite the sagittal bisector of the pedicle (six o'clock" position of the pedicle).[10]

At the target point, in the oblique view with the caudal or cranial tilt, Scotti's terrier sign was accessed and the sub-pedicular space was identified under the fluoroscopy. Under aseptic conditions, local anesthesia, 1% lidocaine was infiltrated at the target point under the skin. A solution of 2ml of 1% plain lidocaine with depot methylprednisolone 20 mg was prepared in a 5ml syringe. At the target level, a 25-gauge spinal needle was inserted below the pedicle with the needle tip aligned to the C-arm and in the optimal trajectory and was advanced on this position to the target point. This was viewed on the lateral view for the position of the needle in the intervertebral foramen. A 10-cc syringe with air was blown into the needle and the release of airflow resistance was used to confirm the level.

Outcome evaluation

The outcome was evaluated based on the intensity of pain of the low back pain and/or radiculopathy based on the visual analog score questionnaire, before the procedure (VAS0) then after 15 minutes (VAS15m) and at four weeks (VAS4wks) following the procedure. Each patient described the pain intensity ranging from 0 with no pain and 10 with unbearable pain. The short-term pain reduction percentage (VASP15m) was calculated by subtracting VAS 15 minutes from the baseline VAS0 divided by VAS0. Long-term pain reduction percentage (VASP4wks) was calculated on a similar basis. After the procedure, the postprocedural pain score VAS was quantified as (1) "good responder" with at least a 50% reduction in VAS score and (2) "poor responder" with below 50% reduction in VAS score, at 4 weeks after the peri-radicular injection. At the end of four weeks, patients were asked for the symptoms, limitation of activities, and quality of life concerning low back pain and/or radiculopathy after TFESI.

RESULTS

During four months period 521 patients with low back pain with or without radiculopathy were assessed and treated conservatively. Among them, 68 patients who did a poor performance on a conservative study were included in the study. Ten patients lost the follow-up. Hence, 58 patients who were subjected to TFESI were included in the study. The demographic profiles are shown in Table I.

Variables	
Age	45.52 ± 6.16 years
Gender	
Male	30 (51.7%)
Female	28 (48.3%)
Side	
Right	32 (55.2%)
Left	26 (44.8%)
Level	
L4	12 (20.7%)
L5	25 (43.1%)
S1	21 (36.2%)

Table I: Patient characteristics. Demographic variables age, gender, side and level are shown

The mean VAS0 score at the time of presentation was 6.4±1.2, VAS at 15min was 3.9±0.9 and VAS at four weeks was 3.2±1.1.

The short-term percentage (relative) pain reduction, VASP15m, was 36.9±18.3 % and the long-term percentage pain reduction, VASP 4 weeks, was 50.1±17.7% as shown on table II.

Pain Assessment				
	Mini	Max	Mean	S.D
VAS0	5	8	6.4	1.2
VAS15m	2	5	3.9	0.9
VAS4wks	2	5	3.2	1.1
VASP15m (%)	0	63	36.9	18.3
VASP4wks (%)	0	75	50.1	17.7

Table II: The VAS scores at three points of time; 1; at the time of presentation (VAS0), 2; 15 min after the TFESI (VAS15m), and 3; one month after TFESI (VAS4wks). VASP15m represents the percentage of relative pain reduction after 15 min of TFESI, and VASP4wks is percentage of relative pain reduction after 1 month of TFESI

Comparison of VAS scores		
	Z	P value
VAS0 - VAS15m	-6.267	0.00
VAS0 -VAS 4wks	-6.543	0.00
VAS15m-VAS 4wks	-4.658	0.00

Table III: Wilcoxon Signed Ranks Test; comparison of VAS scores with initial (VAS0), short term (VAS15m) and long term (VAS4wks) pain relief

The test results of the improvement of pain scores, after the injection compared to the initial presentation were significant (p-value <0.05) in both short term and long-term as shown on table III.

VAS score correlation	Correlations (spearman's rho)	P-value
VAS0/VAS15m	0.10	0.46
VAS0/VAS 4wks	0.42	0.001
VAS15m/VASe 4wks	0.28	0.10

Table IV: Correlation analysis: Data presents the correlation of pain relief at 15 mins (VAS15m) and 4 weeks (VAS4wks) of TFESI in relation to the initial time of presentation (VAS0) and VAS15m with VAS4wks

There was a positive and strong correlation with long-term pain reduction(r=0.42). The short-term pain relief and long-term pain relief have positive correlation however, the relationship was weak (r=0.28).

DISCUSSION

Lumbar transforaminal epidural steroid injection (TFESI) has been an important intervention in the management of low back pain resulting from the prolapse of the intervertebral disc with the foraminal component. The outcome of pain management is good in terms of immediate and long-term. In this prospective longitudinal observational study, we did the retrospective data analysis and the relationship between short-term pain relief and long-term pain relief in single-level unilateral discogenic radiculopathy were assessed. Our study has a comparable finding as other studies in both short-term and long-term pain reduction scores with VASP15m 36.98±18.31% and VASP4wks 50.48±17.74%.[4-5,13-15]

The early improvement of pain at 15 mins might be contributed to the local anesthesia and the persistence of the improvement at 1 month period might be contributed to the subsidence of the local inflammatory reaction which is caused by disc herniation.[3,10,16]

Similar to the study done by Tagowiski et al. and German at el, our study also suggested the improvement in the VAS pain score with both short-term pain relief at 15mins (VAS15m) and long-term pain relief at 4 weeks (VAS4wks) was significant compared to the initial time of presentation before the TFESI.[5,6]

Though, there was a positive correlation with change in VAS score in terms of short- and long-term pain reduction in our study (r=0.21) similar to the study done by Germann et al. However, the improvement was not significant in our study (p = 0.10) which contradicts with the finding with Germann et al (p=0.002).[3]

In contrast to some studies done by Antoniadis et al and Wald et al. which was done on CT guided cervical nerve root injection, suggested there was no correlation between immediate and long-term pain relief. This difference may be contributed to the different techniques of the procedure.[17,18]

LIMITATIONS

This is the short-term study with limited number of people, long term outcome could not be projected as back pain is the persistent problem in many patients. Meanwhile, it is nonrandomized trial and it lacks validity in case of generalization.

CONCLUSION

The study suggests the improvement of symptoms with the TFESI and there is a positive correlation among short and long-term relief of pain, however it may not be significant.

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Level of Satisfaction on Clinical Learning Environment among Nursing Students of Nepalgunj Nursing Campus at Kohalpur

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ABSTRACT

Introduction: Clinical education is a major component of the undergraduate nursing curriculum. To practice a safe beginning level of nursing care, new graduates must have developed not only the theoretical knowledge on which to base their care but also the practical application skills required to implement that knowledge. The clinical learning environment can have a great influence on the development of attitude, knowledge, skills, and problem-solving ability of students. The clinical learning environment plays a crucial role, especially during the clinical training of student nurses, as they face the reality of their roles and responsibilities of being nurses. **Aims:** To find out undergraduate nursing student's satisfaction with their clinical learning environment. **Methods**: This cross-sectional study was conducted in the Nepalgunj Nursing Campus. The study was conducted among 40 students who were studying Proficiency Certificate Level in Nursing at the Nepalgunj Nursing Campus, Kohalpur. A non-probability sampling method was used to select the sample. A semi-structured self-administered questionnaire and the Clinical Learning Environment, Supervision, and Nurse Teacher Scale (CLES+T) were used for data collection. The Clinical Learning Environment, Supervision, and Nurse Teacher Scale is an internationally valid and reliable instrument used to evaluate the quality of clinical learning environments for students in the health professions. **Results**: More than half of the nursing students (52.50%) were highly satisfied with the clinical learning environment. The association between the level of satisfaction among nursing students and age, marital status, last clinical placement ward, frequency of meeting nurse teachers, and use of e-communication tools with nursing teachers was not statistically significant. **Conclusion**: In today's education system, which is centered on students' learning concepts and expectations, assessing the students' satisfaction level can be one of the innovative ways to bring positive changes to both the students' and teachers' experiences. However, the availability of limited research studies on this matter, makes it hard to draw any conclusions. Hence, future studies should focus on identifying the various factors influencing the satisfaction level of students with clinical learning.

