

Prospective observational longitudinal study evaluating erectile dysfunction in 50 type 2 diabetic patients with BMI below 35 kg/m² submitted to ileal interposition associated to sleeve gastrectomy.

Ricardo Alexandre Fernandes Ferro^{1*}, Áureo Ludovico de Paula², Sérgio Vencio³, Rafael Caiado-Vencio⁴, Marco Antônio Gonçalves Rodrigues⁵ and Marco Túlio Costa Diniz⁵

¹School of Health Sciences, Brasília, Brazil ²Department of Surgery, Hospital de Especialidades, Brazil ³Federal University of Goiás, Brazil ⁴Pontifical Catholic University of Goiás, Brazil ⁵Department of Surgery, Federal University of Minas Gerais, Brazil

INTRODUCTION

Erectile dysfunction is a chronic complication presented in a wide range (35-75%) in T2DM male patients, usually 5-10 years earlier than non-diabetic males.¹

Relaxation of the smooth muscles of the venous (cavernous) sinusoids is the final erection mechanism and having sinusoids endothelium integrity is vital for the process. On the other hand, endothelium injury is present in the vast majority organic causes of ED².

Obesity, dyslipidemia and diabetes are independent risk factors for cardiovascular disease and also constitute major risk factors for ED, where sinusoids endothelium injury is an indicative of developing atherosclerosis³.

In this prospective, longitudinal and observational study we observed the ED prevalence before and after 12 months of II-SG evaluated by a questionnaire, evaluate global sexual function 12 months after the procedure and compare with initial parameters and analyze if diabetes duration was an interfering factor in sexual function improvement 12 months after the surgery.

OBJECTIVES

Observe the ED prevalence before and after 12 months of II-SG evaluated by a questionnaire. Evaluate global sexual function 12 months after the procedure and compare with initial parameters. Analyze if diabetes duration was an interfering factor in sexual function improvement 12 months after the surgery.

STUDY POPULATION

The study included 50 consecutive male patients with type 2 diabetes (diagnosed according to the revised ADA criteria) and a body mass index (BMI) < 35 kg/m², who underwent laparoscopic ileal interposition associated to sleeve gastrectomy (II-SG). Mean age was 54.4 years (37-69). Smoking was present in 12% of the patients. Mean diabetes duration was 12,1 years (05-25 years).

Patients were invited to participate the study and answer a questionnaire in the pre- and postoperative period.

All subjects gave written informed consent to the study, and the protocol was approved by the ethics committee of the hospital according to declaration dated from april, 28th 2010 and referenced by the consolidated note from Plataforma Brasil/Ministério da Saúde.

Inclusion criteria : All subjects had had type 2 diabetes for at least 3 years but none had had major upper abdominal surgery; active sexual life in the last four weeks preceding the procedure; hbA1c above 7% in the last three months; documentation of HbA1c exceeding 7.5% for at least 3 months; stable weight, defined as no significant change (>3%) over the 3 months before enrollment; evidence of stable treatment with oral hypoglycemic therapy or insulin for at least 12 months; BMI less than 35 kg/ m².

