

Results:

· General baseline characters:

A total of 56 breast cancer patients were included in our final analysis. Group A: (US Shear) was allocated 28 cases and the same for group B: (Conventional), baseline characters are described in Table 2. Mean age and BMI were similar in both groups. Group A had 10 cases with comorbidities while group B had 4 cases. Tumor and Lymph node stage distribution did not significantly differ between both groups nor did the percentage of cases that received neo-adjuvant chemotherapy. Immuno-histochemistry (IH4) was not significantly different in both groups as well as the percentage of cases operated upon for BCS or MRM.

The baseline character distribution did not differ significantly between both groups as shown in table 2:

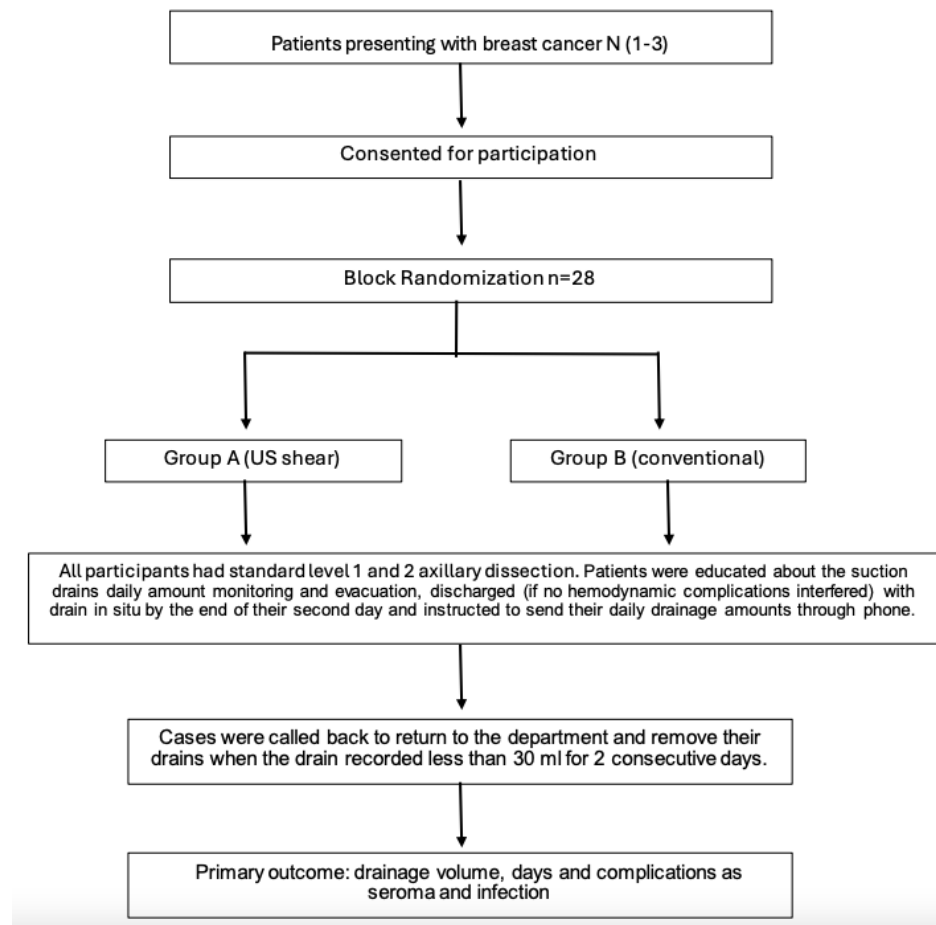
Table 2: Baseline character distribution

		A: US shear		B: Conventional		
		Mean	SD	Mean	SD	P Value
Age		51.0	11.0	51.0	12.7	0.99
BMI		38.7	8.6	39.0	8.4	0.69
		N	%	N	%	
Comorbid		10	35.7%	4	14.3%	0.06
T Stage	T1	0	0.0%	0	0.0%	