Keywords: Clinical Learning Environment, Level of Satisfaction, Nursing Students

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INTRODUCTION

Nursing students' empowerment is an essential element to enhance the learning process. Nursing students' learning experiences in the classroom and the clinical placement play vital roles in their empowerment.[1] The clinical learning environment is an interactive network of forces within the clinical setting, i.e., staff, the patient, the preceptor, and the nurse educator that influence the clinical learning outcomes and have an impact on student behaviors. Hence, clinical experi ences are important for student learning and professional development.[2] Satisfaction is defined as the psychological state, which results from confirmation or disconfirmation of expectation with reality.[3] Satisfaction of the students in their training contributed to intellectual, social and affective growth, classroom and college retention, academic performance, motivation, and college persistence. Satisfied students were more successful and dedicated to accomplishing their goals than unsatisfied students.[3] The clinical learning environment includes everything that surrounds students and affects their professional development in a clinical setting. There is evi-

dence supporting clinical learning is beneficial to students not only to learn and improve their clinical judgment and decision-making skills but also to stimulate their critical thinking. It also is instrumental in helping the students to recognize the consequences of their actions and in exposing them to various cultural, and psychological aspects of patient care.[3] Students' satisfaction regarding their clinical education is important to develop confidence in clinical nursing practice after graduation. Studying students' satisfaction is very important to improve educational institutions and their teaching strategies to meet students' changing demands.[2]

METHODS

This is a descriptive cross-sectional study conducted at Nepalgunj Nursing Campus, Kohalpur, Banke for 8 months from September 2023 to April 2024 on all students studying third-year Proficiency Certificate Level in Nursing. A descriptive cross-sectional design was used to identify the level of satisfaction among nursing students in a clinical learning environment. The population of this study was all third-year nursing students of Proficiency Certificate Level in nursing. The sample size of the study was determined by a total enumerative method which was the total number of students of Nepalgunj Nursing Campus. There are a total of 40 students and hence, the sample size is 40. The questionnaires consisted of two parts: part I included demographic and academic information and part II consisted of the Clinical Learning Environment, Supervision, and Nurse Teacher scale which was developed and validated by Saarikoski et al.[4] The scale (total 34 items) measures the level of satisfaction of nursing students regarding the pedagogical atmosphere, leadership style of the ward manager, premises of nursing in the ward, supervisory relationship, and the role of the nurse teacher.

Satisfaction of each item of this scale was scored on a five-point Likert scale ranging from "very satisfied'' to "very dissatisfied" with a total score of 170 points for the 34 items. The level of satisfaction was categorized as high-level satisfaction and low-level satisfaction based on the mean score of the sample. Ethical clearance was obtained from the Institutional Review Board of the Nepalgunj Medical College. The data was collected from 23rd September 2023 to 30th September 2023. The data was analyzed using the SPSS Version 29. The chi-square test was applied to measure the association between the level of satisfaction among nursing students and various variables.

RESULTS

Variables (N= 40)	Frequency (%)
Age (Years)	
18-20	35 (87.50)
21-25	5 (12.50)
Marital Status	
Married	2 (5.00)
Unmarried	38 (95.00)
Last Clinical Placement	
Pediatric Ward	4 (10.00)
Gynecology Ward	14 (35.00)
Labor Ward	13 (32.50)
Postnatal Ward	6 (15.00)
Neonatal ICU	3 (7.50)
Frequency of Meeting Nursing Teacher	
1 – 3 times	8 (20.00)
More than 3 times	32 (80.00)
Use of E-communication Tool with Nursing Teachers	
Never	16 (40.00)
1 – 3 times	10 (25.00)
More than 3 times	14 (35.00)

Table I: Descriptive Statistics on Demographics of Nursing Students

In this study, most of the students (87.50%) were between the ages of 18 to 20 years with a median age of 19 years (Table I). The majority of the student participants (95%) were unmarried. Among the total students, the majority had completed their last clinical placement in either gynecology (35%) or labor (32.5%) wards followed by postnatal (15%), pediatric (10%), and neonatal ICU (7.5%) wards. Similarly, around 80% of the students reported meeting their nursing teacher more than 3 times. Among the total students, most reported having never used an e-communication tool with their nursing teacher whereas 35% reported using it more than 3 times and 25% reported using it for 1-3 times.

Among the five sub-dimensions of the evaluation scale measuring satisfaction in the clinical learning environment (with a five-point Likert scale), the mean score of respondent's satisfaction towards the role of nurse teacher was highest (4.11 ± 0.12) followed by satisfaction towards the role of supervisory relationship (4.04 ± 0.06), satisfaction towards leadership style of ward manager (3.92 ± 0.19), and satisfaction towards premises of nursing in the ward (3.69 ± 0.44). The satisfaction towards the pedagogical atmosphere was reported to be the least (3.70 ± 0.43) (Table II).

Clinical Learning, Environment, Supervision, and Nurse Teacher Subscales (N=40)	Mean ± SD
Pedagogical Atmosphere	
1. The staff were easy to approach.	4.20 ± 0.46
2. During staff meetings (e.g. before shifts), I felt comfortable taking part in the discussions	4.33 ± 0.73
3. I felt comfortable going to the ward at the start of my shift.	3.95 ± 0.71
4. There was a positive atmosphere in the ward.	3.40 ± 0.81
5. The staff were generally interested in student supervision.	3.95 ± 0.85
6. The staff learned to know the students by their personal names	3.10 ± 1.15
7. There were sufficient meaningful learning situations on the ward.	3.25 ± 0.95
8. The learning situations were multidimensional in terms of content.	3.53 ± 0.96
9. The ward can be regarded as a good learning environment.	3.55 ± 0.88
Total	**3.70 ± 0.43**
Leadership Style of the Ward Manager	
10. The ward manager regarded the staff on his/her ward as a key resource	4.30 ± 0.46
11. The ward manager was a team member.	4.25 ± 0.54
12. Feedback from the ward manager could easily be considered a learning situation	3.97 ± 0.42
13. The effort of individual employees was appreciated.	3.92 ± 0.62
Total	**3.92 ± 0.19**
Premises of Nursing in the Ward	
14. The ward's nursing philosophy was clearly defined.	3.92 ± 0.62
15. Patients received individual nursing care.	3.18 ± 0.87
16. There were no problems in the information flow related to patients' care	3.50 ± 0.75
17. Documentation of nursing (e.g. nursing plans, daily recording of nursing procedures, etc.) was clear	4.18 ± 0.59
Total	**3.69 ± 0.44**
Supervisory Relationship	
18. My supervisors showed a positive attitude toward supervision.	4.07 ± 0.57
19. I felt that I received individual supervision.	3.97 ± 0.62
20. I continuously received feedback from supervisors.	3.95 ± 0.88
21. Overall I am satisfied with the supervision I received.	4.10 ± 0.50
22. The supervision was based on a relationship of equality and promoted my learning.	4.08 ± 0.53
23. There was a mutual interaction in the supervisory relationship.	4.13 ± 0.79
24. Mutual respect and approval prevailed in the supervisory relationship.	4.03 ± 0.73
25. The supervisory relationship was characterized by a sense of trust.	4.05 ± 0.55
Total	**4.04 ± 0.06**
Role of The Nurse Teacher	
26. In my opinion, the nurse teacher was capable of integrating theoretical knowledge and everyday practice of nursing.	4.40 ± 0.50
27. The nurse teacher was capable of operationalizing the learning goals of this clinical placement.	4.10 ± 0.59
28. The nurse teacher helped me to reduce the theory-practice gap.	4.18 ± 0.55
29. The nurse teacher was like a member of the nursing team.	4.00 ± 0.45
30. The nurse teacher was capable of giving his/her pedagogical expertise to the clinical team.	4.05 ± 0.64
31. The nurse teacher and the clinical team worked together to support my learning	4.10 ± 0.71
32. The common meetings between myself, my mentor, and nurse teacher were comfortable experiences.	4.10 ± 0.67
33. The climate of the meetings was congenial.	4.00 ± 0.68
34. Focus on the meetings was in my learning needs.	4.03 ± 0.66
Total	**4.11 ± 0.12**

Table II: Mean score of clinical learning environment, supervision, and nurse teacher sub-dimensions of the nursing students

Level of Satisfaction (N = 40)	Frequency (%)
High (>133.80)	21 (52.50)
Low (≤ 133.80)	19 (47.50)

Table III: Level of Overall Satisfaction with Clinical Learning Environment among Nursing Students

The Chi-square test of association did not show any statistically significant association between the level of satisfaction and age, marital status, last clinical placement ward, frequency of meeting nurse teachers, and use of e-communication tools with nursing teachers (Table IV).

