www.jmscr.igmpublication.org
Impact Factor 5.84
Index Copernicus Value: 71.58
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v5i11.94

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Preservation of Intercostobrachial Nerve Relieves Pain and Sensory Disturbances and Improves Quality of Life of Post Mastectomy Patients

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Abstract

Background: *Postmastectomy pain and sensory disturbances is a complication experienced through majority of the sufferers who undergo breast surgical operation forbreast cancers. The etiology of this neuropathic pain appears to be complex and it is s still understood underneath par. Injury to the Intercostobrachial (ICB) nerve is presumed to be the dominant one. This prospective observe was designed to appraise the effect of protection of Intercostobrachial nerve on post mastectomy pain and sensory disturbances.*

Methods: *This cross sectional comparative study was done in Rajah Muthiah Medical College and Hospital, Chidambaram between July 2015 to July 2017. In-patients who underwent Modified Radical Mastectomy had been included in the study. The sufferers were divided into two groups. Group A -d patients with ICB nerve preserved and Group B - with ICB nerve sectioned. The patients Evaluated for the post operative and psychosocial morbidities immediate post operative and six months after the MRM via the use of numerous questionnaire and scales.*

Results: *Fifty patients who underwent MRM were observed out of which nineteen sufferers ICBN were preserved, General Quality of life as Measured by WHOQOL scaleand the observation for ICBN preserved patients is 107% and for ICBN sectioned 90.*

Conclusions: *Preservation of ICB nerve may significantly lower the occurrence of PMPS and sensory disturbances. Quality of life of patients with Breast Cancer who underwent MRM with intact ICB nerve is much better than those with ICB sectioned.*

Keywords: *Intercostobrachial nerve, Modified Radical Mastectomy, Post mastectomy pain syndrome. Quality of lifestyles.*

Introduction

The breast cancers prevalence rate in India has risen in recent years.[1] With growing occurrence and consciousness, breast most cancers is the most common cancers in urban Indian ladies, and the second one most common in the rural Indian women.[2]

Chronic neuropathic ache after surgery for breast cancers is a common hassle with incidence rate ranging from 20-65%.[3-5] Post-mastectomy pain syndrome is a neuropathic ache following surgical treatment for breast cancers, together with radical mastectomy, modified radical mastectomy and breast conservative surgery.[6-8] The cause of PMPS possibly has multi-factorial origin. ICB nerve injury is meant to be the primary purpose.[8] The ache traits consist of Paroxysms of lancinating ache in the background of burning; aching and

tightening sensations.[9-13]. A observe of PMPS can also help boom cutting-edge attention, pick out the predisposing factors and enhance management methods by treating surgeons. The study results can be beneficial for establishing guidelines for awarness, early diagnosis and treatment of the persistant pain.

Classification of the ache after breast surgical procedure, Jung at al outstanding four one of a kind kinds of persistent neuropathic ache following breast most cancers because of surgical trauma.[15]

- Phantom Breast Pain is experienced within the location of the removed breast.
- Intercostobrachial Neuralgia ache is frequently accompanied with sensory changes within the distribution of the intercostobrachial nerve following breast cancers surgery with or without axillary dissection. Cunnick et al revealed a huge variant ofsize, place and branching of the intercostobrachialnerve which may additionally explain the high threat of damage to these nerves.[16] Post- mastectomy pain syndrome consists of ache and sensory changes localized to the axilla, medial arm, and/or anterior chest wall on the ipsilateral side of the surgery. Damage to the intercostobrachial nerve has been indicated as the main reason PMPS.[9,15]
- Neuroma ache (including scar ache) is the pain in the location of a scar at the breast, chest, or arm, this is provoked or exacerbated via percussion. A neuroma is fashioned from masses of tangled axons formed on the reduce end of peripheral nerves. Neuroma trapped in scar tissue has proven to cause chronic neuropathic pain, spontaneous pain and sever sensitivity to stress at the operated site.

Several other factors appear to boom the risk of PMPS after breast cancer surgical treatment which includes, younger age at prognosis, a bigger tumor, stage of axillary node invasion and use of chemotherapy and/or radiation therapy. Post-operative complications along with bleeding, contamination or seroma formation may additionally increase the chance of PMPS. Surgical strategies additionally play an important role in PMPS.[8,19]

By this observe, our purpose is to assess diverse factors leading to PMPS and to assess the effect of the preservation of the ICB nerve on PMPS and sensory disturbances.

