The Association Between Image Guided Endoscopic Sinus Surgery and Postoperative Revision Incidence: Real World Evidence from Columbia University Medical Center

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Background

Chronic rhinosinusitis (CRS) broadly encompasses inflammation of the nose and paranasal sinuses that persists longer than 12-weeks. The estimated prevalence of CRS in the U.S. and Europe is 10%, where management of the condition results in direct costs of nearly 8 billion dollars to the U.S. healthcare system. Typically, endoscopic sinus surgery (ESS) is offered as an option after medical therapy has failed. Approximately 350,000 ESS operations are performed in the US. Failure of primary ESS is associated with persistent anatomic obstruction of the ostiomeatal complex, and surgical techniques resulting in incomplete dissection. Meticulous attention to complex anatomy of the sinuses with image-guided endoscopic sinus surgery (IGS-ESS) may improve surgical technique and reduce the incidence of revision procedures.

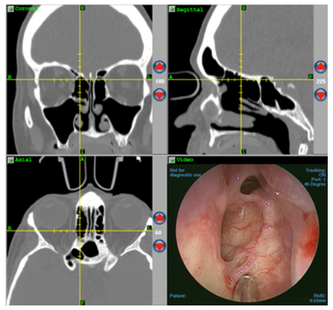

Figure 1: Visualization of the sinuses on a preoperative CT scan in the (top left) coronal (top right) sagittal (bottom left) and axial planes. The surgeon correlates these images with the pictures from an endoscopic camera (bottom right). [Adopted from http://www.arizonasinus.com/image-guided-endoscopic-surgery.htm]

Methods

We implemented a retrospective, observational, cohort study that compares IGS-ESS patients to ESS patients. Patients were greater than 18 years of age, had no history of head or neck neoplasm, cystic fibrosis, asthma, chronic obstructive pulmonary disorder, diabetes or kidney disease. Patients diagnosed with a fracture to the head or face within 90 days prior to the procedure were excluded. Patients with a history of prior ESS procedure or balloon sinuplasty were excluded. The patients who had IGS-ESS were in the target cohort and the patients who had ESS were in the comparator cohort. The outcome event was a second ESS procedure (Figure 2). The study window was between 30 days and 5 years after the procedure, and was between calendar dates 01/01/2012 and 06/01/2019. All patients were had 365 days of medical observation records prior to the index event.

OHDSI Software Package Link: http://www.ohdsi.org/web/atlas/#/estimation/cca/101.

Results

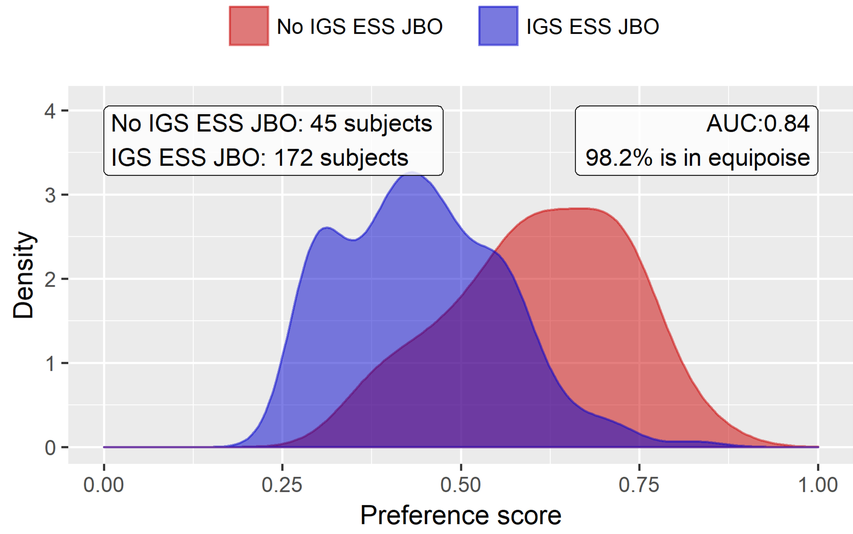

Figure 2: Propensity score distribution for the image guided endoscopic surgery cohorts (IGS ESS JBO) and non image guided endoscopic surgery cohorts (No IGS ESS JBO).

Conclusions

Despite our limited sample size, a comparative effectiveness analysis between IGS-ESS and ESS is feasible.

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