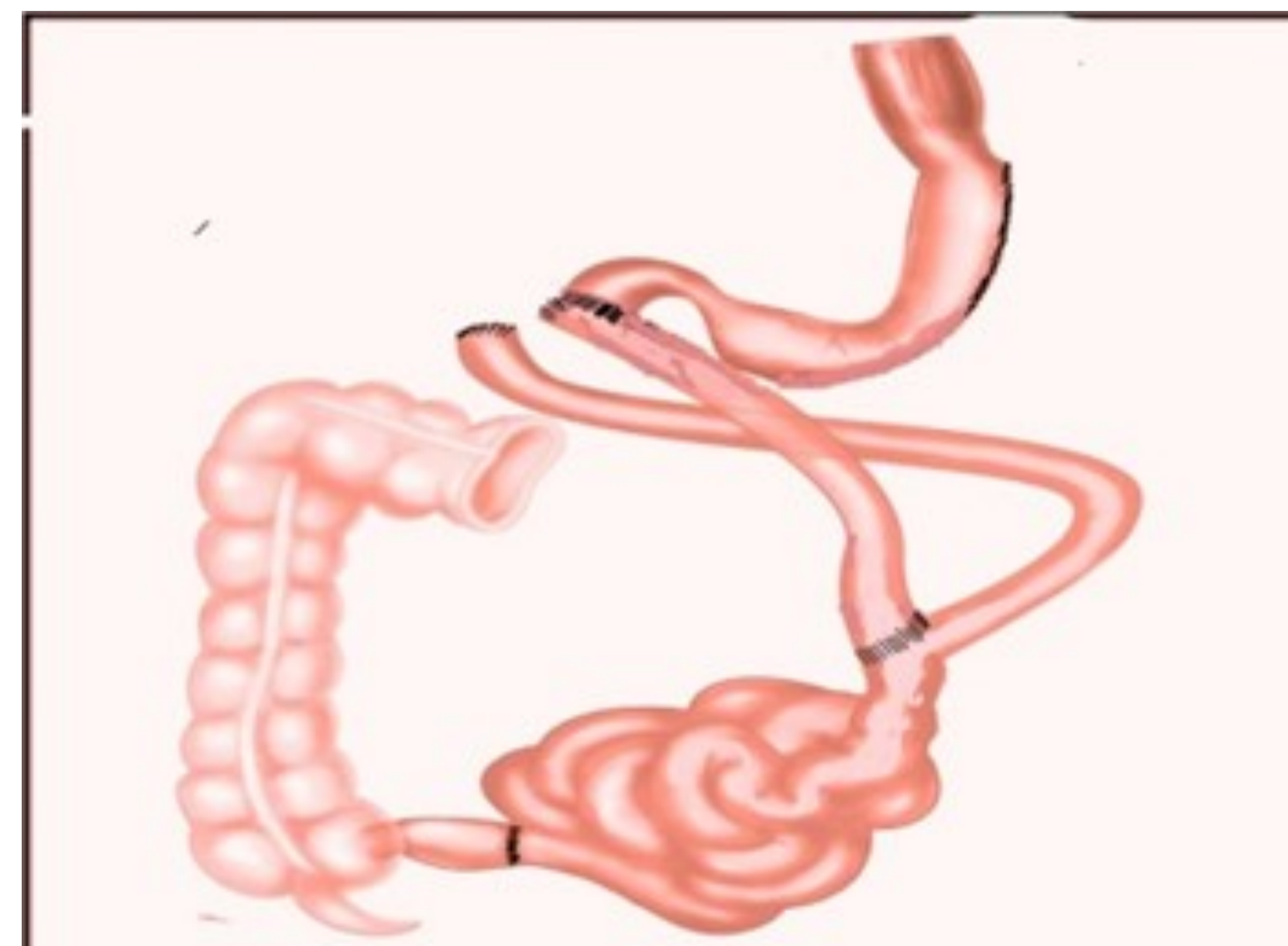
Exclusion criteria : Elderly patients (>70years); Type 1 diabetes (Positive anti GAD and anti-IA-2 auto-antibodies); previous major upper abdominal surgery; pregnancy; malignant or debilitating diseases; severe pulmonary or cardiac diseases, severe renal disease (glomerular filtration rate <30ml/min); use of appetite suppressant medication, eating disorder such as bulimia or binge eating; obesity due to any other endocrine disorder; users of penile prosthesis; use of PDE5 inhibitor medication or any other kind of ED treatment in the last 4 weeks before the procedure; hormonal replacement therapy with testosterone or any other medication that interferes in the steroid hormone laboratory dosage in the last three months before the surgery.

References: Kaiser FE. Erectile dysfunction in the aging man. *Med Clin North Am* 1999;83:1267-1278. Castela A, Soares R, Rocha F, Medeiros R, Ribeiro R, Monteiro C, et al. Differentially expressed angiogenic genes in diabetic erectile tissue: Results from a microarray screening. *Mol Genet Metab* 2012; 105:255-262. Hickey MS, Pories WJ, MacDonald KG Jr, Cory KA, Dohm GL, Swanson MS, Israel RG, Barakat HA, Considine RV, Caro JF, Houmard JA. A new paradigm for type 2 diabetes mellitus: could it be a disease of the foregut? *Ann Surg*. 1998;227(5):637-43 DePaula, AL, Macedo AL, Rassi N, Vencio S, Machado CA, Mota BR, Silva LQ, Halpern A, Schraibman V. Laparoscopic treatment of metabolic syndrome in patients with type 2 diabetes mellitus. *Surg Endosc* 2008;22:2670–2678

Conflict of interest: Authors declare they have no conflict of interest with the subject researched