Variables (N = 40)	Level of Satisfaction		χ2	p-value
	Low (%)	High (%)		
Age				
≤ 20 years	17 (48.60)	18 (51.40)	0.13	0.72

> 20 years	2 (40.00)	3 (60.00)		
Marital Status				
Married	1 (50.00)	1 (50.00)	0.005	0.94
Unmarried	18 (47.40)	20 (52.60)		
Last Clinical Placement Ward				
Postnatal	3 (50.00)	3 (50.00)	0.59	0.96
Pediatric	2 (50.00)	2 (50.00)		
Neonatal ICU	1 (33.30)	2 (66.70)		
Labor	7 (53.80)	6 (46.20)		
Gynecology	6 (42.90)	8 (57.10)		
Frequency of Meeting Nurse Teachers				
1 – 3 times	3 (37.50)	5 (62.50)	0.4	0.52
> 3 times	16 (50.00)	16 (50.00)		
Use of e-communication Tools with Nursing Teachers				
Never	11 (68.8)	5 (31.30)	5.13	0.07
1 – 3 times	4 (40.00)	6 (60.00)		
> 3 times	4 (28.60)	10 (71.40)		

Table IV: Association between Level of Satisfaction in Clinical Learning Environment and Selected Variables of Nursing Students

DISCUSSION

The current study was conducted to measure satisfaction with the clinical learning environment among proficiency certificate level nursing students from the Nepalgunj Nursing Campus using the clinical learning environment, supervision, and nurse teacher tool. The result shows that more than half of the students are highly satisfied with their clinical learning environment which is similar to the findings of the study conducted in Nepal in 2020.[5]

Among the five dimensions of the clinical learning environment, supervision, and nurse teacher tool, satisfaction was highest in the role of nurse teacher (4.11 ± 0.12) followed by satisfaction towards the role of supervisory relationship (4.04 ± 0.06) which is similar to the findings of a study done by Dhakal et al.[6] This supports the notion that one of the major roles of teachers is to support their students in their quest for new knowledge on a specified set of subjects. The satisfaction towards the pedagogical atmosphere was reported to be the least in our study which is similar to the study by Nepal et al.[7]

The study findings did not show any statistically significant association between the level of satisfaction and age, marital status, last clinical placement ward, frequency of meeting nurse teachers, and use of e-communication tools which differs from other studies that found the association to be statistically significant.[2,6,7] The study by Dsouza et al[2] showed that students who were posted in the Gynecology ward were highly satisfied with the clinical learning environment. This difference in findings may be due to the small sample size used in this study (N=40) compared to the other studies which used a higher sample size.[2,6,7] Additionally, the data was collected from only one college for this study as compared to the study by Dhakal et al which utilized multiple colleges for data collection.[6] Moreover, all the student participants come from a similar background academically and socio-economically which might have some influence on the students' perception.

CONCLUSION

The Clinical Learning Environment, Supervision, and Nurse Teacher Scale can be very useful in assessing satisfaction with the Clinical Learning Environment among nursing students which could lay the foundation to evaluate the current academic method used by nursing institutions as well as introduce new models and improvise the current ones. In today's education system, which is centered on students' learning concepts and expectations, assessing the students' satisfaction level can be one of the innovative ways to bring positive changes to both the students' and teachers' experiences. However, the availability of limited research studies on this matter, makes it hard to draw any conclusions. Hence, future studies should focus on identifying the various factors influencing the satisfaction level of students with clinical learning.

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A Comparative Study Between Femoral Nerve Block and Suprainguinal Fascia Iliaca Compartment Block for Post-Operative Analgesia in Femur Fracture Fixation

Regmi NK[1], Gurung S[2], DC GS[2], Kharel S[3]

ABSTRACT

Introduction: Femur fractures and their surgical fixations are common. Adequate postoperative pain relief is mandatory as it facilitates rapid recovery by enhancing early ambulation and mitigating stress response. This is barely achievable with conventional pain control methods. Ultrasound-guided regional blocks like femoral nerve block and supra-inguinal fascia iliaca compartment block are simple yet promising techniques for postoperative analgesia in femur fractures. **Aims:** To compare post-operative analgesia duration and satisfaction attained between the patients receiving ultrasound-guided femoral nerve block with, those receiving ultrasound-guided supra-inguinal fascia iliaca compartment block, after femur fracture fixation. **Methods:** Seventy-four patients, aged 16−85 years, of either sex, ASA I−II, who underwent femur fracture surgical fixations under spinal anesthesia, were randomly divided into two equal groups: groups 1 and group 2. Postoperatively, Group 1 (n= 37) received a femoral nerve block with 15 ml 2.5% bupivacaine whereas Group 2 (n = 37) received a supra-inguinal fascia iliaca compartment block with 30 ml 2.5% bupivacaine. Duration of analgesia, patients' level of satisfaction, visual analogue scale scores, and hemodynamic parameters at different time intervals were recorded in the first 24 hours postoperatively and compared. **Results:** The demographic profiles between the two groups were comparable. Group 2 had a significantly longer duration of analgesia than Group 1, with the means 795.14 vs 538.65 minutes respectively, and a P value of .002. Although group 1 patients had predominantly 3 and 4 levels of satisfaction whereas group 2 had 4 and 5, there was no statistically significant difference in patients' level of satisfaction between the groups (P=.249). **Conclusion:** Supra-inguinal fascia iliaca block provides a longer duration of analgesia than femoral nerve block in femur fracture fixation. The level of satisfaction in both groups is high and comparable.

Keywords: Femoral nerve block, Femur fracture fixation, Post-operative analgesia, Supra-inguinal fascia iliaca compartment block

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INTRODUCTION

Femur fractures are the most common orthopedics injury requiring hospitalization.[1] The pain after the fracture and its fixation leads to a stress response, which is characterized by inflammatory and hormonal changes. This increases the chances of delayed wound healing, delayed fracture repair, delayed mobilization, prolonged hospitalization, and sometimes even severe cardiovascular, neurological, and metabolic events.[2,3] Although multimodal analgesia is almost always used in orthopedics trauma patients, there is still widespread under-treatment of pain after femur fractures.[4] Epidural analgesia, opioids, non-steroidal anti-inflammatory drugs (NSAIDs), and paracetamol are frequently used for multimodal analgesia but are not devoid of major complications.[4,5,6] Femur is supplied by femoral, obturator and sciatic nerve.[7] In search of better analgesics, the use of femoral nerve blocks (FNB) and supra-inguinal fascia iliaca compartment block (SFICB) for hip, femur, and knee injuries has increased with the advent of ultrasonography in anesthesia.[8] The Success rate of both FNB and SFICB is around 90% under ultrasound-guidance.[9,10] Some studies show the effective post-surgical analgesia after FNB and SFICB is similar and begin to decrease after 8 hours while some studies show FNB has significantly shorter effective analgesia than SFICB.[2,11] There are limited studies that compare

the post-operative analgesic effect of FNB and SFICB in femur fracture surgeries. As per today's need, in this study, we compared the two blocks for their post-operative analgesic superiority, along with the patient satisfac-tion they provide.

METHODS

This comparative study is a prospective double-blinded study, conducted from 21 September 2023 to 4 April 2024 in Nepalgunj Medical College Teaching Hospital, Nepalgunj. This study was conducted in patients who were operated for all types of femur fractures and belonging to ASA I-II, after obtaining institutional review committee permission and patient' consent. Patient were randomly assigned into the two groups with 1:1 ratio, after doing concealment with sequential numbered opaque sealed envelope technique.

Sample size calculation: The study by Gupta M and Kamath SS was used as a sample size calculation reference.[11] Sample size calculation was done with a formula for a two independent groups comparative study with continuous outcome, taking 95% confidence interval, 80% β power, and 10% dropout rate.[12]

Sample size: 2 SD2 (Z α/2 + Z β)2 / d2 = 37 each group

In our study, the primary objectives were to compare the time duration for the requirement of the first analgesic after the block and patient satisfaction, regarding analgesia for the first 24 hours, between the two groups. The comparison of visual analogue scale score and the variability of pulse rate and mean arterial pressure from their baseline values, between the two groups, at different time intervals were taken as the secondary objectives.

Inclusion Criteria:

•Femur fracture of all types

•ASA I-II

•16 years - 85 years

•Patients planned for spinal anesthesia

Exclusion criteria:

•Patient not giving consent for the procedure

•Local infection at the injection site

•Allergic to local anesthetic drugs

•Poly Trauma

•Patient dependent on narcotics, alcohol

•Patient difficult to communicate

•Patient on antipyretics, antidepressants and antipsy chotics.

After obtaining written consent, all the patients included in the study had routine pre-anesthetic checkups and routine premedication. On arrival to the operation room, their vitals were monitored, preload was done and spinal anesthesia was given with 2.7 ml bupivacaine. Intraoperative monitoring was continued. Once the surgery was over, under an aseptic technique, either ultra-sound-guided FNB or SFICB, with standard volume and concentration for each group was given to the patients by an experienced anesthesiologist.