Methods

This is a prospective comparative study carried out in RMMCH for the duration of July 2015 to July 2017. All newly detected, histopathologically validated cases of carcinoma breast and underwent modified radical mastectomy had been covered on this observe. The sufferers have been chosen from the inpatient departments of Surgery in Rajah Muthiah Medical College and those attending Breast clinic for followup. The reason of the observe was explained to them. All informations were recorded in the proforma, Data on pain and sensory disturbances, psychological morbidities and quality of life were recorded. WHO QOL performance scale was used to determine QOL. HADS, Becks despair scale, PSQI was used to decide fine of psychosocial overall performance. Severity of sensory disturbances in the form of numbness, paraesthesia, neuralgic ache were recorded with the aid of Visual Analogue scale (VAS). Lymphedema of arm was graded as according to clinical staging.

The sufferers had been divided into groups. Group A included patients with ICB nerve preserved and Group B patients with ICB nerve sectioned. The sufferers were evaluated for the post operative and psychosocial morbidities in immediate postoperative period and six months after the MRM by the usage of various questionnaire and scales.

Inclusion Criteria

- Only women were selected
- Age >30yrs and<70 yrs
- Patients with Breast cancer as recognized, confirmed and staged with the aid of histopathological exam.

- Informed consent

Exclusion Criteria

- Advanced disease (past degree IIB)
- Bilateral and recurrent illnesses
- Irregular follow up
- Patients receiving neo adjuvant chemotherapy or radiotherapy
- Angina pectoris

Methodology

After surgical operation, the cases and controls had been evaluated for pain and sensory disturbances and QOL 6 months after surgery. Chronic pain was described as any kind of ache in ipsilateral breast, chest wall, shoulder, arm or axillary vicinity, persisting for at least 3 months after surgery and adjuvant therapy.

Three pain rankings are derived from the sum of the intensity rank values of the words chose for sensory, affective and overall descriptors.intensity of pain was assessed by Visual Anlogue Scale(VAS) Evidence for validity in PMPS has been estabilished. This questionnaire used to characterize the similarities and variations in chronic pain descriptions. Site of pain was recorded every time.

WHOQUALITY OF LIFE SCALE (WHOQOL – BREF – Field Trial Version – 1996) has been used to evaluate the affected person's QOL. Patients are requested to rate their perceptions, feelings, and satisfaction regarding their Physical, Psychological, Social and Environmental well being. The scale has 26 questions, which check the quality of Life within the above-cited four Life Domains. The responses are given a rating ranging from 1- 5 for every solution. The individual rankings of each area in addition to common rating are then calculated one by one. Raw ratings can be used as such or converted into transformed scores by the usage of a conversion desk. Raw rankings were used on this observe.

Results

Total number of newly detected carcinoma breast cases had been 70. Among this 56 sufferers certified for the study but 6 sufferers had not turned for follow up, hence excluded from the observe. The age range of the sufferers are 30-70 years with meant age of 51.3 years, maximum (38%) of the sufferers belongs to 41-50 age group (Table 1) and 51- 60 age group is 36%. Average BMI become 25.9 range from 21 to 32.12 (Table 2).

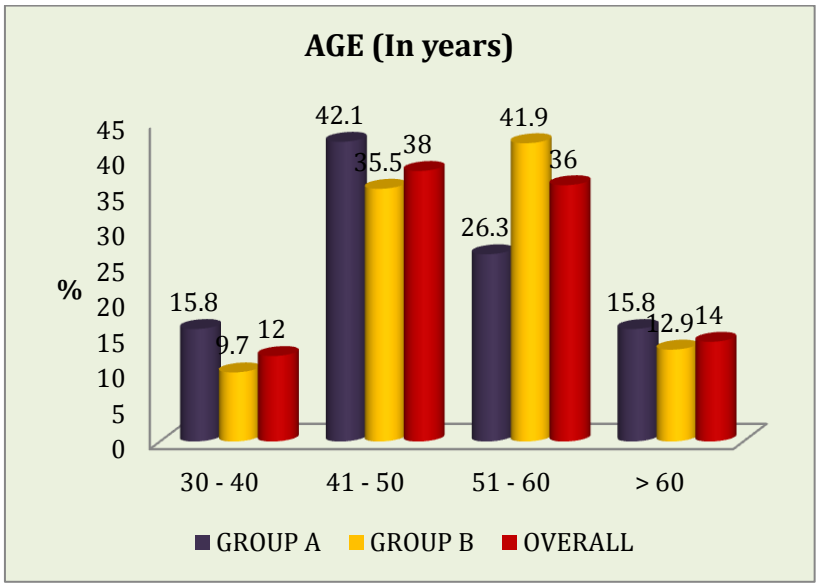
Among 50 patients in this observe, ICBN was preserved in 19 patients and sectioned in 31 patients. Overall Sensory disturbances in the form of parasthesia and numbness was 54% In ICBN preserved group it was 10.5 % compared to 80.6% in ICBN sectioned group. This distinction became discovered to be statistically important (Table 3). Post operative pain over medial component of arm and chest wall after 6 months was 36 % amongst them 51.6% is of ICBN sectioned group and 10.5% is of ICBN preserved group, that is statistically significant (Table 4).

