JMBS
Journal of Metabolic and Bariatric Surgery

J Metab Bariatr Surg 2019;8(2):34-36
https://doi.org/10.17476/jmbs.2019.8.2.34

ORIGINAL ARTICLE

Comparison between ABCD and IMS Scores in the Prediction of Long-Term T2DM Remission after Metabolic Surgery in East Asian Obese Patients

[1]Global Oita Medical Advanced Research Center for Health, Oita University, [2]Department of Gastroenterological and Pediatric Surgery, Oita University Faculty of Medicine, Yufu, [3]Weight Loss and Metabolic Surgery Center, Yotsuya Medical Cube, Tokyo, Japan, [4]Department of Surgery, Korea University College of Medicine, Seoul, Korea, [5]Department of Metabolic and Bariatric Surgery, the First Affiliated Hospital of Jinan University, Guangzhou, China

Masayuki Ohta[1,2], Yosuke Seki[3], Sungsoo Park[4], Cunchuan Wang[5], Wah Yang[5], Kazunori Kasama[3], on behalf of Three East Asian countries Metabolic Surgery (TEAMS)

Recently, several scoring systems have been proposed to predict remission from type 2 diabetes mellitus (T2DM) after metabolic surgery. The ABCD score was compared to the individualized metabolic surgery (IMS) score in terms of the prediction of long-term T2DM remission; however, which of the two scoring systems is better remains controversial. Thus, Three East Asian countries Metabolic Surgery (TEAMS), which has been organized as a study group since 2016, is conducting a retrospective, international, multi-institutional study to compare the two scoring systems in East Asian obese patients after metabolic surgery. The primary study objective is to compare the ABCD score with the IMS score at 3 and 5 years after sleeve gastrectomy (SG), Roux-en-Y gastric bypass, one anastomosis gastric bypass and SG with duodenojejunal bypass. The secondary objectives include evaluating patients who were good candidates for SG, and adjusting the IMS scoring system for East Asian patients.

Key Words: Metabolic surgery, Sleeve gastrectomy, T2DM remission, ABCD score, IMS score

INTRODUCTION

Recently, several scoring systems have been proposed to predict remission from type 2 diabetes mellitus (T2DM) after metabolic surgery. In Asia, Lee et al. [1,2] developed the ABCD scoring system, which consists of age, BMI, C-peptide and duration of T2DM. They also demonstrated that the ABCD scoring system is useful for predicting long-term T2DM remission in patients treated by sleeve gastrectomy (SG) and gastric bypass [3]. In the USA, Aminian et al. [4] developed the individualized metabolic surgery (IMS) score, which consists of the preoperative number of diabetes medications, insulin use, duration of T2DM and glycemic control (Hba1c＜7%). The scoring system categorizes patients into 3 stages of T2DM severity: mild, moderate and severe. In mild T2DM, Roux-en-Y gastric bypass (RYGB) was suggested; in moderate T2DM, RYGB was recommended; and in severe T2DM, SG was suggested. More recently, Chen et al. [5] compared the two scoring systems in Taiwanese patients, and concluded that

Received: August 9, 2019, Revised: September 23, 2019, Accepted: September 30, 2019
Corresponding author: Masayuki Ohta, 1-1 Idaigaoka, Hasama-machi, Yufu 879-5593, Japan
Global Oita Medical Advanced Research Center for Health, Oita University
Tel: +81-97-586-5843, Fax: +81-97-549-6039, E-mail: ohta@oita-u.ac.jp

the ABCD score may be better than the IMS score. They also demonstrated that moderate IMS scores had wider distributions and that the remission rates of patients with moderate T2DM did not differ between SG and gastric bypass; however, this study did not indicate the patients who were good candidates for SG. In addition, they commented that further studies in multiple sites and with patients of different ethnicity are necessary to compare the clinical application of the ABCD and IMS scoring systems.

Three East Asian countries Metabolic Surgery (TEAMS) has been organized as a study group since 2016, in order to deepen the friendship of bariatric/metabolic surgeons in three East Asian countries—Korea, China, and Japan—and to promote a collaborative study on bariatric/metabolic surgery. The first TEAMS symposium was held in Incheon, Korea, the second was held in Guangzhou, China, and the third was held in Tokyo, Japan. In the third symposium, a collaborative research project to compare the two scoring systems in the prediction of long-term T2DM remission after metabolic surgery was proposed and approved on December 15, 2018. Here, the protocol of the collaborative research project is shown. The study protocol was approved by the ethical committee or institutional review board of each participating institution. This study is registered at the UMIN Clinical trial Registry site as UMIN000037180 (https://www.umin.ac.jp/icdr/index.html).

PROTOCOL DIGEST OF THE TEAMS COLLABORATIVE RESEARCH PROJECT

1. Study objective

The primary study objective is to compare the ABCD score with the IMS score in terms of the prediction of T2DM remission in East Asian obese patients at 3 and 5 years after the following procedures: SG, RYGB, one anastomosis gastric bypass (mini-gastric bypass), or SG with duodenojejunal bypass (SG-DJB). The secondary objectives are to determine the patients who were good candidates for SG, and to adjust the IMS scoring system to improve its performance in the East Asian patients.

