Simulating Long Term Benefits of Surgical Treatment of Obesity –A Reanalysis

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A summer project

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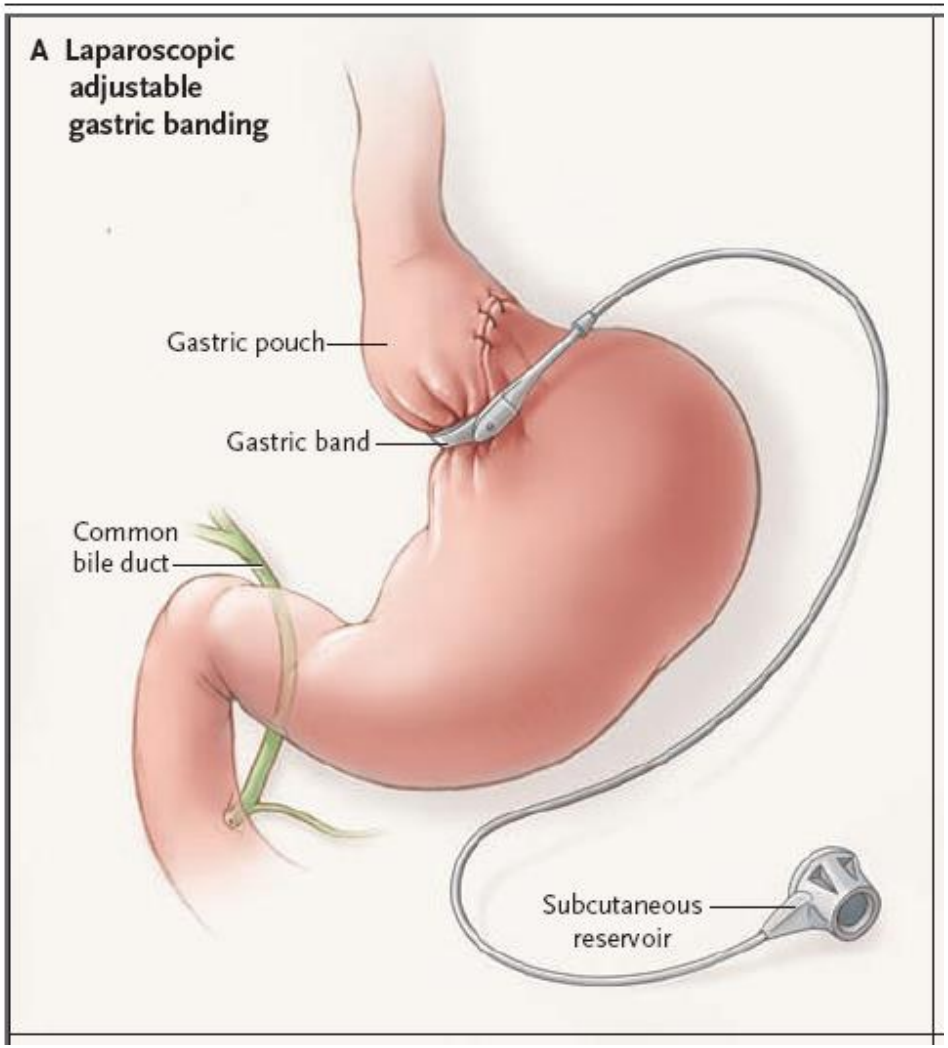

A Laparoscopic adjustable gastric banding
Gastric pouch
Gastric band
Common bile duct
Subcutaneous reservoir

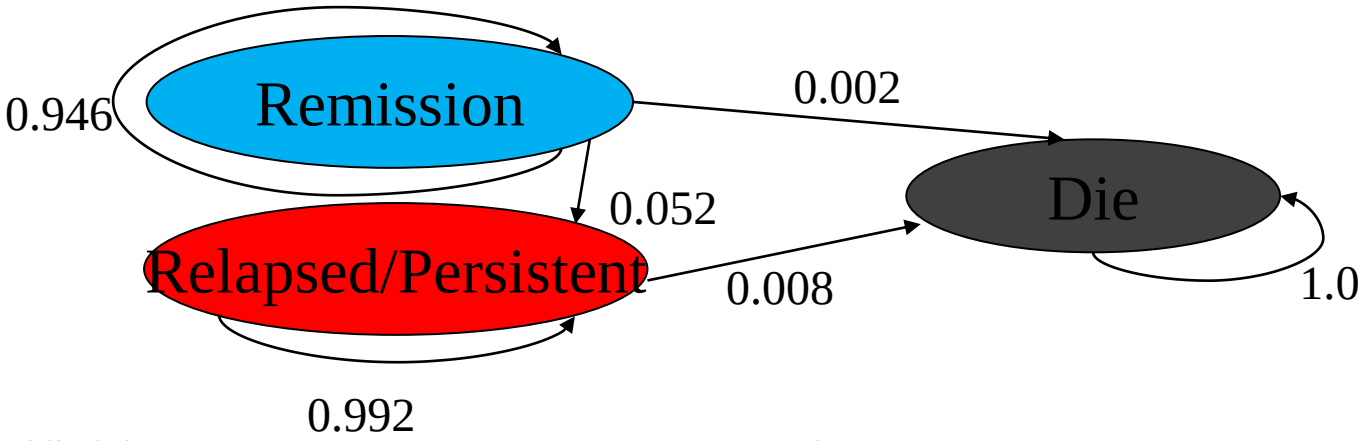
NEJM 2007

Markov Transitional Probabilities for a "Typical" patient

Presently, an obese patient may not have Type-2 diabetes. It's also possible that he may have had Type-2 diabetes in the past but is presently not diabetic. Presently, not having Type-2 diabetes is depicted as the "Remission" state and is shown in blue.

(A)From "Remission" it's possible to go to a Type-2 diabetic stage. That state is called "Relapsed" and is shown in red. The probability of doing so, within a year, is 0.052. It's also possible to go to a "Die" state with a probability of 0.002, in a year, the "Die" state is shown in dark grey. Finally it's possible to persist in "Remission".

(B)From "Relapsed" state, it's possible to either persist in that state, with probability 0.992 or go to the "Die" state with probability 0.008, in a year.



Results

Model results-lifetime means per patient	**Surgical**	**Conventional**	**Difference**
Discounted at 3% for both costs and benefits (Costs AUD)			
2-year RCT intervention	13,383	3,397	9,987
Surgical intervention maintenance	6,477		6,477
Surgical intervention complications	1,768		1,768
Type 2 diabetes remission—monitoring costs	16,479	2,874	13,605
Health care costs to treat type 2 diabetes	60,824	95,105	-34,281
Total cost	98,931	101,376	-2,444
Effectiveness			
Total life-years	20	19.2	0.7
QALYs	15.7	14.5	1.2

QALY: Quality of Life Adjusted Years.

Conclusion

- From a cost perspective, disregarding quality of life and life expectancy benefits of diabetes remission, this reanalysis suggests that after 10 years the return on investment of surgical therapy is fully recovered through saving in health care costs to treat type 2 diabetes.