QOL was assed by WHO QOL is 107.3% in ICBN preserved and 90.23 in ICBN sectioned patients, which is statistically significant (Table 5).

The results are compared using non-parametric impartial pattern test (Mann-Whitney 'U' test). The whole statistical evaluation is done using statistical bundle of social sciences (Spcs-21). Suitable graphical illustrations also are offered.

Table 1: Age Distribution

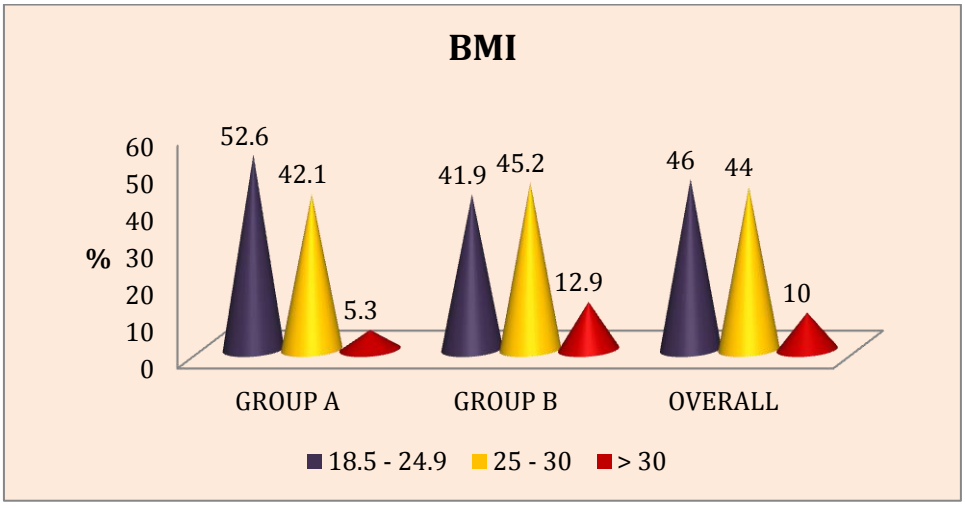
Age (in years)	Group A		Group B		Overall	
	N	%	N	%	N	%
30-40	3	15.8	3	9.7	6	12
41-50	8	42.1	11	35.5	19	38
51-60	5	26.3	13	41.9	18	36
> 60	3	15.8	4	12.9	7	14
Total	19	100	31	100	50	100



In table 1, age distribution of the sufferers is provided. The common typical age distribution is 41 to 50 years in which 38% of the sufferers are observed. The next common age distribution is 51 to 60 years wherein 36% of the sufferers are found. The age distribution of the unique group is also provided. The Mean age of the overall sufferers is 51.38 ± 10.26 years. The age of the two groups are analysed by means of Mann Whitney 'U' Test. The statistical test of importance 'Z' value is1.Forty five with the corresponding 'P' of .146 that's extra than .08 and consequently statistically insignificant. Therefore, age is not statistically important

Table: 2 BMI Distributions

BMI	Group A		Group B		Overall	
	N	%	N	N	%	N
< 18.5	-	-	-	-	-	-
18.5-24.9	10	52.6	13	41.9	23	46
25-30	8	42.1	14	45.2	22	44
>30	1	5.3	4	12.9	5	10
Total	19	100	31	100	50	100