2. Study design

A retrospective, observational, no intervention, international, multi-institutional (27 specialized institutions) study. The estimated sample size is 600 cases.

3. Endpoint

The endpoint of the present study was to identify which of the two scoring systems (the ABCD score or the IMS score) is better for predicting remission from T2DM in East Asian obese patients at 3 and 5 years after metabolic surgery.

4. Eligibility criteria

1) Inclusion criteria

Obese diabetic patients who had undergone SG, RYGB, resectional RYGB, one anastomosis gastric bypass (mini-gastric bypass), or SG-DJB as a primary operation at least 3 years previously.

2) Exclusion criteria

The exclusion criteria were follows: (1) patients who were not diagnosed with T2DM before surgery; (2) patients whose records did not include the preoperative C-peptide level; (3) patients who experienced severe complications such as leakage after the first operation; (4) patients who received revision surgery within 3 years after the first operation; (5) patients who became pregnant within 3 years after the first operation; (6) patients whose records did not include 3 years of data (between 3-4 years); (7) patients who received operations other than SG, RYGB, resectional RYGB, one anastomosis gastric bypass, or SG-DJB; (8) patients who received open metabolic surgery (not laparoscopic surgery).

5. Patient registration

Patient data are collected from medical records, anonymized in each institution, and described in the case report form (CRF). The CRF is sent to Oita University, but the comparative table to identify patients is kept in each institution and not sent to Oita University.

Patient data include the procedures of metabolic surgery, preoperative age, gender, height, weight, duration of T2DM, diabetes drugs, number of diabetes drugs, insulin

use, C-peptide, fasting blood glucose (FBG), and HbA1c. The following data were also evaluated at 3 years and 5 years after surgery: weight, diabetes drugs, number of diabetes drugs, insulin use, FBG, and HbA1c. The preoperative data were evaluated at the time at which metabolic surgery was planned, prior to preoperative weight loss from the implementation of medical diet therapy.

6. Study duration

The registration period is 12 months. The estimated end date is December 31, 2021.

7. Statistical considerations

According to a previous study by Chen et al. [5], comparison of the two scoring systems in terms of distribution and the remission rates will be performed using tables. The correlation between the two scores for each procedure will be statistically analyzed using Pearson's correlation coefficient. In addition, more sensitive cut-off values for remission at 3 and 5 years after metabolic surgery will be determined for each scoring system and each procedure using Receiver Operating Characteristic curves. These results will demonstrate patients who are good candidates for SG in East Asian countries, and identify a better cut-off point distinguishing between the mild and moderate stages in the IMS score.

8. Participating institutions

China: the First Affiliated Hospital of Jinan University, Huashan Hospital of Fudan University, People Hospital of Jiangsu Province, Beijing Friendship Hospital Capital Medical University, Beijing Tiantan Hospital Capital Medical University, China-Japan Union Hospital of Jilin University, West China Hospital Sichuan University.

Korea: Korea University College of Medicine, Gangnam Severance Hospital Yonsei University College of Medicine, Chung Hospital, Hallym University Sacred Heart Hospital, Seoul National University College of Medicine, Seoul National University Bundang Hospital, Hanyang University College of Medicine, CHA Gangnam Medical Center CHA University School of Medicine, Keimyung Univsity School of Medicine Dongsan Medical Center, Soon Chun Hyang University Hospital Seoul.

Japan: Yotsuya Medical Cube, Iwate Medical University School of Medicine, Tohoku University Graduate School of Medicine, Kusatsu General Hospital, Ohama Daiichi Hospital, Toho University Sakura Medical Center, Kansai Medical University, Osaka University Graduate School of Medicine, Shiga University of Medical Science, Oita University.

CONFLICT OF INTEREST

The authors declare no conflicts of interest in association with the present study.

REFERENCES

1. Lee WJ, Hur KY, Wong SKH, et al. Metabolic surgery ABCD score: predicting the success of surgical treatment diabetes. Obes Surg 2013;23:1020.
2. Lee WJ, Almulaifi A, Tsou JJ, Ser KH, Lee YC, Chen SC. Laparoscopic sleeve gastrectomy for type 2 diabetes mellitus: predicting the success by ABCD score. Surg Obes Relat Dis 2015;11:991-6.
3. Lee WJ, Chong K, Aung L, Chen SC, Ser KH, Lee YC. Metabolic surgery for diabetes treatment: sleeve gastrectomy or gastric bypass? World J Surg 2017;41:216-23.
4. Aminian A, Brethauer SA, Andalib A, et al. Individualized metabolic surgery score: procedure selection based on diabetes severity. Ann Surg 2017;266:650-7.
5. Chen JC, Hsu NY, Lee WJ, Chen SC, Ser KH, Lee YC. Prediction of type 2 diabetes remission after metabolic surgery: a comparison of the individualized metabolic surgery score and the ABCD score. Surg Obes Relat Dis 2018;14:640-5.