Group 1-Femoral nerve block with 15 ml of 0.25% Bupivacaine

Group 2-Supra-inguinal Fascia iliaca compartment block with 30 ml of 0.25% Bupi-vacaine

The patients were blinded to the block type, as there was no pain during the blocks, due to spinal effect. After the blocks were given, the patients were shifted to the post-operative ward. The anesthesiologist was also blinded, as patients' vitals and VAS scores were recorded and noted in a proforma sheet by trained nurses at 30min, 1hr, 2hrs, 12hrs and 24hrs postoperatively. Patients' satisfaction was recorded with a scale from 0 (unsatisfied) to 5 (extremely satisfied), as per the Likert Scale of satisfaction after 24 hours. Any complications that occurred were recorded.

1	Extremely Not Satisfied
2	Not Satisfied
3	Moderately Satisfied
4	Very Satisfied
5	Extremely satisfied

Table I: Five-point Likert Scale for Satisfaction[13]

Statistical Analysis:

Data was analyzed with SPSS. T-test was applied for continuous data to compare the groups and either the chi-square test or Fisher's exact test (when more than 20% of cells had expected cell counts less than 5) was applied for ordinal data for comparing the two groups. Repeated measure ANOVA test was used for repeated measurements within each group.

RESULT

The demographic profiles between the two groups were comparable. The mean age in group 1 was 50 and in group 2 was 47, and statistically indifferent with a p-value of 0.583. Both groups had a higher number of males than females. The male:female ratio in group 1 was 23:14 and in group 2 was 28:9 and in total 51:23. Groups compared with Pearson 'Chi-square test, showed significant value of .209.

S.N		Group 1	Group 2	P value
1	Duration of Analgesia in minutes	538±295	795±376	.002
2	VAS at first Analgesia	4.46±1.23	4.30±1.19	.569

Table II: Comparison of duration of analgesia and VAS score at the first analgesia, between the groups (T-test)

Duration of analgesia was significantly greater in group 2 whereas VAS score was similar in both groups.

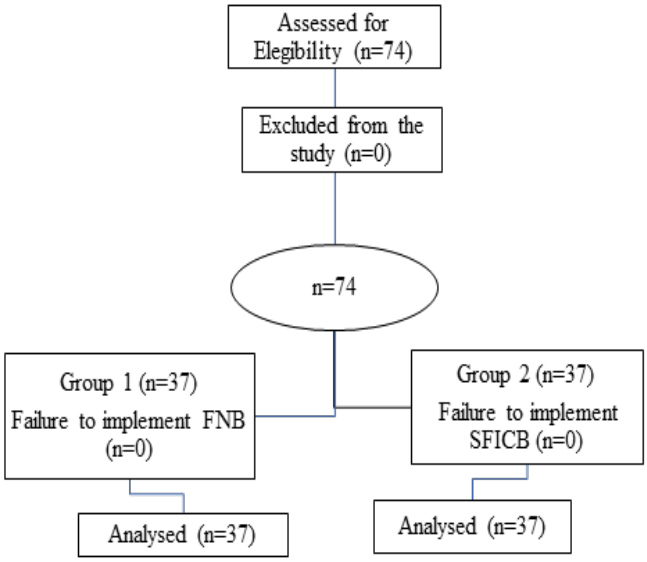

Figure 1: Flow diagram

			Group		Total	Exact sig. (2-sided)
			1	2		
Level of Satisfaction	2	Count	1	2	3	
		% within Group	2.7%	5.4%	4.1%	
	3	Count	11	5	16	
		% within Group	29.7%	13.5%	21.6%	.249
	4	Count	16	15	31	
		% within Group	43.2%	40.5%	41.9%	
	5	Count	9	15	24	
		% within Group	24.3%	40.5%	32.4%	
Total		Count	37	37	74	
		% within Group	100.0%	100.0%	100.0%	

Table III: Comparison of the level of satisfaction between the groups (Fisher's exact test)

Although the difference in level of satisfaction between the group was statistically not significant, the percentage of level 5 satisfaction was higher in group 2.

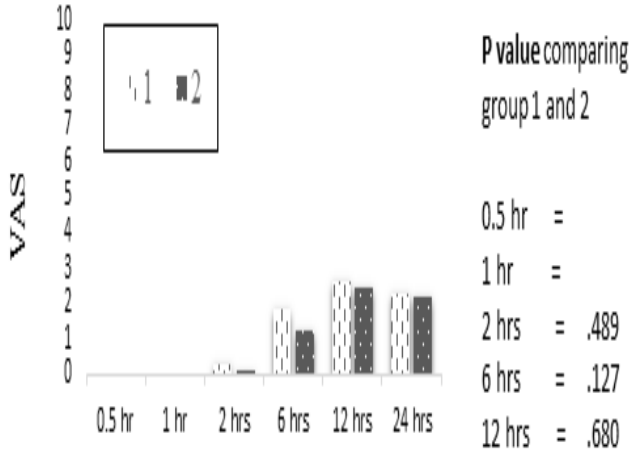

Figure 2: Comparison of VAS score at different time intervals between groups (T test)

VAS score at different time intervals between the groups was statistically not significant.

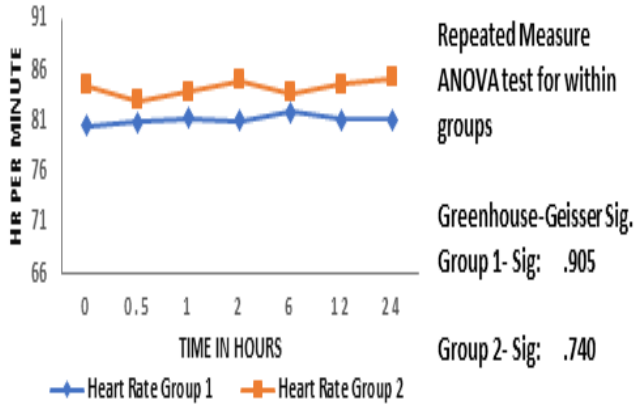

Figure 3: Comparison of heart rate at different time intervals within and between groups (Re-peated measure ANOVA test)

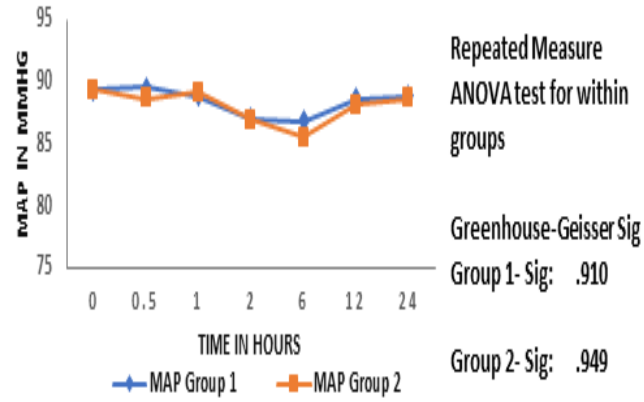

Figure 4: Comparison of mean arterial pressure at different time intervals within and between groups (Repeated measure ANOVA test)

The heart rate and the mean arterial pressure were statistically similar within each group at the recorded time intervals.

DISCUSSION

Opioids, although considered good analgesics, when used as a part of multimodal analgesia for optimal pain control, are frequently associated with hypoxemia, hypotension, nausea, vomiting, and delayed hospital discharge.[14] Analgesia with opioid-sparing effects, such as epidural analgesia, peripheral nerve block, periarticular injection, local infiltration of local anesthetic solution, NSAIDs, and acetaminophen, for post-operative analgesia have been recommended by enhanced recovery after surgery (ERAS) protocols.[15] NSAIDS are associated with peptic ulcers, gastroin-testinal bleeding and nephrotoxicity.[6] Epidural analgesia although very effective for postoperative pain, has disadvantages of urinary retention, hypotension, and bilateral muscle weakness.[4] Hence, Peripheral nerve blocks are being effectively used as an alternate method for post-operative pain control. It has been shown that peripheral nerve block accelerates rehabilitation, reduces systemic analgesic doses, and shortens hospital stays.[16]

In our study, the duration of analgesia in group 1 was 538± 295 minutes, and in group 2 was 795± 376 minutes i.e. 8.96 ± 4.91 hrs vs 13.25 ± 6.2 hrs. The difference was statistically significant with a p-value of .002. Similarly, in a study done by Gupta M et al in 70 patients who underwent proximal femur fracture surgeries, the mean first rescue analgesia time for the FICB was 7.1 ± 2.1 hours, while for the FNB it was 5.2 ± 0.7 hours. The P value was less than 0.001, which was statistically significant.[11]

In contrast to our study, a study by Shukla U et al in 105 patients posted for DHS and PFN were given either FNB or infrainguinal FICB. They found that the first requirement of analgesic in the FNB group was 8.24±1.880 hrs and in the infrainguinal FICB group was 8.09±1.869, which had statistically no significant difference, with a p-value of 0.72.[2]

In our study, though group 1 patients' had predominantly 3 and 4 levels of satisfaction, group 2 had mostly 4 and 5 levels of satisfaction. When a statistical comparison was made, there was no significant difference in overall level of satisfaction between the groups. The p-value was .249. This study is consistent with the meta-analysis by Li XD et al which included 13 trials. They concluded no significant difference occurred in patients' level of satisfaction between the groups with a P value of 0.99.17 In the same meta-analysis, VAS scores recorded at different time intervals during the first 24 hours of post-block were statistically indifferent, except at 4 hours where a decrease of the VAS score was seen in the FICB group.[17] Similarly, in our study, the 24-hour VAS score when compared did not show any statistically significant difference between the two groups with p values .489, .127, .680, and .663 at 2 hours, 6 hours, 12 hours and 12 hours post block. VAS was 0 in both groups, at the time of block injection, at the first half hour and one hour post block, which could be due to persistent spinal effect.

