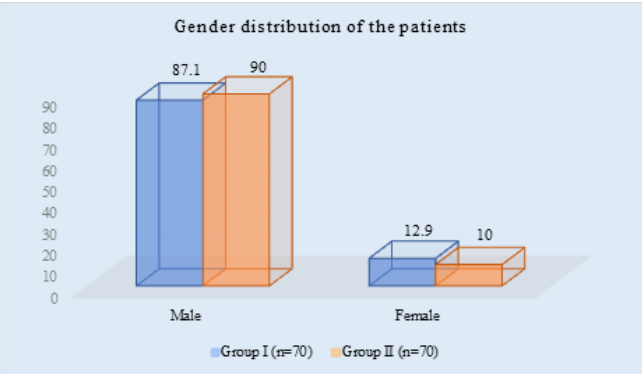
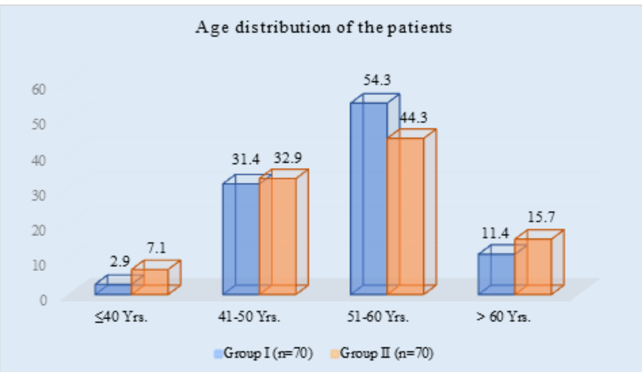
(RAO) at early (24 hours) was observed more frequently in group II than in group I (12.8% vs. 4.3%, P=0.04) with D VLJQLILFDQW DVVRFLDWLRQ7KH VDPH FKDUDFWHULVWLF ZDV also observed more frequently in group II than in group I YV3 DWODWHGDVVZLWKDVLJQLILFDQW association. Multivariate logistic regression analysis LGHQWLILHGWKHGXUDWLRQRIKHPRVWDVLVFRPSUHVVLRQWLPHRI hours as a strong predictor of RAO (Odds ratio [OR] = 7.149, &RQILGHQFH,QWHUYDO>&,@ 3



)LJXUH Column chart showed gender wise patients distribution (N=140)

7DEOH Age distribution (N=140)

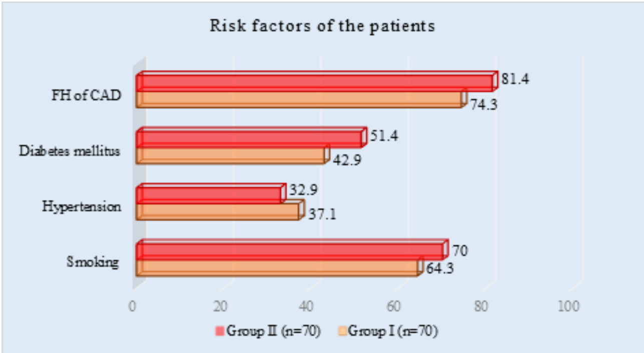
Age (Years)	Group I (n=70)		Group II (n=70)		P-value
	n	%	n	%	
V□	2	□	5	□	
UV	22	□	23	□	
UV	38	□	□	□	
□UV	8	□	□	□	
Mean ±SD	□		□	□	



)LJXUH Column chart showed age wise patients distribution (N=140)

7DEOH Cardiovascular risk factors (N=140)

Risk Factors	Group I (n=70)		Group II (n=70)		P-value
	n	%	n	%	
Smoking	45	□ □	□	□	
SHUWHQ	□	□	23	□	□
DEHWHV	□	□ □	□	□ □	
FH of CAD	52	□	57	□ □	
BMI (Mean)	□	□	□		

