

Major osteoporotic fracture risk following bariatric surgery: a self-controlled case series including 5,492 people from the UK CPRD and linked HES databases

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Objective: Bariatric surgery is increasingly common due to the obesity epidemic but there is controversial evidence about the risk of fracture after bariatric surgery potentially due to differences between the patients who receive surgery and those who do not. We aim to investigate the association between bariatric surgery and risk of three fracture locations, using a within person study design comparing a) the 5 year incidence post-surgery to the 5 year pre surgery risk and b) splitting the 5 year post surgery risk into two windows 0-2 and 2.01 – 5 years.

Methods: A self-controlled case series analysis was conducted. Patients undergoing bariatric surgery and experiencing fracture were identified in the clinical practice research datalink (CPRD) GOLD dataset and linked to hospital episode statistics (HES) data. Primary outcome was any fracture (any skeletal sites except skull and digits). Secondary outcomes were major (hip, vertebrae, forearm and humerus) and peripheral fractures (forearm and lower leg). Poisson models were fit to calculate Incidence Rate Ratios (IRR) for the aforementioned time windows.

Results: Of 5,492 patients undergoing bariatric surgery, 252 patients had 272 any fractures, 75 had 80 major osteoporotic fractures and 126 had 135 peripheral fractures. Average BMI was 43.9. Major fracture risk increased nearly threefold following surgery: IRR (95% CI) 2.70 (1.31, 5.57). Conversely, the incidence of any and peripheral fractures did not change in the 5 years post-surgery compared to previously: IRRs 1.17 (0.86, 1.60) and 0.92 (0.60, 1.42) respectively. Any and major fracture risk increased further in the 3rd to 5th year post-surgery: IRRs of 1.73 (1.08, 2.77), 4.98 (1.94, 12.78) respectively.

Conclusions: Few patients had fractures after surgery (252 / 5492). The incidence of major osteoporotic fracture is increased after bariatric surgery by nearly 3 fold; this further increases to 5 fold in the 2.01-5 year window. Further research is needed on post-bariatric surgery care to minimise fracture risk.

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