VAS at the time of the first analgesia in Group 1 was 4.46±1.23 and in Group 2 was 4.30±1.19. the difference was statistically not significant, with a p-value of .569.

The post-operative heart rate and mean arterial pressure taken at 2-hour intervals during the first 24 hours within each femoral block group and fascia iliaca compartment block group were statis-tically not different in a study done by Gupta M et al.[11] Similarly, repeated measure ANOVA test applied within each group of our study showed no significant statistical variability in the heart rate and the mean arterial pressures in the first 24 hours.

No local anesthesia and block-related complications were seen in either group, similar to the study done by Shukla U et al.[2]

LIMITATIONS

No control group was made in our study. It is better to do other studies where a control group is also added along with the block groups for comparison.

CONCLUSION

Supra-inguinal fascia iliaca block provides a longer duration of analgesia than femoral nerve block in femur fracture fixation. The level of satisfaction regarding analgesia in both groups is high but comparable. No significant side effects are seen with either block type.

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ORIGINAL ARTICLE

A Comparison of the Efficacy Between Mass Closure and Layer by Layer Closure of Midline Laparotomy and Its Influence on Wound Healing: A Prospective Study

Kidwai R, Sharma A

ABSTRACT

Introduction: The midline laparotomy is the most common approach in surgery which gives access to viscera of the abdomen. Following surgery, the laparotomy wound is sutured by two techniques: mass closure and layer by layer closure. The primary objective of wound closure is to restore the function of the abdominal wall. However the method adopted for incision closure has an influence on the outcomes of wound healing. Our study wants to compare the two suture techniques in terms of efficacy and wound healing. **Aims:** To compare conventional layer by layer suture technique versus mass closure in terms of efficacy and wound healing in patients with midline laparotomy approach. **Methods:** A Prospective study with a population size of 94 was performed at the surgery department of Nepalgunj medical college teaching hospital, Nepalgunj, starting from September 2023 to May 2024. A pre-tested questionnaire containing structural, semi-structural, and open-ended questions in printed form was made as a data collection tool. All the people in this study were interviewed after receiving their consent. Patients were followed up for 3 months to rule out any post operative complications. **Results:** Total 94 patients were studied among which majority of patients were in 30-39 age group. Male outnumbered the females. Incidence of early complications like seroma, wound infection and wound dehiscence was more in layered closure group as compared to mass closure. Average time taken in layered vs. mass closure group is 15 vs 25 mins respectively. Overall wound healing was found more efficacious in mass closure group which is also cost effective than layered closure group. **Conclusion:** Mass closure technique is less time consuming, along fewer instances of surgical site infection and dehiscence with better overall compliance.

Keywords: Efficacy, Laparotomy, Layered vs Mass closure, Wound healing

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INTRODUCTION

Wound dehiscence involves the partial or complete separation of wound edges, often leading to acute wound failure.[1] The risk of a burst abdomen is highest between the 6th to 9th postoperative day.[2] The strength of the abdominal wound closure is influenced by both the tissues' suture holding capacity and vice versa.[1] The choice of incision and closure technique in abdominal surgery significantly impacts surgical success, considering factors like ease, time, costs, and wound complication rates.[3,4,5] While layer-by-layer closure was traditionally accepted, recent studies suggest that the mass closure technique offer superior outcomes.[6,7] Mass closure involves all the layers closed en masse, except for the skin which is sutured separately. The primary advantage is less operating time and good approximation, minimizing tension across the wound edges. However may lead to inadequate vascularization of the deeper tissues, impairing wound healing and increasing risk of SSI due to limited wound inspection.

In this study, evaluated and compared the efficacy of the layer -by-layer and mass closure technique, based on postoperative wound complications, time required and the strength of the wound.

METHODS

This study is a hospital based prospective study conducted at Surgery department of Nepalgunj Medical College Teaching Hospital, Nepalgunj from September 2023 to May 2024. In this study, a total of 94 patients who underwent both elective and emergency laparotomies through vertical midline incisions were taken as study population. Equal number of cases (47 each) were studied for comparison in closure with the two techniques, mass closure and layered closure. All patients between age group 20-60 years undergoing ventral midline approach with at least 10 cm of incision either in elective or emergency case were taken in the study. However age <20

years or >70 years, other approach of incision like paramedian, transverse or other non-vertical, patients with any previous abdominal surgeries and co-morbidities like Hypertension, Diabetes Mellitus (DM), Chronic obstructive pulmonary disease (COPD), Tuberculosis (TB) and other chronic conditions were excluded from our study. This study was done mainly to compare the two methods of midline laparotomy closure i.e. mass and layered closure taking into regard wound complications (wound infection, dehiscence, incisional hernia, time taken for closure and wound strength. We started our study after taking the Ethical clearance from the institutional review committee (IRC). During the study period, patients meeting the inclusion criteria were enrolled in our study and grouped accordingly. First group contained patients with mass closure with polypropylene 1-0 in continuous fashion except the skin which was close with subcutaneous tissue with 1-0 polygalactin in simple interrupted manner while skin with staples. A detailed proforma was developed and written consent was taken from the patients. Statistical Analysis - Data was analyzed in statistical package program SPSS version 25. All numerical variables were tabulated and calculated by using descriptive statistics, Chi-square test, and odds ratio. P value less than 0.05 was considered as of statistical significance. To pass the inclusion criteria; head to toe clinical examination of the patient were made and recorded to rule out anemia, jaundice, obesity and nutritional status. Patients landing up in emergency had specific investigations like plain X-ray abdomen erect and supine, USG abdomen and pelvis, CT abdomen to compliment the diagnosis.

After the operation the patients were closely observed in the post-op unit till the day of discharge from the hospital. Common postoperative complications like vomiting, abdominal distension, wound infection and burst abdomen were noted during the 3rd, 5th and 7th post op days. The patients were instructed to care their surgical site properly and counseled for hospital visit on the day of suture removal. Further instructions were given for follow up in every subsequent month till 3 months. At the time of suture removal and during follow up period, the surgical site was thoroughly inspected for any infection or dehiscence, pain, incisional hernia, sinus or scar formation. If wound discharge was present, pus was sent for culture and sensitivity. The records of all the patients were maintained in our developed proforma.

RESULTS

A total of 94patients aged between age group 20-60 years meeting inclusion criteria were included in our study. Males constituted 59.57% of study population and remaining were females with a sex ratio of 1.47:1 (fig.1). Maximum numbers of patients belonged to age group 30-39 years (40.43%) whereas least number of patients belonged to 50-59 years (9.57%) as shown in fig.2. Out of 94 patients who underwent midline laparotomy, 50% of patients underwent mass closure among which maximum 52.63% were from the age group 30-39 years. Among the 50% of patients who had layered suture closure, 47.39% were from 30-39 age group which constituted the maximum number as presented in table I. In our study, 31 (32.98%) elective and 63 (67.02%) of the emergency cases were taken and categorized into mass closure and layer closure groups. In the mass closure group 41.94% patients had undergone elective whereas 53.97% patients underwent emergency surgery. In the layered closure group 58.06% patients underwent elective surgery whereas 46.03% patients underwent emergency surgery respectively as shown in table II. Association of wound infection among the elective or emergency cases and closing techniques and its impact on wound healing is depicted in table III. The rate of infection in our overall study was 22.34%. The surgical site infection (SSI) rate in the mass closure group was 12.76% while it was 31.91% in the layered closure group. Statistically this was found to be significant with the p value 0.046. It implies that the rate of wound infection was significantly lower in the mass closure group as compared to the layered closure group as shown in contingency table IV. Association of wound infection among the cases and its association with wound dehiscence is presented in table V. The rate of wound dehiscence in our overall study was 8.51%.Among the layered closure technique only one patient (5.55%) from elective and 5 patients (17.24%) from the emergency group developed wound dehiscence while from the mass closure group only two patients (5.88%) from the emergency surgery group developed wound dehiscence. The association of surgical closing techniques on wound dehiscence is found to be statistically non-significant with a p value of 0.267 as shown in contingency table VI.