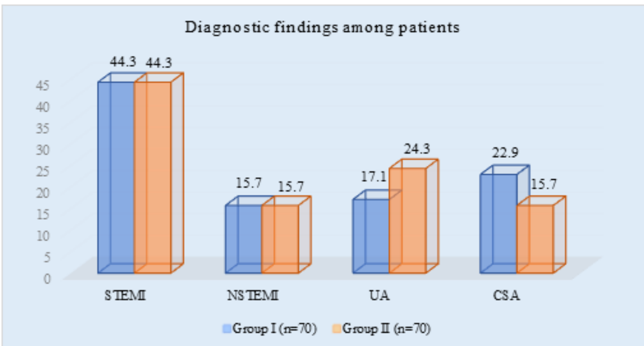


)LJXUH Bar chart showed cardiovascular risk factors wise patients (N=140)

)LJXUH Bar chart showed cardiovascular risk factors wise patients (N=140)

Diagnosis	Group I (n=70)		Group II (n=70)		P-value
	n	%	n	%	
STEMI	□	□ □	□	□	
NSTEMI	□	□ □	□	□	
UA	□	□ □	□	□	
CSA	□	□ □	□	□	

Table 3 showed STEMI: ST-Elevation Myocardial Infarction, NSTEMI: Non-ST-Elevation Myocardial Infarction, UA: Unstable Angina, CSA: Coronary Artery Spasm



)LJXUH &RORQQFKDUWVKRZHGGLDJQRVWLFILQGLQJVRIWKHSDWLHQWV (N=140)

Citation: Atikur Rahman, Tariq Ahmed Chowdhury, A K S Zahid Mahmud Khan, Fahdia Afroz, Mohammad Faridul Hoque, Mizanur Rahman Majumder, Mahmudul Hasan Masum, Ferdous Jahan. Evaluation of Hemostatic Compression on Radial Artery Occlusion After Trans Radial Percutaneous Coronary Intervention. Cardiology and Cardiovascular Medicine. 8 (2024): 83-88.

Table 4: Procedural and post-procedural characteristics (N=140)

Variables	Group I (n=70)		Group II (n=70)		P-value
	n	%	n	%	
Sheath size used					
6F	64	91.4	65	52.9	0.75
5F	6	8.6	5	7.1	0.75
Types of sheaths used					
New	26	37.1	29	41.4	0.61
Sterilized	44	62.9	41	58.6	0.61
Nitroglycerin	38	54.3	32	45.7	0.31
Number of vessels stented					
1	60	85.7	55	78.6	0.27
2	10	14.3	15	21.4	0.27
Procedure Time (min)					
Mean ±SD	53.3±8.2		55.1±9.1		0.23
AP at 24 hrs.	2	2.9	8	11.4	0.04
AP at 30 days	1	1.4	6	8.6	0.04
Spasm	9	12.8	11	15.7	0.62
Hematoma	2	2.9	3	4.3	0.64

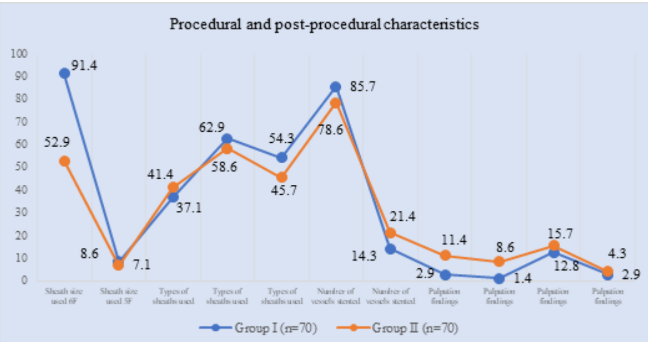


Figure 5: Line chart showed variables wise procedural and post-procedural characteristics of the patients (N=140)

Table 5: Duplex assessment of RAO (N=140)

Assessment	Group I (n=70)		Group II (n=70)		P-value
	n	%	n	%	
RAO at 24 hrs.	3	4.3	9	12.8	0.04
RAO at 30 days	2	2.8	8	11.4	0.04

Table 6: Multivariate logistic regression analysis of RAO with confounding factors

Variables of interest	Odds Ratio (OR)	P-value
Age in years (>55)	1.034	1.118
Male gender	0.52	0.6
Smoking	2.188	0.34
Hypertension	1.573	0.5
Diabetes mellitus	1.076	0.91
Increased BMI kg/m²	1.479	0.09
Sterilized sheath use	1.497	0.56
Nitroglycerin use	1.624	0.03
Procedure time	1.186	0.03
HC time 6 hours	7.149	0.01