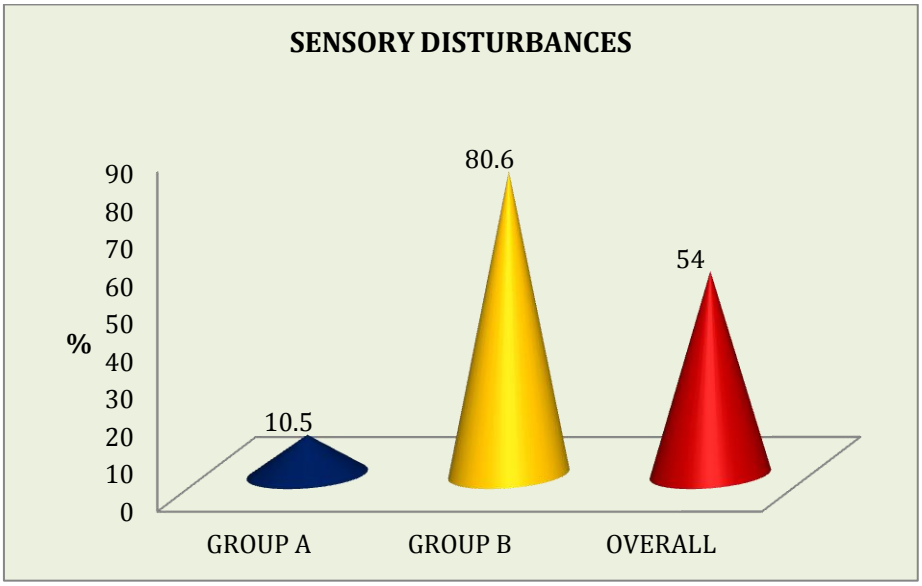


BMI evaluation is offered in table 2. The More common BMI distribution is 18.5 to 24.9 years in which 46% are observed, that is intently accompanied by means of BMI distribution of 25-

30 (overweight) wherein 44% are observed. The imply average BMI is 25.90 ± 3.02. The mean BMI of group 'A' is 25.15 ±3.33 and it's far 26.36 ± 2.77 for group 'B'. The BMI did no longer differed drastically among the groups (Z+ 1.25, P+211 >0.5) and for this reason both groups are comparable in BMI i.e. BMI matched group.

Table 3: Sensory Disturbances distribution and comparison

Sensory Disturbances	Group A		Group B		Overall		Mann Whitney 'U' Test	
Present	N	%	N	%	N	%	'Z' Value	'P' Value
	2	10.5	25	80.6	27	54	4.78	.001



In table 3, sensory disturbances distribution and comparison is listed. The maximum of group 'B' sufferers have sensory disturbances (80.6%) compared to 10.5% of group 'A' sufferers. The difference in the distribution is statistically significant (Z=4.78, P=.001). Hence the incidence of sensory disturbances is drastically higher in-group 'B' patients than in group 'A' patients.

Table 4: Pain Distribution

Pain	Group A		Group B		Overall	
	N	%	N	%	N	%
Present	2	10.5	16	51.6	18	36

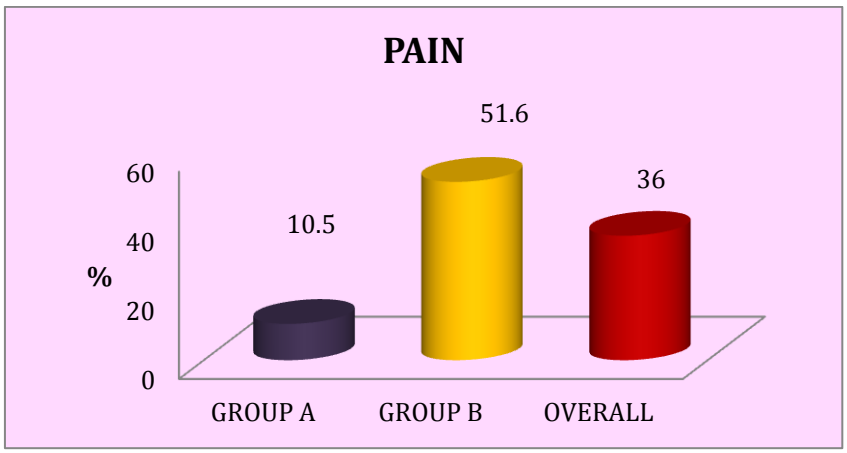
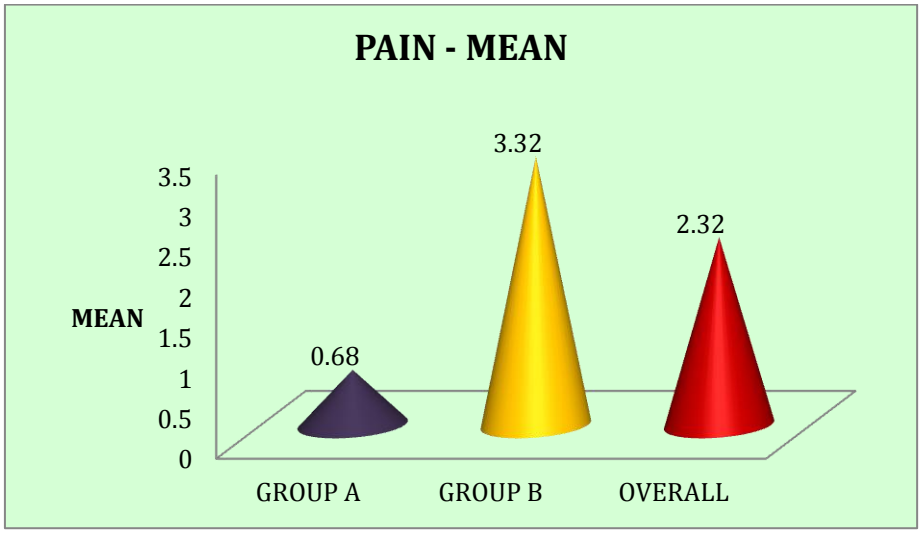