The average time taken for closure of abdominal wound using mass closure technique was 15 minutes (range 14 to 17 minutes) as compared to 25 minutes (23 to 28 minutes) in layered closure as shown in table VII. It was statistically found to be significant.

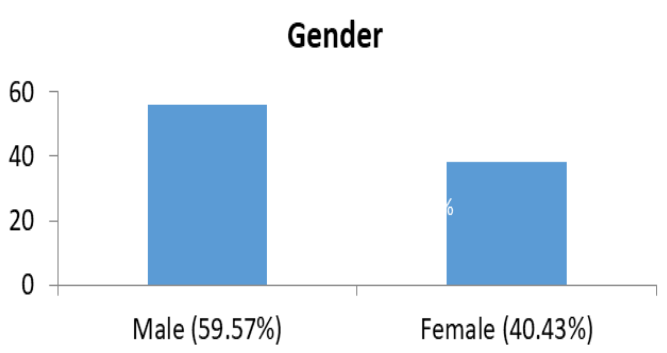

Figure 1: Sex distribution of Patients

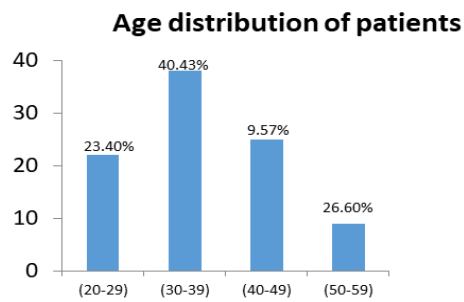

Figure 2: Distribution of age of patients

Age Group (In Years)	Closure Techniques		Total	Percentage (%)
	Mass	Layered		
20-29	9	13	22	23.40
30-39	20	18	38	40.43
40-49	13	12	25	26.60
50-59	5	4	9	9.57
Total	47	47	94	100

Table I: Type of closing technique according to age

Nature of surgery	Closure Techniques		Total	Percentage (%)
	Mass	Layered		
Elective	13	18	31	32.98
Emergency	34	29	63	67.02
Total	47	47	94	100%

Table II : Distribution of cases based upon nature of surgery and the closing techniques

Type of Closure	Elective			Emergency			Total Wound infection	Percentage (%)
	Number of cases	Wound infection	%	Number of cases	Wound infection	%		
Mass	13	1	7.69	34	5	14.70	6	12.76
Layered	18	4	26.67	29	11	37.93	15	31.91

Table III: Distribution of cases based upon the incidence of wound infection in relation to the closing techniques

Type of closure	Wound infected	Wound healthy	Total
Mass	6	41	47
Layered	15	32	47
Total	21	73	94

Table IV : 2 X 2 contingency table for calculation of p value (The two tailed p value using Fisher's exact test is 0.0460 i.e. statistically significant)

Type of Closure	Elective			Emergency			Total Wound infection	Percentage (%)
	Number of cases	Wound dehiscence	%	Number of cases	Wound dehiscence	%		
Mass	13	0	0	34	2	5.88	2	4.25
Layered	18	1	5.55	29	5	17.24	6	12.76

Table V: Distribution of cases based upon the incidence of wound dehiscence in relation to the closing techniques

Type of closure	Wound dehiscence	Wound healthy	Total
Mass	2	45	47
Layered	6	41	47
Total	8	86	94

Table VI: 2 X 2 contingency table for calculation of p value (The two tailed p value using Fisher's exact test is 0.2673 i.e. not statistically significant)

Type of closure	No. of cases	Average time taken (Minutes)
Mass	47	15
Layered	47	25
Total	8	86

Table VII: Showing average time taken for different closing techniques

DISCUSSION

Wound closure is a critical step in laparotomy surgeries, as it significantly impacts postoperative complications, incisional hernias, patient discomfort, and overall recovery. Dambrin reported the decreased incidence of wound evisceration with a mass layer technique.[8] Hoerr et al in their study at Clevel and clinic suggested better wound closure with mass technique which is also supported by Spencer et al[9,10] In our study among 94 patients, we observed that mass closure technique resulted in better healing of wound than layered technique. Higgins et al in their experimental study showed abdominal incisions closed by mass suture technique had greater strength than those closed with conventional layer method.[11]

The rate of infection in our overall study was 22.34%. The infection rate in the mass closure group was 12.76% while it was 31.91% in the layered closure group. A research conducted by Kumar S in Coimbatore Medical college showed 30% of overall infection rate among the study population.[12]

Our data show 12.76% wound infection in mass closure group and 31.91% in layered closure group. Our results shows similarity with various researches with 12% vs 48% Kumar S, 6% vs 8% Sreeharsha et al, 6% vs 8% Kumar et al, 20% vs 37.5% Chhabra et al 6.6% vs 10% Walia D S, 22.5% vs 47.5% Choudhury.[12,5,4,13,14,15] However contrarily layered technique was associated in less wound infection than mass closure by 0% vs 29% Pollock, 0% vs 8.5% Shepherd, 18% vs 22% Ausobsky, 0% vs 7.9% Israelsson, 0% vs 3.5% Carlson, 6.6% vs 10% Deshmukh et al.[16,17,18,19,20,21]

The rate of wound dehiscence in our overall study was 8.51% which represents 5.55% from layered group and17.24% from the mass closure group. Study by Kumar S represented 4% overall wound dehiscence as 8% vs 0%.[12] Various researchers reflected their results in favor of our study like 4% vs 2% Sreeharsha et al 2% vs 0% Kumar et al, 10% vs 5% Chhabra et al, 10% vs 3.3% Walia D S, 3.75% vs 0% Choudhury, 1.48% vs 0.6%

Ausobsky, 3.88% vs 0.31% Kirk, 10.28% vs 0.92% Goligher, 1.05% vs 1.04% Irvin.[13,5,4,14,15,18,22,23,24] However contrarily layered technique was associated in less wound infection than mass closure by 0% vs 0.7%% Israelsson, 0% vs 1.3% Carlson.[19,20]

Our study concludes the average time abdominal wound closure using mass vs layered technique to be 15 minutes and 25 minutes which is almost similar to time taken in a Study by Kumar S at Coimbatore Medical College.[12]

LIMITATIONS

The limitation of our study was that it was a single center study conducted in a small sample size, with convenient sampling so for generalization of results in multicentric study on a larger sample size should be done. The length of the incision site and total duration of hospital stay of the patients might have influenced by social and financial factors which is not avoided in this study.

CONCLUSION

Our study comparing mass versus layered closure of midline laparotomy found that mass closure is more effective in providing strength to the wound. Further we conclude that mass closure results in fewer instances of wound infection and dehiscence, with relatively less operative time and better overall compliance.

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ORIGINAL ARTICLE

Accessibility of Finding Tuberculosis Case Actively, Separate Safely and Treat Effectively (FAST) Strategy for Early Detection of Suspected and Symptomatic Tuberculosis Patients: A Hospital Based Quantitative Study

Shrestha M[1], Singh PS[1], Rana D[1], Jayswal A[2]

ABSTRACT

Introduction: Tuberculosis is a contagious disease which has always been a challenge over the course of human history. It is known to spread mostly from persons with undiagnosed and suspected tuberculosis cases. Diagnosing tuberculosis in an early stage with effective treatment is one of the best ways to reduce the burden of tuberculosis. Finding cases Actively, Separate safely and Treat effectively (FAST) Strategy in Nepal, is a rapid diagnostic tool for rapid tuberculosis case detection. **Aims:** To access tuberculosis case Actively, Separate safely and Treat effectively (FAST) strategy for suspected and symptomatic tuberculosis patients coming to the hospital for early case detection and also to identify patient's health care behaviour, technical barrier during surveillance. **Methods:** An observational quantitative study of active cough surveillance was carried at an entry point of FAST corner of Nepalgunj Medical College Teaching Hospital, Banke from April 2023 to December 2023. Scrutinized data was obtained by purposive sampling method with sample size 128 from FAST corner. **Results:** Maximum cases belonged to the aged group 65 and above having lower middle to lower socioeconomic status. Most of them were from joint family with contact history of tuberculosis in 35 (27.3) % of total cases. Out of total cases, 72 (56.25) % were confirmed with tuberculosis. Among those confirmed tuberculosis cases, multi drug resistance TB was found in 6 (4.7) %. Uses of mask was found significant (P< 0.05) in our study although number of these health care behaviour were less appropriate. Pneumonia was a significant association 17 (P = 0.004) with tuberculosis patient. Insufficient volunteers, and limited Gene xpert machine were major barriers to implement FAST strategy screening in Hospital. **Conclusion:** FAST strategy is feasible tool in high tuberculosis burden healthcare settings in Nepal. However, the technical and behavioral factors should be managed to ensure an effective approach.

