Introduction: Rectus abdominis muscle flap is widely using method for reconstruction for large defect. When the pedicled TRAM flap is considered for reconstruction, an extremely thin muscle pedicle can cause circulation problems. We have an experience of very thin rectus abdominis muscle during the TRAM flap.(Fig. 1) So we investigate the factors that affect the muscle and soft tissue thickness. The thicknesses of the rectus abdominis muscle and the abdominal subcutaneous fat tissue were measured using abdomenpelvis computed tomography (APCT). The patients' medical records such as age, gestational history, history of laparotomy, and body mass index (BMI) were reviewed.

Methods: A total of 545 adult women(age range, 20 to 60 years) were studied. Rectus abdominis muscle and abdominal subcutaneous fat thicknesses were measured with APCT. The results were analyzed to determine if the thickness of the rectus abdominis muscle or subcutaneous fat tissue was significantly correlated with age, number of pregnancies, history of laparotomy, and BMI.

Results: Rectus abdominis muscle thicknesses were 9.58 ± 2.11mm (4.52-17.10) (right) and 9.73 ± 2.06mm (4.47-16.23) (left) at the xiphoid level and 10.26 ±1.83 (4.25-17.82) mm (right) and 10.26 ± 1.85 (4.30-19.32) mm (left) at the umbilicus level. Subcutaneous fat thicknesses were 24.31 ±8.04 (4.47-58.45) mm (right) and 23.39 ±7.92 (3.93-54.29) mm (left). The Pearson's correlation coefficient test showed the following results. (Table 1)The age, the number of gestation, the number of pregnancy, and the number of normal delivery had significant negative correlations with muscle thickness. The number of laparotomy had significant negative correlations with muscle thickness. BMI had significant positive correlations with thickness of muscle and fat at the umbilical level. The number of arbotion had no correlations with muscle and fat thickness. Abdominal subcutaneous fat thickness had no correlation with age, number of pregnancies, or history of laparotomy.

Conclusions: Age, gestational history, and history of laparotomy influenced rectus abdominis muscle thickness but did not influence abdominal subcutaneous fat thickness. These results are clinically valuable for planning a rectus abdominis muscle flap and safe elevation of muscle flap.

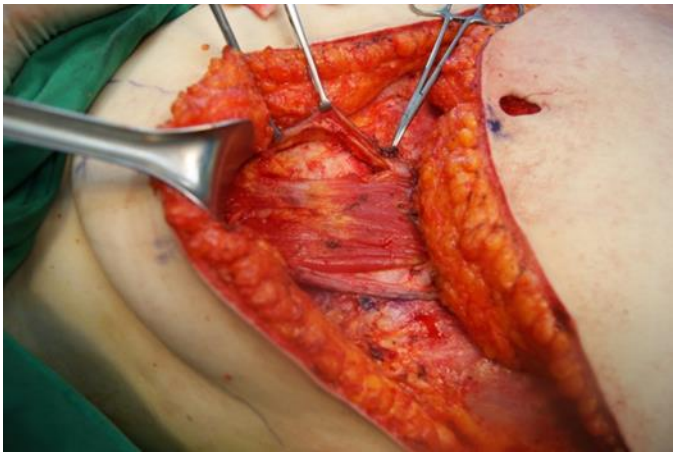

Fig 1. Thin rectus abdominis muscle.

Table 1.

Factor	MXR	MXL	MUR	MUL	FUR	FUL
Age	-0.206[a]	-0.233[a]	-0.194[a]	-0.207[a]	0.052	0.048
G	-0.113[a]	-0.124[a]	-0.094[a]	-0.126[a]	0.037	0.036
P	-0.171[a]	-0.169[a]	-0.175[a]	-0.210[a]	0.055	0.065
AA	-0.035	-0.054	-0.006	-0.010	0.033	0.026
SA	-0.012	0.016	-0.015	-0.034	-0.028	-0.029
ND	-0.102[a]	-0.105[a]	-0.137[a]	-0.151[a]	0.017	0.013
CS	-0.072	-0.065	0.005	-0.019	0.045	0.058
L	-0.123[a]	-0.094[a]	-0.011	-0.019	0.046	0.062
BMI	0.041	0.072	0.233[a]	0.234[a]	0.691[a]	0.692[a]

MXR, thickness of right muscle at the xiphoid level; MXL, thickness of left muscle at the xiphoid level; MUR, thickness of right muscle at the umbilicus level; MUL, thickness of left muscle at the umbilicus level; FUR, thickness of subcutaneous fat tissue on the right side at the umbilicus level; FUL, thickness of subcutaneous fat tissue on the left side at the umbilicus level; G, number of gestations; P, number of pregnancies; AA, number of artificial abortions; SA, number of spontaneous abortions; ND, number of normal deliveries; CS, number of Cesarean sections; L, number of laparotomies; BMI, body mass index.a)$P<0.05$.