	T2	4	14.3%	0	0.0%	0.3
	T3	14	50%	14	50%	
	T4	10	35.7%	14	50%	
N Stage	N0	0	0.0%	2	7.1%	0.38
	N1	13	46.4%	12	42.9%	
	N2	14	50%	14	50%	
	N3	1	3.6%	0	0.0%	
IH4	LA	14	46.4%	10	32.1%	0.59
	LB	9	28.6%	10	32.1%	
	Her2	5	14.3%	7	25%	
	TN	0	0.0%	1	3.6%	
neoadjuvant		12	42.9%	10	35.7%	0.58
procedure	BCS	16	57.4%	18	64.3%	0.59
	MRM	11	39.4%	10	35.7%	
	Radical	1	3.2%	0	0.0%	

(BMI): Body Mass Index, (IH4): Immuno–histo–chemistry, (LA): Luminal type A, (LB): Luminal type B, (Her 2): Her 2 neu positive, (TN): Triple Negative, (BCS): Breast Conservation Therapy, (MRM): Modified Radical Mastectomy.

Participants flow chart:



primary outcomes:

Significant difference was found regarding the total drain volume, where group A had a mean of 319.6 ml in contrast to 407.5 ml for group B. This volume difference did not appear on the first 48 hrs. of drainage, but appeared on further days, summing up to total drainage days mean of 8 days for group A versus 12.5 days for group B as described in table 3. Higher rates of seroma were recorded in group B, with a total of 9 (31%) cases versus 6 (20%) for group A, where the higher rates were accounted for the higher incidence of infection in group B.

Table 3: primary outcomes

Primary Outcomes		A: US shear		B: Conventional		
		Mean	SD	Mean	SD	P value
Total Drain Volume		319.6	75.4	407.5	75.2	<0.0001
Drain Volume 48 hr.		285	40.5	302	20	0.02
Drainage Days		8.0	1.0	12.5	2.2	<0.0001
		N	%	N	%	P Value
Seroma	Seroma only	3	10%	3	10%	0.01
	Seroma followed by Infection	3	10%	6	21%	
	Total	6	20%	9	31%	

▪ secondary outcomes:

Post operative pain records had a mean score of 5.7 (moderate) for group A and 5.9 (moderate) for group B

with no statistical significance. Mean Lymph Node yield was not affected between groups A or B. A mean operative time of 29.4 minutes was recorded for group A versus 31.6 minutes for group B which wasn't statistically significant as shown in table 4.

Table 4: secondary outcomes

Secondary outcome	A: US shear		B: Conventional		P value
	Mean	SD	Mean	SD	
Post-Operative Pain	5.7	0.8	5.9	1.1	0.45
LN yield	14.4	3.4	13.1	4.7	0.17
Operative Time	29.4	1.0	31.6	5.1	0.16

(LN yield): Lymph Node yield

· confounding factors:

During our data analysis, some baseline factors were found to affect the primary outcome of both groups. Age was significantly associated with increased amount of drain postoperatively with p value 0.001, also BMI significantly affected the total drain amount postoperatively with p value <0.0001 described in table 5. Cases that received neo adjuvant chemotherapy recorded less amount of drainage volume in both groups (P value 0.04). Also modified radical mastectomy cases that received quilting sutures between the axillary and breast compartments recorded less drainage volumes in both groups (P value 0.079) as shown in table 6.

Table 5: age and BMI affecting total drain amount

Variable	Spearman correlation coefficient	P value
Age	0.43	0.001
BMI	0.62	<0.0001

(BMI): Body Mass Index

Table 6: Neoadjuvant chemotherapy NACT and procedure type affecting total drain amount

		Drain amount (A)		Drain amount (B)		P value
		Mean	SD	Mean	SD	
Neo adjuvant	Upfront	419.2	42.7	422.7	20.7	0.04

	Post NACT	357.5	35.8	378.2	24.6	
Procedure	BCS	430.0	98.7	435.8	82.7	0.079
	MRM	365.0	87.5	376.9	80.3	

(Post NACT): Post Neo Adjuvant Chemo Therapy, (BCS): Breast Conservation Surgery, (MRM): Modified Radical Mastectomy