

The effects of duodeno-jejunal bypass on glucose metabolism in obese type2 diabetic rat model.

¹Department of surgery, Division of biological-regulation and oncology, Tohoku university graduate school of medicine, Sendai, Japan

Hirofumi Imoto¹, Shibata Chikasi¹, Takeshi Naitoh¹, Fumie Ikesawa¹, Masayuki Kakyo¹, Makoto Kinouchi¹, Naoki Tanaka¹, Koh Miura¹, Hitoshi Ogawa¹, Iwao Sasaki¹

BACKGROUNDS: Bariatric surgery, especially gastric bypass or duodenal switch, has been shown to improve type 2 diabetes. However, its detail mechanisms are not well comprehended yet. There are two hypotheses that are advocated to explain effects of bariatric surgery on glucose metabolism: the foregut hypothesis and the hindgut hypothesis. The former theory is considered to depend on exclusion of duodenum and proximal jejunum from the nutrients transit, possibly enhancing secretion of anti-incretin factors, while the latter one is thought to be results from more rapid delivery of nutrients to the ileum, thereby enhancing the release of hormones such as glucagon-like peptide-1 (GLP-1). Duodeno-jejunal bypass (DJB) might include both theories, but it is still controversial which theory is dominant. **METHODS:** Male 20-week-old OLETF rats were divided into 3 groups and they underwent sham operation or two types of DJB, which are defined as DJB-J and DJB-I. These are differentiated by the length of alimentary limb (AL). In DJB-J, the biliopancreatic limb (BPL) was anastomosed to the side of distal limb to make 2.5cm AL and it can be considered as pure foregut model. In DJB-I, the BPL was anastomosed to the distal limb 25cm proximal to the ileum-end, and it can be thought as foregut plus hindgut model. All rats underwent OGTT at baseline, 4 and 8 weeks after surgery. **RESULTS:** There was some weight controlling effect in DJB-I group, but not in other groups. Regarding OGTT, DJB-I group demonstrated lower plasma glucose curve at 4 and 8 weeks after surgery comparing to other groups, but there were no significant difference between DJB-J and sham group. **CONCLUSION:** The improvement of glucose metabolism in DJB mainly depends on an inflow of bile and pancreatic juice to the ileum, and the exclusion of the duodenum may not contribute to the anti-diabetic effect.