Effect of bariatric surgery on cancer risk: identifying appropriate non-exposed controls for a cohort study

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Real World Data (RWD) promises to vastly expand clinical research.

However, observational studies can yield biased results when improperly designed.

Target trial emulation using RWD can help overcome this limitation.
RWD can be used to address whether the risk of specific cancer types is reduced after Bariatric Surgery (BS).

Previous studies addressing this question have mostly found non-significant or inconsistent results.
• OHDSI offers a unique opportunity to study BS and cancer risk as it includes over 1.5 billion individual records from 20 countries with highly detailed information on patients.
BACKGROUND

OHDSI tools 🤝

People eligible for surgery

1

Current surgery

2

New surgery

OHDSI tools 😞

People eligible for surgery

1

Current surgery

2

NO surgery

Clear exposure

Index date for group 2?
Our aim is to briefly describe a protocol to study specific-site cancer risk after bariatric surgery in the OHDSI network and address the issue of identifying appropriate non-exposed controls.
STUDY METHODOLOGY

- Matched cohort study.
- Databases mapped to the Observational Medical Outcomes Partnership (OMOP) Common Data Model (CDM).
- Study start dates vary according to each database (earliest 01/01/2000 - latest 31/12/2019).
We will build two mutually exclusive cohorts.

Inclusion criteria:
- Aged ≥18 years
- With a record of body mass index (BMI)≥35 kg/m2 or an obesity diagnosis
- Without history of BS nor cancer
- Have been on the database for 1 year before study entry
- Have at least 1 year of follow-up
- **Main exposure**: BS
- **Main outcome**: Incident diagnoses of obesity-related cancers.
- **Covariates**: Sociodemographics, diagnoses, procedures, measurements and devices.
A MATCHING PROCESS TO EMULATE A TARGET TRIAL

1: We split the study period in 1-year windows.

2: We assign patients into the BS and non-BS cohorts.

3: BS cohort: index date = surgery date.
   Non-BS cohort: index date = random date.

4: We identify the covariates from 1 year prior to their index date.

5: We estimate propensity scores (PS).

6: We match 1 BS patient with up to 5 non-BS patients.
We fit Cox proportional hazard models to estimate the risk of developing each cancer.

We will check for residual confounding using negative outcomes.
- It is possible to emulate a target trial even without a clearly defined index date for non-exposed controls.
- Analogous to in a target trial, patients in the non-BS cohort at period X, could still undergo a BS in the future.
- A network study will soon be proposed to the OHDSI Community using this protocol.
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