Discussion

In this study, there was no significant difference in age distribution between the two groups. The mean age of patients in Group I and Group II was 53.3±6.6 and 53.5±8.7 years, respectively, with P=0.85. Similar results were reported by Karimul et al. [13]. Regarding sex distribution, there was no statistically significant difference between the study groups (P=0.59), and male patients predominated (81.6%). A study by Dharma et al. found no significant reduction in the risk of RAO in women patients (Odds ratio, 0.69; 95% confidence interval [CI], 0.38 to 1.26; P=0.147) [14]. History of smoking, diagnosed diabetes mellitus, hypertension, and family history of CAD were similar between the groups with no significant association (P>0.05). The mean BMI in Group I and Group II was nearly identical (26.4±1.3 vs. 26.7±1.5 Kg/m2), with no statistically significant difference (P=0.16). The overall

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patient BMI was 26.6±1.4 kg/m2, consistent with findings by Karimul et al. [13]. In Group I, 44.3% had STEMI, 15.7% had NSTEMI, 17.1% had UA, and 22.9% had CSA. Group II showed higher UA (24.3% vs. 17.1%, P=0.30) and lower CSA (15.7% vs. 22.9%, P=0.28). Matin et al. reported a similar disease profile [11]. Procedural and post-procedural characteristics showed no statistically significant association between the study groups (P>0.05), except for palpation findings. Absent pulse at early (24 hours) was higher in Group II than Group I (11.4% vs. 2.9%, P=0.04), with a significant association. The same was observed at late (30 days) (8.6% vs. 1.4%, P=0.04) with significant association. Studies using absent radial pulse as the sole criterion for RAO reported immediate rates ranging from 2% to 18% [2]. In certain studies, using Doppler, the reported incidence of RAO tends to be higher than when relying solely on the absence of pulse as a criterion. Huang et al. found that the rate of immediate occlusion was 4.7% using the radial pulse method and 10.7% using the Doppler study [3]. Lopes et al., in a Brazilian study, reported an incidence of early RAO (within 7 days) as 10.5% [15]. In this study, the primary outcome incidence of RAO early (24 hours) after trans-radial PCI, as defined by duplex ultrasound, was significantly lower in the 2-hour hemostatic compression group compared to the 6-hour group (4.3% vs. 12.8%, P=0.04). Late (30-day) RAO was also significantly lower in Group I than in Group II (2.8% vs. 11.4%, P=0.04). Similar findings were reported by Samir B. Pancholy et al., where early RAO occurred in 5.5% of patients with 2-hour compression and 12% with 6-hour compression, with statistically significant differences. Chronic RAO occurred in 3.5% with 2-hour compression and 8.5% with 6-hour compression [12]. The study also indicated that the use of post-procedural nitroglycerin reduced the incidence of RAO (OR=1.624; 95% CI=1.110-11.304; P=0.03). Longer procedure time was significantly associated with the development of RAO (OR=1.186, CI=1.097-1.289; P=0.03). This aligns with findings from Pancholy and Patel (2012) [12] and Rashid et al. (2016) [16], which identified hemostatic compression time as a significant predictor of RAO (P=0.025). In Matin et al.'s study, the incidence of RAO was 9.6% based on Duplex ultrasound [11]. Additionally, Karimul et al. [13] found predictors of RAO to include hemostatic compression time exceeding 2 hours, post-procedural nitroglycerine use, and prolonged procedure time.

Limitation of the Study

This single-center study had a limited sample size and was conducted over a short duration. Consequently, the findings may not accurately represent the overall scenario in the entire country.

Conclusion & Recommendation

The critical correlation between hemostatic compression duration and radial artery occlusion following trans-radial intervention underscores the significance of timely and strategic post-procedural care. The findings strongly advocate for a shorter compression duration, as it emerges as a pivotal factor in reducing both early and late occurrences of radial artery occlusion. This not only enhances the overall efficacy of trans-radial interventions but also addresses the imperative need for minimizing associated complications. Healthcare practitioners should consider these results when formulating post-procedural protocols, emphasizing the potential benefits of a nuanced approach to compression duration. As medical practices continue to evolve, optimizing procedural techniques and post-interventional care protocols becomes paramount in ensuring the safety and success of trans-radial interventions.

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