SUPPLEMENTARY TABLE 1

Functional ROI	x	y	z
Right Caudate	12	14	10
Left Caudate	-14	12	11
Right Nucleus Accumbens	8	11	-7
Left Nucleus Accumbens	-10	14	-6
Right Putamen	24	7	-6
Left Putamen	-25	6	-6
Right Amygdala	18	-4	-25
Left Amygdala	-26	-4	-21
Orbitofrontal cortex	1	44	-14
Ventromedial prefrontal cortex	-2	52	-8
Right Hippocampus	26	-17	-16
Left Hippocampus	-22	-14	-28
Right Insula	33	22	0
Left Insula	-34	24	0
Paracingulate gyrus	1	28	40
Right Middle frontal gyrus	28	0	54
Left Middle frontal gyrus	-30	0	54
Right Parietal lobule	34	-82	-8
Left Parietal lobule	-25	-87	-8

Supplementary Table 1. Table of MNI co-ordinates for the functional ROIs pertaining to the Reward System and Executive Control System, ascertained from the whole group brain activation responses to visual food cues (both visits combined).

SUPPLEMENTARY TABLE 2

	Roux-en-Y Gastric Bypass (RYGB)	Very Low-Calorie Diet (VLCD)	*P*-value between treatment groups
N	**7**	**7**	
Female: Male	**6: 1**	**4: 3**	**0.56**
Age (years)	**51.14 ± 4.15**	**44.71 ± 4.69**	**0.33**
Weight at baseline (VISIT 1) (kg)	**113.63 ± 9.44**	**106.44 ± 8.59**	**0.58**
Weight with intervention at VISIT 2 (kg)	**105.39 ± 9.20**	**98.24 ± 8.37**	**0.58**
Weight loss between fMRI scans (VISIT 2-VISIT 1) (kg)	**-8.24 ± 0.69**	**-8.20 ± 0.67**	**0.97**
Percentage weight loss between fMRI scans (%)	**-7.46 ± 0.75**	**-7.84 ± 0.62**	**0.70**
Follow up weight one year after study entry (kg)	**80.81 ± 5.91**	**108.85 ± 11.38**	**0.043**
HbA1c at VISIT 1 (mmol/mol)	**49.29 ± 3.61**	**57.86 ± 4.44**	**0.16**
HbA1c at VISIT 2 (mmol/mol)	**44.00 ± 2.12**	**51.43 ± 4.10**	**0.13**
Fasting glucose at VISIT 1 (mmol/L)	**8.07 ± 0.80**	**8.89 ± 1.39**	**0.62**
Fasting glucose at VISIT 2 (mmol/L)	**5.94 ± 0.28**	**6.67 ± 0.45**	**0.059**
Δ Fasting glucose (mmol/L)	**-2.14 ± 0.69**	**-2.22 ± 1.22**	**0.95**
Fasting insulin at VISIT 1 (mIU/L)	**20.09 ± 3.25**	**15.91 ± 1.53**	**0.27**
Fasting insulin at VISIT 2 (mIU/L)	**12.18 ± 1.70**	**10.35 ± 1.14**	**0.39**
Δ Fasting insulin (mIU/L)	**-7.91 ± 3.68**	**-5.56 ± 2.39**	**0.60**
Treatment for diabetes prior to the study	**Diet:3 Metformin:4**	**Diet:1 Metformin:6**	**0.56**

Supplementary Table 2. Demographic and clinical characteristics of a subgroup of patients who had RYGB (N=7) and weight matched patients who had VLCD (n=7). Both study groups at baseline (VISIT 1) and at the end of the intervention (VISIT 2) are shown. Continuous variables (checked for normality of distribution) are shown as means ± SEM. *P*-values represent the results of unpaired t-tests between the RYGB and VLCD treated groups. Categorical variables were analysed using Fisher's exact test.

SUPPLEMENTARY TABLE 3

		Hippocampus		Caudate		Insula		Amygdala		Nucleus Accumbens	
		Pearson ρ	*P*-value	Pearson ρ	*P*-value	Pearson ρ	*P*-value	Pearson ρ	*P*-value	Pearson ρ	*P*-value
RYGB	Ghrelin	-0.086	0.76	0.084	0.77	-0.283	0.31	0.069	0.81	-0.072	0.8
	GLP-1	0.002	0.996	0.079	0.79	-0.019	0.95	0.033	0.91	0.244	0.38
	PYY	-0.209	0.46	-0.130	0.64	-0.067	0.81	-0.096	0.73	-0.324	0.24
	GIP	-0.389	0.15	-0.472	0.08	-0.360	0.19	-0.328	0.23	-0.383	0.16
VLCD	Ghrelin	0.303	0.21	0.061	0.81	-0.072	0.77	0.063	0.80	-0.126	0.61
	GLP-1	-0.173	0.52	-0.271	0.31	-0.123	0.65	0.152	0.57	-0.151	0.58
	PYY	-0.125	0.64	-0.332	0.21	-0.073	0.79	-0.142	0.60	-0.156	0.56
	GIP	0.068	0.78	-0.104	0.67	-0.188	0.44	0.123	0.62	0.065	0.79

Supplementary Table 3. Correlation between changes in gut hormone levels and reward ROI activity following RYGB and VLCD