

Obesity and Common Surgical Disorders, Effects on  
Incidence and Complications

AKADEMISK AVHANDLING

som för avläggande av medicine doktorsexamen vid Sahlgrenska Akademin vid Göteborgs Universitet kommer att offentligen försvaras i Stora aulan, Centralkliniken, Sahlgrenska Universitetssjukhuset/Östra sjukhuset, Göteborg, torsdagen 5 maj, kl 9.00

av

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Avhandlingen baseras på följande delarbeten:

- I. Body mass index and diverticular disease: a 28-year follow-up study in men.  
Anders Rosemar, Ulf Angerås, Annika Rosengren.  
Diseases of Colon Rectum. 2008 51(4):450-5.
- II. Body mass index and groin hernia: a 34-year follow-up study in Swedish men.  
Anders Rosemar, Ulf Angerås, Annika Rosengren.  
Annals of Surgery 2008 247(6):1064-8.
- III. Effect of body mass index on groin hernia surgery.  
Anders Rosemar, Ulf Angerås, Annika Rosengren, Pär Nordin.  
Annals of Surgery 2010 252(2):397-401.
- IV. Body mass index and risk for surgery: a 38-year follow-up study in middle-aged Swedish men.  
Anders Rosemar, Ulf Angerås, Georgios Lappas, Annika Rosengren.  
In manuscript.



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## **Obesity and Common Surgical Disorders, Effects on Incidence and Complications**

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**Background:** Overweight and obesity are becoming increasingly common, not only in the developed countries but also in developing countries. It is well documented that obesity increases the risk of several medical disorders; however, less is known of effects of obesity on common surgical disorders and treatments.

**Objectives:** To study overweight and obesity and its effects on the incidence of diverticular and groin hernia disease, type of surgery in general and groin hernia surgery in particular.

**Patients and databases:** The effect of overweight and obesity on diverticular disease, groin hernia disease and the incidence of surgery were studied prospectively in a cohort of 7,495 Swedish men from the Multifactor Primary Prevention Study. The men were examined at 47-55 years of age and followed for 28-38 years. Hospitalization with a discharge diagnosis of diverticular or groin hernia disease, as well as operation codes, was registered during follow-up. For groin hernia surgery, the Swedish Hernia Register was used. Obesity was defined as a body mass index (BMI)  $> 30 \text{ kg/m}^2$ .

**Results:** In the cohort 112 men (1.5 %) were hospitalized with diverticular disease during 28 years of follow-up. Hospitalization was significantly more common in overweight men (BMI 25 to 27.5 and 27.5 to 30 with hazard ratios (HR) 3.0 and 3.2 respectively) and in obese men (HR 4.4) than in men of normal weight (BMI 20 to 22.5). Totally, 1,017 men (13.6%) were hospitalized with groin hernia during 28 years of follow-up: It was significantly fewer overweight men (BMI 27.5 to 30  $\text{kg/m}^2$ , HR 0.74) and men with obesity (HR 0.57) were hospitalized in comparison with men of normal weight. Investigation of 49,094 groin hernia operations in both men and women showed that surgery in women, femoral hernia and emergency operations were more common in underweight (BMI  $< 20 \text{ kg/m}^2$ ) individuals than in the other BMI classes. Postoperative complications in groin hernia surgery were significantly more common in underweight (HR 1.27), overweight (HR 1.10) and obese (HR 1.62) patients as compared with patients with normal weight. Altogether, 13,210 operations were performed in 7,495 men during 38 years of follow-up. No difference in BMI was found between middle-aged men with or without later surgery. By contrast, increasing BMI reduced the risk of pulmonary surgery (HR 0.91), compared with a BMI  $< 20 \text{ kg/m}^2$ .

**Conclusions:** Hospital admissions due to diverticular disease increase with increasing BMI. In contrast, obesity reduces the risk for inguinal hernia surgery. The proportions of hernia repair in lean patients are greater for women, femoral hernia and emergency admission than in normal and overweight persons. Finally, in Swedish men BMI at the age of 47-55 does not predict the risk of future surgical intervention during an extended follow-up.

**Key words** Obesity, BMI, diverticular disease, groin hernia, postoperative complications, groin hernia repair, surgery, incidence, complications

