

MECHANISMS FOR IMPROVED GLYCEMIC CONTROL AFTER ENDOSCOPICALLY PLACED DUODENAL-JEJUNAL BYPASS LINER

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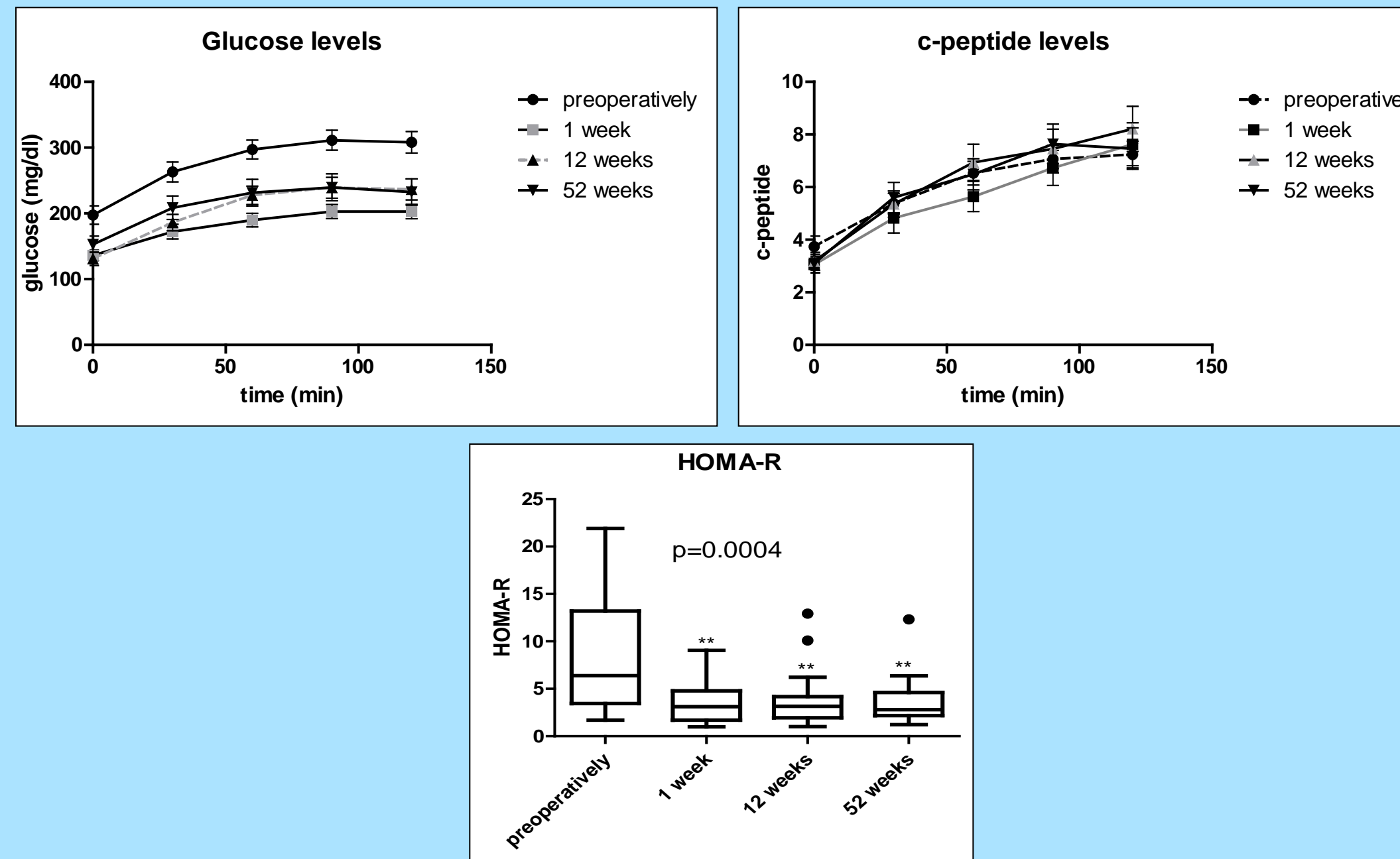
ABSTRACT

Objective: To investigate glycemic control and the underlying mechanisms of the Duodenal Jejunal Bypass Liner (DJBL).

Methods: Sixteen patients with type 2 diabetes and body mass index (BMI) < 36 kg/m² were evaluated before and 1, 12 and 52 weeks after DJBL implantation. Mixed meal tolerance tests were conducted over 120 minutes and glucose, insulin and c-peptide were measured. Matsuda Index and Homeostatic Model of Assessment Insulin Resistance (HOMA-IR) estimated insulin sensitivity. Insulin secretion rate (ISR) from deconvolution of c-peptide was calculated for insulin secretion.

Results: After 1 year of DJBL, BMI, HbA1c, fasting glucose, glucose AUC and 120 min glucose reduced (all p < 0.001). Matsuda Index and HOMA-IR improved significantly as early as 1 week post-implantation. Fasting insulin levels, insulin AUC, fasting C-peptide, C-peptide AUC, fasting and total ISR did not change during the DJBL implantation period.

RESULTS



		preoperative	1 week	12 weeks	52 weeks	p value
Gender	(Male/Female)	10/6				
Age	years	49.8 ± 6.7				
Weight	kg	81.97±4.63	-	77.21±4.53***	75.39±4.55***,###	p<0.001
BMI	kg/m ²	30.9±0.74	-	29.18±0.79***,#	28.51±0.86***,###	p<0.001
HbA1C	% mmol/mol	8.6±0.2 71.3±2.4	-	6.9±0.2*** 52.3±2.4***	7.5±0.4*** 58.1±4.4***	p<0.001
Glucose fasting	mg/dL	203.3±13.5	138.3±8.2***	130.8±10.8***	155.1±13.1**	p=0.004
Glucose AUC	mg*min/dL	34356±1714	22441±1156***	24837±1642***	26468±2299**	p<0.001
Glucose 120'	mg/dL	312.4±16.7	206.5±11.1***	235.6±17.0***	235.0±21.2***	p<0.001
HOMA-R		6.6(4.2-13.4)	3.1(1.7-4.8)**	3.1(1.9-4.3)**	3.0(2.2-4.7)**	p<0.001
Matsuda Index		1.7(1.2-2.3)	3.4(2.2-6.1)***	3.5(1.9-4.9)***	3.2(2.2-4.6)**	p<0.001
Fasting insulin	µU/mL	16.3±2.3	10.7±1.6	13.4±2.5	11.0±1.9	p=0.053
Insulin AUC	µU*min/mL	5757±606.7	4399±701.3	5280±825.6	5068±713.7	p=0.13
c-peptide fasting	ng/mL	3.8±0.4	3.1±0.3*	3.2±0.4	3.1±0.4	p=0.028
c-peptide AUC	ng*min/mL	743.3±50.3	689.1±69.5	773.2±75.0	763.3±70.5	p=0.31
Insulinogenic Index (ΔI30/ΔG30)		0.4(0.2-0.7)	0.6 (0.3-0.8)	0.36 (0.15-0.69)	0.41(0.23-0.68)	p=0.43
Fasting ISR	pmol/min/m ²	128.4±12.8	114.1±14.9	120.4±14.4	128.7±16.8	p=0.27
Total ISR	nmol/min/m ²	23.0±1.7	22.7±2.5	25.7±2.9	24.7±2.7	p=0.81

CONCLUSION

The DJBL improves glycemia in overweight and obese patients with type 2 diabetes by rapidly improving insulin sensitivity