

Totally Robotic Roux-en-Y Gastric Bypass: Technique

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Abstract The da Vinci™ robotic system (Intuitive Surgical, Inc, Sunnyvale, CA) has been used frequently for urological procedures including radical prostatectomy and pyeloplasty. Its use in bariatric surgery is limited to few high volume centres in the western world. The advantages of robotic assistance are three-dimensional vision, ergonomic advantage and improved precision. We report our experience of using this advanced technology to perform a robotic Roux-en-Y gastric bypass in a 55-year-old obese diabetic patient. We were able to reproduce our standard laparoscopic technique and all the steps of the surgical procedure were done using robotic assistance.

Keywords Robotic · Gastric bypass · Bariatric surgery

Introduction

Robots have been used for a variety of surgical procedures but are most useful in procedures where complex reconstruction is required. Use of robotic system for Roux-en-Y gastric bypass (RYGB) was first described by Horgan and Vanuno in year 2001 [1]. Since then, many centres in the western countries have incorporated its use in their programme and reported their experience [2, 3]. We report our experience of using the da Vinci™ robotic system to perform a RYGB in an obese diabetic female patient.

Case Presentation

The patient was a 55-years-old female with a body mass index of 37.7 kg/m². She was suffering from type 2 diabetes

mellitus for the past 10 years and was on oral hypoglycaemic medicines. Her other co-morbidities included hypertension, dyslipidemia and osteoarthritis. The patient was evaluated as per the standard protocol and her co-morbidities were optimised prior to surgery. She was started on very low calorie diet for a period of 10 days. She was counselled about the advantages and possible drawbacks of robotic surgery. Being a public funded hospital, the procedure was free of charge for the patient.

Surgical Technique

Detailed preoperative planning was done regarding the approach, port positions and the steps of surgery. The operating room setup is depicted in Fig. 1. The robot was placed over patient's left shoulder and docked from this position. With the patient in supine position, the ports were inserted (Fig. 2) after creating pneumoperitoneum using a Veress needle. Five ports were used as in the standard laparoscopic RYGB. A 12-mm port was inserted in the supraumbilical position and the robotic telescope was inserted through this port. Subsequently, two 8-mm ports were inserted for the robotic arms. A 12-mm port was inserted on the right side for the stapling device and a 5-mm port was inserted for assistant. Nathanson liver retractor (Cook Medical Inc) was inserted through a small incision in the epigastrium. Dissection was started close to the gastric wall, about 5–6 cm from gastro-oesophageal junction. This was done using robotic assistance. A small gastric pouch was created using the Echelon 60 endostapler (Ethicon Endosurg, Cincinnati Ohio) using blue cartridges. The proximal biliopancreatic limb was measured at 50 cm and the loop of jejunum is brought up in antecolic fashion at this point and hitched to the gastric pouch using stay sutures using robotic assistance. Jejunum was divided using a white cartridge just proximal to left stay suture. The alimentary limb was measured at 100 cm and approximated to the biliopancreatic limb using a stay suture taken with robotic assistance. The jejunojejunal anastomosis was created in a side to side manner using a single firing of a 60-mm linear stapler. The resultant enterotomy was closed with stapler after taking three stay

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