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Activity of metalloproteinases and adiponectin in obese patients—a possible factor of incisional hernias after bariatric procedures

Key words: Metalloproteinase, Adiponectin, Obesity, Incisional hernia

Baseline characteristics of the study participants

Parameter	Morbidly obese patients (BMI ≥ 35, n=40)	Non-obese patients (BMI < 25, n=30)	p-value
• Age (years)	40.5 (37.5-45.5)	42 (32-47)	ns
• Females n (%)	22 (55)	20 (67)	ns
• Males n (%)	18 (45)	10 (33)	ns
• BMI (kg/m^2)	48.7 (44.3-54.8)	25.35 (23.2-26.2)	0.00001
• Diabetes mellitus n (%)	20 (50)	0	0.00001
• Hypertension n (%)	21 (52)	6 (20)	0.00001
• MMP-2 (ng/ml)	178.32 (164.34-205.4)	161.43 (142.53-198.31)	0.04
• MMP-9 (ng/ml)	532.7 (389.0-760.9)	324.60 (280.50-753.1)	0.09
• MMP-13 (ng/ml)	0.37 (0.36-0.38)	0.37 (0.37-0.39)	ns
• Adiponectin (µg/ml)	3.39 (2.62-5.17)	3.54 (2.62-4.86)	ns

Values are presented as median (25th-75th quartile).

BMI: body mass index; MMP-2: metalloproteinase 2; MMP-9: metalloproteinase 9; MMP-13: metalloproteinase 13; ns: not significant

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Method

- The serum concentrations of MMP -2, 9 and -13 and adiponectin were biochemically assayed
- The outcomes were subjected to a statistical analysis, comparing the obese group to the non – obese group

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Results

Variable	AUC	SE	95% CI	Cut-off value	Sensitivity	Specificity
MMP-2 (ng/ml)	0.635	0.070	0.499-0.772	149.8	0.94	0.42
MMP-9 (ng/ml)	0.666	0.100	0.470-0.862	405.5	0.73	0.73
MMP-13 (ng/ml)	0.392	0.064	0.267-0.517	0.344	1.00	0.10
Adiponectin (μg/ml)	0.524	0.082	0.363-0.686	1.931	1.00	0.18

AUC: Area under the curve; 95% CI: 95% Confidence interval; MMP-2: metalloproteinase 2; MMP-9: metalloproteinase 9; MMP-13: metalloproteinase 13; SE: standard error

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Conclusions

- The concentrations of the investigated MMPs secreted by the adipose tissue differed between obese and non-obese individuals. The heightened activity of MMP-2 and MMP-9 in the obese group may adversely influence wound healing, as shown in other pathologies.
- The elevated serum MMP-2 and -9 concentrations in obese individuals may be related to the higher incidence of incisional hernias in this population.