Keywords: FAST strategy, Gene xpert machine, Multi drug resistance (MDRtb), Tuberculosis (TB)

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INTRODUCTION

Tuberculosis is one of the most contagious diseases and is second leading cause of deaths worldwide, yet it is preventable and curable. The mode of transmission of the tuberculosis is through droplet infection from patients suffering from pulmonary tuberculosis.[1] An estimated data of more than ten million people is living with tuberculosis globally. According to an epidemiological survey done in Nepal, in 2019, annual TB incidence of 245 per 100,000 population is noted, which is relatively 1.6 times higher than in previous estimated years. National tuberculosis programme Nepal has established various tuberculosis surveillance programme which significantly reduced the burden of disease and number of tuberculosis related deaths.[2]

FAST (find actively separate safely and treat effectively) strategy is one of the modest surveillance methods, collaborated by Ministry of Health and Population Nepal, USAID and Kapilvastu integrated development services project (KIDS), Nepal.[3] FAST strategy is used to reduce tuberculosis cases or drug resistant TB transmission in in-patient and out- patient healthcare settings.[4] A Study conducted in Bangladesh shows that FAST implementation revealed a high frequency of unsuspected TB in hospitalized patients.[5] The aim of the study is to access FAST

strategy among suspected, symptomatic tuberculosis patients and also identifying the status of health care behaviour and technical barriers for proper implementation of FAST strategy in Nepalgunj medical college teaching hospital. Hence, aiming on reduction of tuberculosis transmission significantly by early detection and prompt DOTS regime. It also fulfills the gap among researchers for further analyzing qualitative study on FAST surveillance.

METHODS

A prospective observational quantitative design was conducted for active cough surveillance of symptomatic and suspected tuberculosis patients. Three sets of informant interviews were taken at entry point i.e. in- patient, out- patient, billing counters, pharmacies and FAST corner of Nepalgunj Medical College Teaching Hospital, Banke. Similarly, focal person of FAST strategy were also interviewed purposively about indoor settings at FAST corner. The study period was carried out for nine months from April 2023 to December 2023 after obtaining ethical clearance from institutional review board of Nepalgunj Medical College. Verbal and written consent has been taken from each patient and also from designated FAST corner. A purposive sampling technique was utilized to recruit study participants. The sample size was estimated by using prevalence in proportion method of smear-positive cases in pulmonary tuberculosis aged >15 years. With the assumption that positive to negative ratio (PN ratio) was 2 and case notification rate was 93 in province number 5[5] and so the estimated prevalence of smear positive PTB (p) would be: smear-positive case notification x 2 = 93x 2 = 186 per 100,000 population.[6] Therefore, the estimated prevalence in proportion (p) was 0.18. Hence the approximated sample size was 128 with 7% absolute precision at 95% confidence interval (CI) and 10% non response rate. This survey has estimated prevalence of smear-positive pulmonary tuberculosis to determine the sample size, though the primary outcome was the Gene Xpert positive pulmonary tuberculosis. All those patients or clients aged more than 15 years coming to the hospital with symptomatic cough and suspected tuberculosis were included for active cough surveillance in the study. The instrument tool consists of semi structured questionnaire as interview tool of three sets consisting of set I as individual's profile and sociodemographic profile, set II as health care behavior and set III as indoor setting after carefully reviewing terminology and constructs associated with published theories of consolidated framework for advancing implementation research (CFIR).[7] The main screening tool was Gene Xpert test CBNAAT (cartridge based nucleic acid amplification test), a widely accepted rapid diagnostic test for Tuberculosis detection as well as Rifampicin resistance in direct smear negative cases to confirm the diagnosis.[8] Pre testing was done among ten percent of population to ensure the completeness of methodology and questionnaire sets.

RESULTS

Among symptomatic and suspected pulmonary tuberculosis cases from in-patient, out-patient, emergency, billing counter, brought by volunteers of FAST corner during study period, 128 cases were selected as a sample study for active cough surveillance and sent for Gene Xpert test. Thirty cases were male and eighteen cases were female belonged to aged group 65 and above as shown in figure 1.

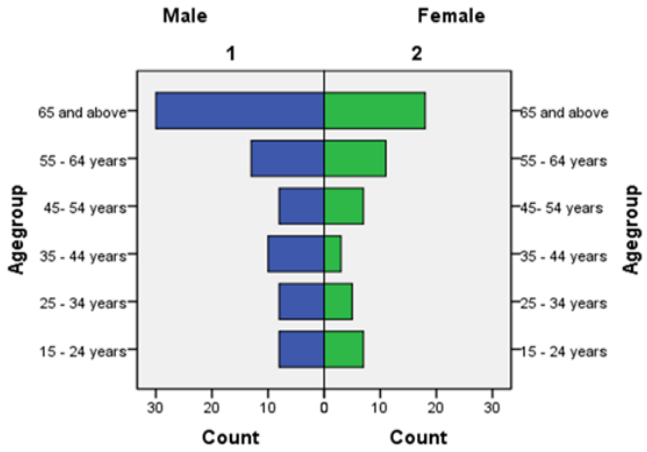

Figure 1: Histogram chart showing distribution of age group and gender

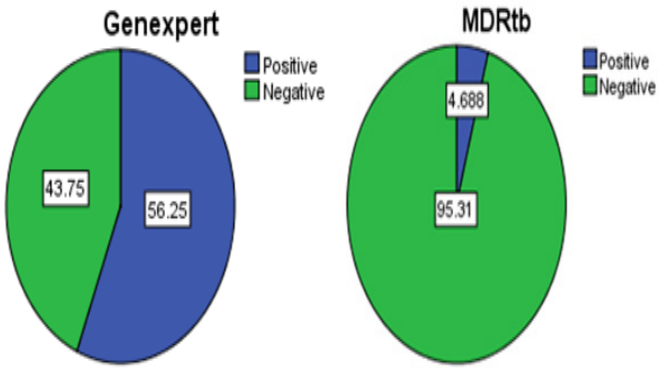

Figure: i ***Figure: ii***

Figure 2: Pie diagram showing total number of TB and MDR TB cases

Among 128 Gene xpert tested cases, 72 (56.25) % were tested positive for tuberculosis and 56 (43.8) % were tested negative for tuberculosis. Similarly, among those confirmed tuberculosis cases, 6 (4.7) % cases were found to have multi drug resistance tuberculosis as given in figure 2. Out of total cases, 90 (70.3) % cases were from joint family having lower middle class in 53 (41.4) % and lower class in 57 (44.5) %. It was also found that 29 (40.3) % had history of contact TB in confirmed tuberculosis cases while 50 (89.3) % had neither history of contact TB nor tested positive for tuberculosis. Thus, it revealed that contact history of tuberculosis within family members was highly significant factor for TB transmission in joint family (P <0.05) as shown in table I.

Variable		Gene xpert		P value
		Positive	Negative	
Contact history of TB	Yes	29 (40.3) %	6 (10.7) %	0.001*
	No	43 (59.7) %	50 (89.3) %	

Table I: Association between tested cases and contact history of tuberculosis

Out of total sample population, 59 (46.1) % had co morbid conditions like pneumonia, hypertension, diabetes, heart disease etc. However, out of those tested and confirmed cases of tuberculosis by Gene xpert, seventeen TB positive cases were significantly associated with pneumonia ($p < 0.5$) as shown in table II. While no case of HIV has seen with confirmed TB during study period.

Presence of co morbidity	Gene xpert		P-Value
	Positive	Negative	
Pneumonia	17	3	0.004*
Hypertension	12	11	0.41
Diabetes mellitus	13	9	0.47
Heart disease	4	9	0.49
HIV/AIDS	0	0	-

P ≤ 0.05

Table II: Association between Gene xpert confirmed cases and co morbid status

Regarding health care behaviour of patient, out of those confirmed TB cases, thirty four patients had habit of wearing mask. Although use of mask was statistically significant (P = 0.01), thirty eight patients had never put on mask also tested TB positive as presented on table III. Hence it was depicted that use of mask has not found to be a potential health care behaviour tool to prevent droplet infection. Instead, we must rule out proper use of mask, contact history of TB and over crowding within health facilities and in family members too.

Health care behaviour		Gene xpert		P-Value
		Positive	Negative	
Use of mask	Yes	34	11	
	No	38	45	0.001*
Hospital admission	Yes	15	1	0.001*
	No	57	55	
Follow up	Yes	22	6	0.006
	No	50	50	

P ≤ 0.05

Table III: Association between Gene xpert tested case and health care behaviour of patient

Meanwhile, during interview taken with the health care provider at FAST corner, they were concerned about the inadequate supply of Information Education Communication (IEC) material related tuberculosis, limited Gene xpert machine and late maintenance of Gene xpert machine. However, FAST service was provided promptly even though health care volunteers were still on deficit. All Gene xpert positive cases were reported by program coordinators and relayed to DOTS in charge to ensure immediate initiation of effective DOTS treatment and provide awareness to family members for potential TB threats.