Table 4 (a): VAS Comparison

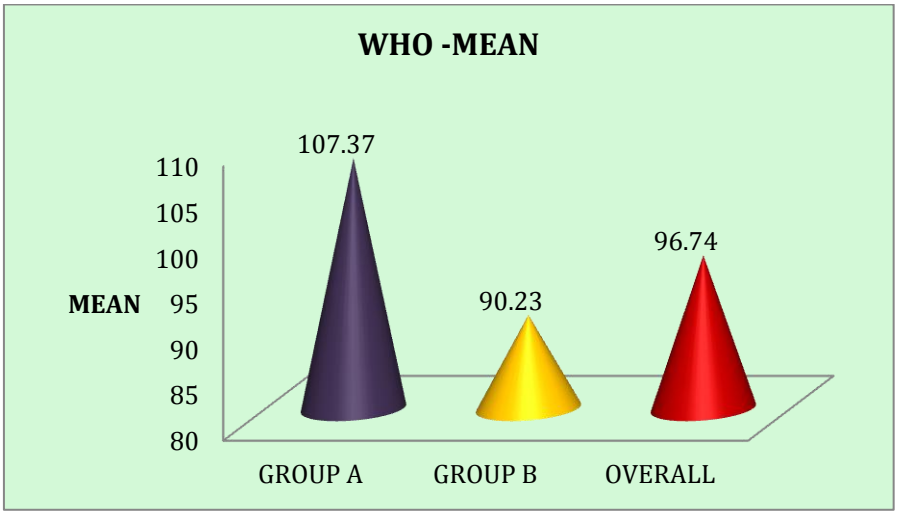
VAS	Mean	S.D	Mann Whitney 'U' Test	
			'Z' Value	'P' Value
Group A	0.68	2.07	2.82	.005
Group B	3.32	3.32		
Overall	2.32	3.16		



The analysis of pain is offered in table 4. The pain is observed in majority of the group 'B' sufferers (51.6%) where as it is 10.5 in group 'A' patients.

Table 5: WHO QOL Score

WH0 - QOL	Mean	S.D	Mann Whitney 'U' Test	
			'Z' Value	'P' Value
A	107.37	10.92	4.81	.001
B	90.23	8.31		
Overall	96.74	12.52		



The WHO-QOL score is in comparison in table5. The Mean rating is relatively higher in group A (107.37 ± 10.92) than in group B (90.23 ± 8.31) and the distinction is statistically significant (Z=4.81, P =.001). Hence, QOL is significantly better in 'A' compared to group 'B' patients.

Discussion

Auchincloss MRM with axillary lymph node dissection was carried out in 50 patients, out of which, in 19 patients the intercostal brachial nerve was preserved. The mean age of patients with the intercostal brachial nerve was 52.77, while age in the ones preserved was 48.57. The BMI became calculated and was determined to be 26.35 for the one with the nerve not preserved and 25.15, for those with the nerve preserved.

According to a study by using Verma et al 11.9% of sufferers who underwent modified radical mastectomy with intercostal brachial nerve preserved complained of pain in comparison to 10.52% encountered in our observe .The percentage of patients with pain is found to be higher for those with the nerve dissected in both studies with Verma et al reporting 18.5% in comparison to 51.61% in our observe.

Percentage of numbness /hypoesthesia in sufferers with the intercostal brachial nerve preserved in our observe is 10.5% in comparison to that of 11.9% of Verma et al. In patients with the nerve dissected, the Verma et al was said to be25.9% incidence of numbness in comparison to 80.64% in our observe and Overall QOL is lots higher in ICBN preserved group.

Conclusion

In this observe, patients with breast cancer who underwent modified radical mastectomy with the intercostal brachial nerve sectioned suffered of ache, sensory disturbances, other physical and psychosocial morbidities compared to the sufferers in whom the nerve was preserved and QOL is much better in ICBN preserved patients

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