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Impact of enteral tube feeding on body fat and lean body mass

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Objectives: Enteral tube feeding (ETF) has known benefits, improving weight and stabilising lung function in adult patients with CF. The aim of this study was to examine how weight gain is achieved through measurement of fat deposition before and after initiation of ETF.

Methods: 6 patients fulfilled the study criteria, having undergone measurement of body composition [DXA] 1 year prior to starting ETF and up to 18 months post ETF. Percentage change in weight (kg), body fat (%), lean body mass (kg), gynoid fat (%) and android fat (%) were recorded.

Results: 6 patients [3M/3F], aged 17.7-33.0 years underwent DXA scans for body composition pre and post start of ETF. Body mass index at start ETF was 14.7-24.8kg/m². Fat deposition in the year after enteral feeding achieved up to 340% increase. Android (central fat) deposition was consistently greater than gynoid fat. 50% of cases had a reduction in lean body mass after start of enteral tube feeding, despite only one individual displaying weight loss over this period.

Table 1

	Weight		% change	%fat pre/post		%change	Android fat pre/post		% change	Gynoid fat pre/post		%change	Lean body mass pre/post		% change
Case 1	39.40	51.90	31.7%	7.30	10.00	37%	7.70	12.10	57%	12.60	16.90	15.9%	35.60	45.40	27.5%
Case 2	47.80	48.70	1.9%	10.20	15.50	50.1%	12.80	19.10	49.2%	18.20	26.00	43%	41.50	39.00	-6%
Case 3	55.60	49.30	-12.8%)	34.40	32.10	-6.6%	39.40	33.70	-14.5%	44.80	44.90	0	34.80	31.60	-9.2%
Case 4	43.60	51.20	17.4%	21.00	30.00	42.8%	16.80	30.10	79.2%	38.30	48.00	25%	33.00	34.70	5.1%
Case 5	51.20	55.40	8.2%	24.20	35.3	45.9%	26.70	38.30	43.4%	36.90	40.90	10.8%	37.30	33.70	-9.7%
Case 6	51.20	69.40	35.5%	6.20	27.30	340%	5.30	29.10	449%	10.60	38.70	265%	46.50	48.60	4.5%

Conclusion: In a case series of adults with CF, ETF resulted in 37-340% gain in body fat in all 5 of 6 patients who gained weight. This was predominantly as android fat, a known predictor of Type 2 diabetes in the general population. ETF is a known risk factor for cystic fibrosis related diabetes and prompts further evaluation of nutritional practice in CF.