DISCUSSION

Our study is one of the rigorous measurement of FAST services in Nepalgunj medical college teaching hospital, Banke for continuation of effective FAST tuberculosis services and anti-tuberculosis treatment. Active surveillance for tuberculosis should be performed in high risk communities in combination with active case-finding in health care facilities. Gene xpert is the primary investigation tool in our study, had a distinct advantage over smear microscopy test in identifying suspected and drug resistance tuberculosis efficiently. Over total 128 sample population, 72 (56.25)% were confirmed with tuberculosis, 6 (4.7)% were multi drug resistance TB cases which were immediately sent for DOTS therapy in the same day without any delay. It represents that Gene xpert test is one of the advanced diagnostic tool for tuberculosis screening in the hospital. This study is similar to prospective study conducted by L. Gabelaia[1] et al in the similar way of early TB detection.[8] Since our study concurs that 90 (70.3)% of cases had joint family and belonged to lower middle and lower classes, there could be a chance of intra house hold transmission on the basis of history of contact TB cases in family members. Similar type of study revealed in 150 patients by Jember T et al, where 138 cases were tuberculosis positive on the basis of analysis confirmed by transmission of tuberculosis among members of 53 families.[9]

Studies done in hospitals of Miami and Florida, concurrent TB and pneumonia cases were found in HIV infected patients.[10] However, our study exhibited seventeen cases of pneumonia and zero HIV case among confirmed tuberculosis patients. Health care behaviours were equally important factor to reduce the incidence of pulmonary tuberculosis cases in other studies.[11,12] In contrast, our study revealed that uses of mask, hospital admission and timely follow ups were significantly less common factor. For continuous use of gene xpert machine, uninterrupted supply of cartridge is required, and the number of machine should be increased. Our study identified that the Gene Xpert module failure at a time and delayed in maintenance, which significantly produced the gap in FAST strategy implementation. The result is similar to the study conducted in Bangladesh and Nepal which identified that the machinery capacity is important for the sustainability and expandability for FAST strategy programme.[3, 13] Besides Gene xpert test, FAST strategy must carry a chest radiograph examination (irrespective of symptoms) to identify additional individuals with transmissible extra pulmonary TB disease in future research.

LIMITATION

Since it is single centered study, thus, may not represent the study of whole population of Banke District.

CONCLUSION

FAST, as an effective strategy for preventing transmission of TB, should be considered as a primary investigation tool and incorporated into the National Health Service for all government and private hospitals through health policy. It reduces tuberculosis prevalence by early case detection and initiation of effective TB treatment. Effective tuberculosis diagnosis and treatment also represents a measurable improvement in quality of care for patients, meeting the target of End TB strategy.

In high burden of tuberculosis and low resource settings, health care provider may face various challenges like limited infrastructure, inadequate volunteers on floor, and minimum supply of information education communication material (IEC) for proper counselling. These reported barriers in indoor settings may hinder on successful implementation of FAST approach. Therefore, regular monitoring and timely supervision are mandatory in clear policy making at national level for FAST tuberculosis surveillance.

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CASE REPORT

Krait bite: A Diagnostic Dilemma

Acharya D[1], Yadav P[1], BK SK[2], Ghimire P[3], Pandey P[4]

ABSTRACT

In Nepal, fatalities resulting from snakebites are alarmingly common, yet the issue remains inadequately addressed, prompting experts to characterize it as an imminent but overlooked crisis. Among the venomous snakes, the Common Krait stands out for its exceptionally lethal venom, rich in neurotoxins that induce muscle paralysis. Particularly in rural areas, snakebites pose a significant threat to public health. However, the diagnostic challenge posed by patients with obscure medical histories devoid of known snakebite incidents is seldom documented in medical literature. In this context, we present the case of a 22-year-old male patient presenting with nonspecific symptoms and an indistinct medical background.

Keywords: Krait bite, Venom

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INTRODUCTION

In Nepal, snakebites represent a significant public health concern. In Nepal, documented incidence rates reveal 1,162 snakebites per 100,000 individuals annually, with 604 cases of envenomation per 100,000 people each year.[1] The manifestation of symptoms following a venomous snakebite can vary widely. Failure by healthcare professionals to promptly identify a toxic snakebite, particularly from a Krait, can lead to delays in administering appropriate antivenom, resulting in adverse outcomes. Notably, Krait bites often lack visible signs of injury and pain at the bite site. Venom from poisonous snakes may exhibit myotoxic, neurotoxic, or vasculotoxic effects. Neurotoxic snakebites can precipitate descending cranial nerve paralysis, potentially culminating in respiratory failure and fatality.[2] Clinical diagnosis of Krait bites is further complicated by the absence of local indicators and pain, with these snakes typically biting during nocturnal foraging activities.[3]

Case Report

A 22-year-old male patient presented with sudden onset stomach pain and dysphagia, initially attempting self-management with over-the-counter remedies. Following evaluation at the surgical outpatient department, he was promptly referred to the emergency room for further assessment and consultation with the medicine department, as no surgical cause for his abdominal pain was identified. Lacking a precise medical history, the patient's symptoms served as the primary basis for evaluation. Continuous monitoring of vital signs was instituted in the emergency ward.

Upon consultation with an ENT team regarding worsening dysphagia symptoms and the presence of a "broken neck sign" on physical examination, a soft tissue neck X-ray was performed. The patient's level of consciousness progressively declined, necessitating endotracheal intubation.

Subsequent inquiry into the patient's background revealed that he had slept on the floor inside an open hut situated in an agricultural area. Although the patient could not recall any details of a snakebite, the geographical location and symptomatology suggested a probable Krait snake envenomation, given that Kraits typically forage at night. Laboratory investigations indicated normal total blood count and renal function; however, hepatosplenomegaly was suspected based on abdominal and pelvic ultrasonography findings. The patient received primary therapeutic

interventions, including intravenous anti-snake venom serum, antibiotics, and multivitamins during hospitalization. Supportive care and antivenom therapy constituted the cornerstone of treatment for venomous snakebites. Given the prolonged neuromuscular effects of Krait venom, mechanical ventilation was maintained until receptor regeneration occurred.

Upon detection of the snakebite, the patient received 10 vials of anti-snake venom serum intravenously, in addition to doses of glycopyrrolate, proton pump inhibitor, adrenaline, atropine, and hydrocortisone. Prompt access to medical care and adherence to a standard treatment protocol contributed to a favorable prognosis, with the patient displaying stable vital signs and orientation to time, place, and person upon recovery.

DISCUSSION

Diagnosing Krait snakebites presents a challenge due to the subtle local symptoms and signs often associated with such incidents. The difficulty is compounded when patients are unaware of being bitten. Proficiency in snake identification is crucial for optimal clinical management, as it guides healthcare providers in selecting appropriate treatment strategies. In this case, the patient's lack of awareness regarding the bite led to delayed diagnosis, compromising management. Fortunately, timely diagnosis ultimately contributed to his survival.

Addressing such complex emergencies with potentially grave consequences necessitates raising awareness among rural populations regarding the risks posed by venomous snakes. Vulnerability in the context of snakebite envenomation refers to the conditions resulting from physical, socioeconomic, and environmental factors that render individuals or communities more susceptible to adverse outcomes. This understanding underpins efforts to assess vulnerability to snakebite envenomation (SBE) systematically.

In the Terai region, where snakebite incidents are prevalent, two primary categories of life-threatening SBE systemic syndromes neurotoxic and hemotoxic predominate. Rapid recognition and treatment of neurotoxic envenomation are imperative, as severe symptoms may manifest within an hour post-bite.[4,5]

Across South Asian nations, comprehensive strategies for snake population management and bite prevention are lacking. Educating individuals at risk is paramount for preventing many incidents. In Nepal, nocturnal biting risks can be mitigated by employing cots instead of sleeping on the ground and using bed nets.[6,7]

Environmental modifications, such as clearing garbage, termite mounds, and firewood from human settlement areas, help deter snakes from congregating. Additionally, efforts to control rodent populations reduce the likelihood of attracting snakes. Regular inspection of mud walls and thatched roofs-common snake hiding spots can further minimize encounters.[8]

Simple precautions, such as wearing boots and long pants when engaging in agricultural activities and using torches or lanterns while traversing trails at night, significantly reduce the incidence of snakebites. By implementing these measures, communities can effectively mitigate the risk of snakebite incidents and their associated consequences.

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