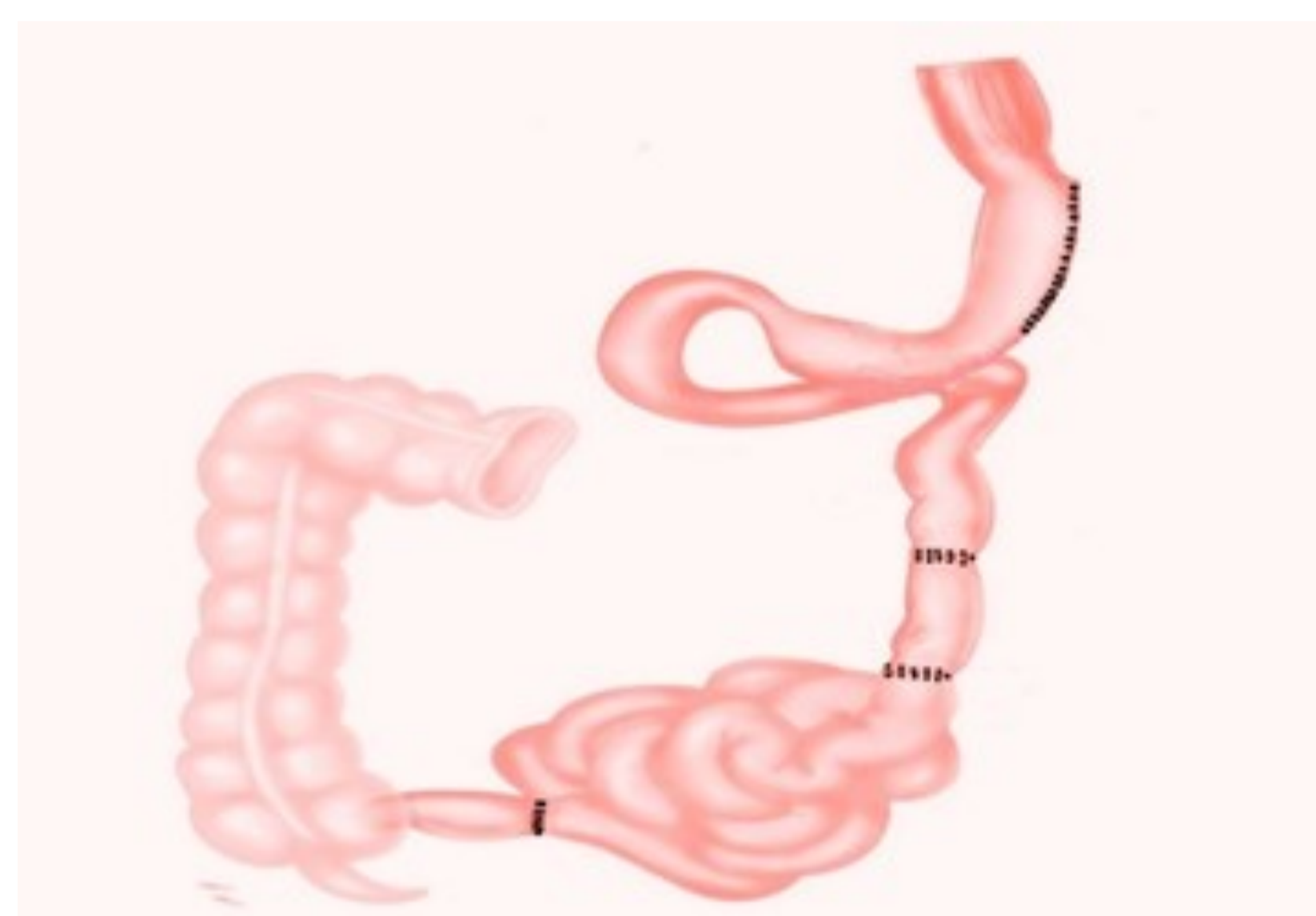
Contact: Ricardo Ferro - 1School of Health Sciences, Brasília, Brazil - dr.ricardoferro.uros@gmail.com

SURGICAL PROCEDURE



Ileal interposition associated to sleeve gastrectomy.

Ileum interposed in the duodenum



Ileal interposition associated to sleeve gastrectomy.

Ileum interposed in the jejunum

Questionnaire: A standardized questionnaire was applied in 56 T2DM patients in the preoperative period and in 50 after 12 months of follow-up. In 6 patients, we were unable to apply the questionnaire in the appropriate period. This was a discreet procedure conducted by the same investigator in the day before the surgery and after 12 months when a clinical and laboratory evaluation were performed. The International Index of Erectile Function Questionnaire (IIEF) was used to classify the sexual dysfunction level

RESULTS

Mean age was 54.4 years (37-69). Mean diabetes duration was 12,1 years (05-23 years). Mean HbA1c was 8,8 % (7,5-10,5%). After 12 months we observed a significant improvement in glycemic control, dyslipidemia, blood pressure and a reduction in the use of insulin and anti-diabetic agents (p<0.05). Erectile dysfunction, sexual intercourse satisfaction, orgasmic function, sexual desire and overall sexual life satisfaction were improved (p<0.05). ED prevalence was 78% before and 46% after the procedure. More than 15 years of diagnosis was a bad predictor for ED improvement.

CONCLUSION

Ileal Interposition associated to sleeve gastrectomy is an effective alternative option for the treatment of type 2 diabetes and associated diseases and can lead to improvement in sexual related complications such as erectile dysfunction.

