WHAT'S HOT IN... MEDICINE , Jul/Aug 2009

Two Studies Show that Obesity Surgery Does Improve Mortality Outcomes

by David W. Sharp

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There is as yet no established clinical specialty of bariatrics, but if worldwide obesity trends continue one may soon be needed. However, we do have bariatric surgery, which covers several different operative procedures on the stomach such as gastric banding. Surgery is usually a last resort and guidelines suggest that only exceptionally should it be resorted to if the patient's body-mass index (or BMI, determined by weight in kilograms divided by the square of height in meters) is below 40. Obesity is defined by a BMI of 30 or more.

When the Swedish Obese Subjects (SOS) controlled but non-randomized follow-up study began in 1987 it would not have been certain that weight-reducing surgery would benefit mortality. The position would have been a little clearer by the time recruitment ended in early 2001. Even so, the central message of the main SOS paper, which was at #14 last time and has now inched up to #13 (L. Sjostrom, *et al.*, *New Engl. J. Med.*, 357[8]: 741-52, 23 August 2007; total cites 163, latest count 38) is important. Bariatric surgery for severe obesity was associated both with long-term weight loss and with reduced mortality. The surgery group numbered 2,010 and the matched controls (given non-standardized conventional treatments) 2,037.

After an average follow-up of almost 11 years, 6.3% of the controls had died

Medicine Top Ten Papers

Rank	Papers	Cites Jan-Feb 09	Rank Nov-Dec 08
1	The ACCORD Study Group (H. C. Gerstein, *et al.*), "Effects of intensive glucose lowering in type 2 diabetes," *New Engl. J. Med.*, 358(23): 2545-59, 12 June 2008. [Writing Group: 10 U.S. and Canadian institutions] *311IJ	62	8
2	J. Yu, *et al.*, "Induced pluripotent stem cell lines derived from human somatic cells," *Science*, 318(5858): 1917-20, 21 December 2007. [Genome Ctr. Wisconsin, Madison; U. Wisconsin, Madison] *243HE	61	1
3	L.J. Scott, *et al.*, "A genome-wide association study of type 2 diabetes in Finns detects multiple susceptibility variants," *Science*, 316(5829): 1341-5, 1 June 2007. [12 U.S. and Finland institutions] *173PS	58	4
4	S.E. Nissen, K. Wolski, "Effect of rosiglitazone on the risk of myocardial infarction and death from cardiovascular causes," *New Engl. J. Med.*, 356(24): 2457-71, 14 June 2007. [Cleveland Clinic, OH] *178DR	52	6

compared with 5.0% of the surgery group. There were very few early postoperative deaths (five within 90 days of surgery). The controls experienced no meaningful weight change but at 10 years the surgical patients had average losses of 14-25%, depending on the type of operation.

Science Watch asked Dr. Lars Sjostrom what influence this 2007 paper might have had on patient choices in Sweden and elsewhere. Sweden has a population of only 9 million, and in 2002 about 700 bariatric operations were done, says Dr. Sjostrom. At that time the figure for the USA would have been more than 100,000. In 2008 the Swedish figure had quadrupled to 2,800. Sjostrom reckons that referrals for such surgery have doubled in the past two or three years but does not know if this change reflects "increased pressure from obese patients or an increased interest from referring doctors."

Today's BMI-above-40 criterion was not in place back in 1987, and in SOS the cutoffs were 34 for men and 38 for women. How important is this difference, *Science Watch* wondered? Not at all, it seems. The relative effect of surgery on mortality was no different for patients above and below the median BMI in these patients, which was 40.8. In Sjostrom's opinion, "most obese patients with BMI 35 to 40 kg/m2 will not obtain efficient lifelong treatment without bariatric surgery, given the current non-surgical treatment modalities available."

5	T.M. Frayling, *et al.*, "A common variant in the *FTO* gene is associated with body mass index and predisposes to childhood and adult obesity," *Science*, 316(5826): 889-94, 11 May 2007. [19 institutions worldwide] *166HM	50	7
6	The ADVANCE Collaborative Group (A. Patel, *et al.*), "Intensive blood glucose control and vascular outcomes in patients with type 2 diabetes," *New Engl. J. Med.*, 358(24): 2560-72, 12 June 2008. [Writing Group: 18 institutions worldwide] *311IJ	50	†
7	E. Zeggini, *et al.*, "Replication of genome-wide association signals in UK samples reveals risk loci for type 2 diabetes," *Science*, 316(5829): 1336-41, 1 June 2007. [10 U.K. institutions] *173PS	49	5
8	G. Hudes, *et al.*, "Temsirolimus, interferon alpha, or both for advanced renal-cell carcinoma," *New Engl. J. Med.*, 356(22): 2271-81, 31 May 2007. [17 institutions worldwide] *172PO	46	10
9	R. Sladek, *et al.*, "A genome-wide association study identifies novel risk loci for type 2 diabetes," *Nature*, 445(7130): 881-5, 22 February 2007. [14 institutions worldwide] *138CR	41	9
10	S.D. Wiviott, *et al.*, "Prasugrel versus clopidogrel in patients with acute coronary syndromes," *New Engl. J. Med.*, 357(20): 2001-15, 15 November 2007. [8 institutions worldwide] *230RV	41	†

SOURCE: Thomson Reuters Hot Papers Database. Read the Legend.

Those in the 35 to 40 BMI range have a poor health-related quality of life; in patients who are operated on, quality of life improves, and the greater the weight loss the more the improvement (J. Karlsson, *et al., Int. J. Obesity,* 31[8]: 1248-61, 2007). Finally, *Science Watch* touched on advances in surgical technique since 1987-2001, the years of recruitment to SOS, an example being laparoscopic ("keyhole") surgery. "Probably, we obtained the favorable results not due to but in spite of old-fashioned methodology," says Sjostrom. With today's methods, the advantages of bariatric surgery might have been even greater.

Accompanying the SOS paper at #13 came data from a retrospective study of mortality in surgery patients and matched controls (T. D. Adams, *et al.*, *New Engl. J. Med.*, 357[8]: 753-61, 23 August 2007; 19 citations for this period, 108 overall) supporting the conclusions of Dr. Sjostrom and his colleagues. In this study, 7,925 patients undergoing gastric bypass surgery were compared with a matched number of obese patients applying for driving licenses.

After about seven years of follow-up, the mortality rate was lower in the surgical group (37.6 versus 57.1 deaths per 10,000 patient-years). A tendency for non-disease-related deaths to be higher in the surgery group does not appear in the SOS study. Again, quality of life improved with surgery (R.L. Kolotkin, *et al.*, *Surg. Obes. Related Dis.*, 5[2]: 250-6, March 2009).

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