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Predicting the functional status after breast reconstruction : A prospective, longitudinal study

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Purpose
To evaluate the functional status of breast cancer patients after breast reconstruction with transverse rectus abdominis flap and to identify factors affecting functional outcomes.

Methods
A prospective longitudinal study in patients with breast cancer who visited the department of rehabilitation at 1 month (T0) and 3 months (T1) after breast reconstruction with TRAM. Manual muscle test of shoulder. abdomen by hand held dynamometer, Isometric Double Straight Leg Lowering Test (IDSLLT) and Abdominal muscle related Activities of Daily Living (ArADL) using questionnaires were used to functional status. Personal and cancer-related factors were recorded. Univariable and multivariable analyses were used to identify factors associated with changes in physical function.

Results
A total of 53 patients (mean age; 48.1± 5.8 yrs) were enrolled from March 2017 to June 2018. Functional status such as abdominal strength, shoulder strength, LDSLLT and ADL scores were improved from T0 to T1 (3.2±0.8 vs 4.0±0.6, $p<0.001$; 2.5±1.1 vs 3.6±0.8, $p<0.001$; 5.5±5.0 vs 16.1±9.9, $p<0.001$; 46.0±3.0 vs 49.4±2.4, $p<0.001$, respectively). Abdominal muscle strength at T0 (less than 3) were significantly associated with IDSLLT (β =8.307, 95% CI, 1.539 to 15.075) and ADL (β =-1.684, 95% CI, -3.353 to -0.015) at T1.

Conclusions
Breast cancer patients with poor abdominal muscle strength at 1 month after reconstruction with TRAM are likely to show lower ArALD level at 3 months after surgery. Rehabilitation program with abdominal strengthening exercise should be prioritised for breast cancer patients with poor abdominal muscle at 1 month after TRAM for better activities of daily living.

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. regress ADL_RA_Function_Score_2 i.abmmt1
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Source	SS	df	MS	Number of obs	=	53
				F(1, 51)	=	4.10
Model	23.0002633	1	23.0002633	Prob > F	=	0.0481
Residual	286.018605	51	5.60820793	R-squared	=	0.0744
				Adj R-squared	=	0.0563
Total	309.018868	52	5.94267054	Root MSE	=	2.3682

ADL_RA_Fun~2	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
1.abmmt1	-1.683721	.831411	-2.03	0.048	-3.352848	-.0145937
_cons	50.8	.7488797	67.83	0.000	49.29656	52.30344

Association between abdominal muscle strength at 1 months and ADL scores at 3 months after breast reconstruction

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. regress IDSLLT_2 i. abmmt1
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Source	SS	df	MS	Number of obs	=	53
				F(1, 51)	=	6.07
Model	559.858885	1	559.858885	Prob > F	=	0.0171
Residual	4702.02791	51	92.1966256	R-squared	=	0.1064
				Adj R-squared	=	0.0889
Total	5261.88679	52	101.190131	Root MSE	=	9.6019

IDSLLT_2	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
1.abmmt1	8.306977	3.371019	2.46	0.017	1.539373	15.07458
_cons	9.6	3.03639	3.16	0.003	3.504193	15.69581

Association between abdominal muscle strength at 1 months and Isometric Double Straight Leg Lowering Test (IDSLLT) at 3 months after breast reconstruction